



**PERSONALITY CHARACTERISTICS, TRAUMA AND  
SYMPTOMS OF PTSD:  
A POPULATION STUDY IN IRAQ**

*by*

**Khalil A. Hussen Aljurany**

**BA, MA (Psychology)**

**Submitted for the degree of Doctor of Philosophy**

**Heriot-Watt University**

**School of Life Sciences /Applied Psychology**

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Signature of the Author.....

Approved by: .....

Reader in psychology Dr. Maarten Milders (Thesis Supervisor)

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## **Abstract**

**Background:** The Iraqi people have been continually exposed to wide range of traumatic events, greatly increasing the rates of PTSD, depression, and health problems. However, there is a dearth of research investigating the prevalence of PTSD in the Iraqi population and the impact this has on the individual. This research sought to address this issue by assessing personality traits, sense of coherence, coping strategies and aggressive behaviours.

**Methods:** Self-report scales were used via three studies and a qualitative analysis was conducted from interview transcripts in the fourth study. In order to use self-report scales, the first study validated seven scales, including Baghdad Trauma History Screen (BTHS), Brief Cope, Screen of Posttraumatic Stress Symptoms (SPTSS), Sense of Coherence (SOC), personality traits of Neuroticism, Depression and Somatic Symptoms Scale (DSSS), and Satisfaction With Life Scale (SWLS) in sample of 408 ( 251 males, and 157 females) members of the public. In the second study, another three scales were validated to use including; Health-Related Quality of Life SF-8, Health-relevant 5-factor Personality inventory (HP5i), and Aggression Questionnaire (AQ) in a sample of 52 (33 males and 19 females) Iraqi public population. In the third study the scale of the Big Five Inventory (BFI) was validated in a sample of 51 (34 males, 17 females) Iraqi student and refugees. Correlations between saliva cortisol and PTSD were examined in the second and third studies. In the fourth study, 17 interviews were conducted (9 males and 8 females) with Iraqi students and refugees to obtain a better understanding individual's experiences of exposure to traumatic events and PTSD symptoms as well as the different coping strategies adopted following a traumatic event.

**Results:** The studies scales were reliable and valid. The results showed that a high proportion (94%) of participants reported at least one traumatic event. Thirty percent of 359 traumatised participants met the full DSM-IV criteria for PTSD association by low levels of sense of coherence, and high level of depression, neuroticism, and aggression. Very few of the participants (6%) reported no PTSD symptoms. Women reported less exposure to trauma and manifested more PTSD symptoms than men. Groups with and without PTSD did not differ significantly on their cortisol concentration levels. Social relationships and family support as well as religion played a vital role in shaping and dealing with trauma and PTSD symptoms.

**Conclusion:** Personality traits, active coping strategies, sense of coherence and social and family support contributed in prediction of PTSD symptoms after exposure to severe

traumatic events. Furthermore, the characteristics of PTSD related to social backgrounds and continue exposure to trauma in Iraq. The report measures were validated in this study, demonstrating their utility for future research examining PTSD symptoms in the Iraqi general population. Further research will help to create a systematic treatment programs for traumatised people.

## **Dedication**

This work is dedicate to all those who suffering from war and conflict in my home country in Iraq.

I sincerely would like to dedicate my thesis to my father and my mother, for their efforts, tiredness and patience.

To my father; I wish I could see you in front of me once more to say thank you for everything.

To my mother; your trust of me, gave me the strength to move forward.

Also, I would like to dedicate this thesis to my martyrs' brothers *Farhood* and *Ali* and my brother in law *Shaker* you have lit our lives by your sacrifice, I will stay always longed for all of you.

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Name:	Khalil A. Hussen Aljurany		
School/PGI:	School of Life Sciences		
Version: <i>(i.e. First, Resubmission, Final)</i>	Final	Degree Sought (Award <b>and</b> Subject area)	PhD in Psychology (Personality)

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## **Glossary of Terms and Abbreviations**

A	Anger
APA	American Psychology Association
AQ	Aggression Questionnaire
ASD	Acute Stress Disorder
ASR	Acute stress responses
BDHI	Buss-Durkee Hostility Inventory
BFI	Big Five Inventory
BTHS	Baghdad Trauma History Screen
CADS	Chinese American Depression Scale
COOP/WONCA- charts	Measure six core aspects of functional status
CSD	Chronic Stress Disorder
CSE	Coping Self-Efficacy
CPTSD	Complex PTSD
DCEG	Department of Counselling and Education Guidance
DESNOS	Disorder of Extreme Stress Not Otherwise Specified
DHL	International shipping, courier, and packaging service
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders-IV
DSM-III	Diagnostic and Statistical Manual of Mental Disorders-III
DSM-III-R	Diagnostic and Statistical Manual of Mental Disorders-III-revised
DSM 5	Diagnostic and Statistical Manual of Mental Disorders -5
DSSS	Depression and Somatic Symptoms Scale
EDS	Edinburgh Depression Scale
GD	Global Distress
HDRS	Hamilton Depression Rating Scale
HP5i	Health-relevant 5-factor Personality inventory
HS	Hostility
HRQL	Health-Related Quality of Life SF-8
HWU	Heriot-Watt University
ICD-10	International Classification of Diseases, 10 <sup>th</sup> Edition
KSP	Karolinska Scale of Personality
MADERS	Montgomery-Asberg Depression Rating Scale
MCS	Mental Component Summery

MDD	Major Depression Disorder
MI	Myocardial Infection
PA	Physical Aggression
PCS	Physical Component Summary
PRQ	Reactive-Proactive Questionnaire
PTSD	Posttraumatic Stress Disorder
PTE	Potential Traumatic Events
PTG	Post-Traumatic Growth
QLI	Quality of Life Index
SAM	Situational Accessible Memory
SOC	Sense of Coherence
SP	Scale of Personality
SPTSS	Screen for Posttraumatic Stress symptoms
SWLS	Satisfaction With Life Scale
VA	Verbal Aggression
VAM	Verbally Accessible Memory
WHO	World Health Organisation
WOC	Ways of Coping Checklist
WONCA	World Organization of General Practice/Family Physicians

# Chapter 1 Literature review

## 1.1 Introduction

The Iraqi people have experienced many traumatic events on an on-going basis and have suffered as a result of these events. These events include number of wars: The Iraq-Iranian war from 1980 to 1988, the invasion of Kuwait in 1990, the operation of Kuwait freedom in 1991, the economic blockade from 1991 to 2003, and the foreign invasion in 2003. However, the worst event experienced by Iraqi people was the violence and terrorism that followed the occupation of Iraq from 2003 onwards (Murthy & Lakshminarayana, 2006). Lankford (2009) states that Iraqi people are victims of the war forced upon them. They have suffered extreme aggression and violence such as murder, injury, arrest, and exposure to torture (Rudolph, Craig, Leifer, & Rubin, 1998 & Rubin, 1998); all of Iraq became a war zone after the occupation in 2003 (Lankford, 2009).

Hundreds of thousands of civilians in Iraq died within one decade due to the economic sanctions that were enforced by the United States and this produced a range of devastating consequences for the health and well-being of many of Iraq's civilian population (Harding, 2004). However, the majority of research has found that the most harm caused to Iraqi civilians was that of the sanctions. These sanctions were criticised as a violation of international human rights (Kozal, 2000).

In 2003, the United States of America led the invasion that resulted in the occupation of Iraq. From 2003 onward, violence, torture, and terrorism increased dramatically. The estimated civilian mortality risk rate increased by about 58 times higher after 2003 to be estimated about 267 per hundred thousand after the invasion of Iraq (Carlton-Ford, Ender, & Tabatabai, 2008; Roberts, Lafta, Garfield, Khudhairi, & Burnham, 2004). More than 4 million Iraqi people were displaced inside and outside the country and approximately 1,350 children were detained by military and police authorities; many for alleged security violations (UNICEF, 2007). In addition, more than one million people have been killed or seriously injured; most of them were civilian men. The real death number is unknown for political reasons. However, some journalist reports indicate an estimate of more than 650,000 deaths when calculated on a different basis and published in a 2006 study in the Lancet (Leigh, 2010). Other reports indicated that the Iraq War Logs released by WikiLeaks estimate the documented death toll across all categories "US troops and its allies, Iraqi forces, and terrorism" since March 2003 to be 162,000 of whom 79% were civilians

(<http://www.iraqbodycount.org/analysis/numbers/2011/>). Where the terrorism and political conflict in Iraq was the major cause of death to Iraqi civilians, Hicks et al. (2011) found in their dataset that from 2003 to 2010, 1,003 events were documented with suicide bombs causing 19% (42,928 of 225,789) of all Iraqi civilian casualties. In addition, these events not only caused a huge number of deaths among Iraqi people but also more than 110,000 people sustained injuries as estimated by the U.S. National Counterterrorism Centre by events related to terrorist attacks from 2004 through 2010. The World Health Organisation (WHO) estimates that 0.5% of the total population (approximately 150,000) was in need of physical rehabilitation (Crawford, 2011).

During the last 3 years of occupation, there have been reports about the mental health of the population. The majority of these mental health problems are depression, anxiety, and psychosomatic problems (Murthy & Lakshminarayana, 2006). According to a study by Lightsey and Hulsey (2002), such traumatic events may contribute to a wide range of maladjustment and impulsive behaviours. Numerous studies show that exposure to trauma and disaster, especially war and conflict, increases the risk of depression, anxiety, and somatic symptoms in addition to the severity of exposure and perceived lack of control during the disaster (Batniji, Van Ommeren, & Saraceno, 2006 2006). Bryant (2003) argued that there is vast body of evidence supporting the presence of anxiety symptoms and high rates of numbing after trauma exposure.

Due to all of the above, people in Iraq have been exposed to a wide variety of events that are a combination of war, terrorism, and sectarian war. Since this combination of events rarely happen in one society, it makes the Iraqi people a unique population to study with respect to the impact of these events on the prevalence of Post-Traumatic Stress Disorder, personality traits, health, and the factors related to these events. The effect of these human-made disasters and their consequences are the topic of current study and what this thesis try to examine.

## **1.2 PTSD overview**

PTSD is an anxiety disorder that may occur following the exposure to traumatic events. PTSD can be classified depending on the period of time between exposure to trauma and the onset of PTSD symptoms. Acute Stress Disorder is diagnosed when the trauma symptoms persist for no longer than a month. PTSD is diagnosed Chronic Stress Disorder (CSD) when trauma symptoms last more than a month and delayed PTSD is diagnosed when the trauma symptoms appear after many years. Human beings have been exposed to different kinds of trauma since they first appeared on earth (Braquehais &

Sher, 2010). PTSD was first recognised following the devastating effects that war experience had on soldiers serving in Vietnam (Johnson & Thompson, 2008).

The DSM-III first recognised PTSD as a disorder in 1980. The DSM-III produced 5 criteria of PTSD: (i) the stressor criterion; (ii) re-experiencing symptoms (at least one); (iii) avoidance symptoms (at least three); (iv) arousal symptoms (at least two); and (v) duration criterion of 1 month (Friedman, Keane, & Resick, 2007). The development of PTSD as a disorder was the result of a long process of amending both the term and content of its description. In many of his plays, Shakespeare described the reaction of acute stress. Thereafter, in 1666, Samuel Pepys recorded his own reaction of horror to the great fire of London (Daly, 1983). During the American Civil war in the 1860s, symptoms of stress such as nightmares and hyper-vigilance were diagnosed as 'shell shock' and 'neurasthenia' which are PTSD symptoms (Wooley, 1982). In 1894, Kraepelin used the term 'anxiety neurosis' to describe reactions to accidents and other disasters, as Freud used the same terms to describe the syndromes that resulted from childhood traumatic events (Ray, 2008). The term 'shell shock' was used to describe the reaction to stress during World War I that had previously been labelled 'nervous shock' (Page, 1885). Whilst caring for the soldiers who served during World War II, mental health professionals used the concept of post-trauma syndrome (Grinker & Spiegel, 1943).

In 1941, Kardiner recognised that traumatic events combined the feelings of irritability and outbursts of aggression as well as exaggerated startled responses. In parallel, other mental health professionals recognised a similar pattern of symptoms among civilians exposed to acute stressors that often occurred in those that confronted fighting soldiers. During the Vietnam War, American mental health associations paid attention to the devastating effects that war experience had on many recruited men (Yule, Williams, & Joseph, 1999). In the late 1970s, criteria for the diagnosis of PTSD was developed in the United States when a substantial number of veterans returning home from the Vietnam conflict displayed behaviour that appeared to be associated with psychological distress (Krippner, Pitchford, & Davies, 2012).

Since 1980, there has been a focus on factors that make an individual susceptible to developing PTSD. One factor was previous psychiatric history and the notion that people with psychiatric history suffer more from PTSD. However, it appeared that most of those with PTSD do not have psychiatric history (Scott & Palmer, 2000). Subsequently, there was a greater emphasis on the person's response to trauma based on (APA) criteria (Hunt, 2010). The terms used to describe PTSD went beyond combat experience to describe any

traumatised person whose experience left profound feelings of fear, horror, and helplessness (APA, 2000).

During the Vietnam War, clinicians and doctors became interested again in PTSD and what afflicted returning warriors. The researcher criteria for Vietnam Syndrome were transformed into the newly titled post-traumatic disorder. In the DSM-III, 17 possible symptoms were listed that suggested PTSD and as its cause, required only a recognizable stressor that would evoke significant symptoms of distress in almost anyone. Thereafter, the DSM-III-R stated that the event must not only be stressful but must be outside the range of normal experience (McLay, 2012).

There is a debate on what type of trauma would qualify to meet the definition of exposure to trauma and that definition would exclude many people from receiving health care (Rosen, 2004). Therefore, The DSM-IV PTSD committee has changed the definition of what constitutes a traumatic stressor to be , "one who experienced , witnessed, or was confronted with an events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" as long as " the person's response involved intense fear, helplessness, or horror" (McNally, 2004,p.3). However, the definition of what constitutes a traumatic event was expanded after the terrorist attack on 11<sup>th</sup> September, 2001 to include even watching television since its effects stay for a long time (Schuster et al., 2001). There is a vast body of evidence to suggest that trauma survivors who develop PTSD symptoms display their symptoms within days or even hours after the event (Rothbaum & Foa, 1993).

In many cases, it is the trauma resulting from a combination of a multitude of events arising from conflict and war zones, rather than a single event, which represents a strong risk factor for PTSD in civilians. Exposure to multiple events was mentioned for the first time by Herman (1992) as Complex PTSD (CPTSD). This study stated that repeated or prolonged trauma only occurs when the victim is in a state of captivity. This syndrome is currently under consideration for inclusion in the DSM-IV under the name of Disorder of Extreme Stress Not Otherwise Specified (DESNOS). The CPTSD is always used to describe an individual who has had a history of severe and repetitive exposure to trauma. Until now, the two most common factors associated with the CPTSD are sexual abuse in childhood and extensive experience of domestic violence. The presence of PTSD symptoms found in short-term stressors such as severe psychological stress, physical trauma, and infection (Pall, 2007), and in chronically mentally ill (Simpson, Anne Comtois, Moore, & Kaysen, 2011). In a DSM-IV field trial, it was



established that a patient with PTSD may meet the diagnosis for CPTSD if they had been exposed to trauma under the age of 14 years (Johnson, 2009).

In 1970, psychiatrists Chaim, Shatan, and Lift examined a group of 'Vietnam Veterans against the War' who recently returned as veterans to establish 'rap groups' in which they talked about their war experience. Chaim et al., (1970) tried to diagnose the effect of the war on these men's psychological health. The psychiatrists used the literature of Holocaust survivors and other accident victims to make a list of the 27 most common symptoms of 'traumatic neuroses' (Van der Kolk, 2007). The definition of PTSD in the DSM-III (1980) identifies the different syndromes as 'Vietnam veteran's syndrome', 'abused child syndrome', 'rap trauma syndrome', and 'battered woman syndrome' (Andreasen, 1980).

Pynoos and Nader (1993) state that PTSD varies in severity and intensity as a dynamic stress-response syndrome and can develop at any point throughout the lifespan. There are 3 patterns of PTSD: Acute, chronic, and delayed-onset PTSD. The Acute Stressor Disorder " ASD" appears in the DSM-IV (APA, 1994). It is defined when an individual has been exposed to trauma with symptoms that last between 2 days and 1 month (Goulston, 2008). PTSD becomes chronic when the symptoms last several years. Yehuda, McFarlane, and Shalev (1998) state that one of the important factors that predict chronic PTSD is the nature of the traumatic event to which that individual has been exposed. The DSM and International Classification of Diseases, 10<sup>th</sup> Edition (ICD-10) agree that a delayed-onset PTSD diagnosis should be given when the symptoms of PTSD appear after 6 months have passed from the time of exposure to the onset of the trauma (Holen, 2000).

There are sets of symptom clusters that make up PTSD and Complex PTSD which are as follows: (i) re-living; (ii) changes in self-structure, personal identity, and ego processes; (iii) avoidance and numbing; (iv) increase physiological reactivity; and (v) changes in affiliation, attachment, intimacy, and interpersonal relationships (Wilson, 2004).

### **1.3 Prevalence of PTSD**

Numerous studies have been published on PTSD and the factors that affect the prevalence of PTSD as well as the consequences of PTSD symptoms worldwide. The prevalence of PTSD differs from one country to another depending on several factors. The indicator of prevalence of PTSD will obviously depend on what traumatic events

people have been exposed to and the number of people who were exposed to them (Yule et al., 1999).

The prevalence of PTSD among civilians in countries affected by war range between 11% in Yugoslavian, 17% in Kosovo Albanians, 20% in Eastern Afghanistan, to 37.4% in Algeria (Johnson & Thompson, 2008). The prevalence rate has risen in some countries for different reasons. According to Yule et al. (1999), the proportion of those people exposed who go on to develop PTSD varies, in part, according to the nature and severity of the traumatic event. A further study was conducted by Khamis (2008) to investigate the relationship between combat exposure and PTSD among Palestinian adolescents. One-hundred and seventy-nine Palestinian adolescents aged between 12 and 18 years were victims of injury during military combat. PTSD was assessed by using the diagnostic criteria for assessments of PTSD as outlined in the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV)<sup>1</sup>. The study results showed that the prevalence of PTSD among Palestinian adolescents was 76.5% during Intifada whereas other studies have found a variety of prevalence rates related to PTSD among civilians population in wars zones. In a systematic review, Steel et al. (2009) found that the prevalence rates for PTSD among civilians in conflict regions have ranged from 0% in a conflict-affected region in Iran to 99% in Sierra Leone with an average of 30% for all articles reviewed. In a war zone, civilians can experience a higher frequency of intrusive recollections and reduced emotional numbing. The response to post-trauma for civilians can destroy their assumptions about safety (Johnson & Thompson, 2008). By comparison in countries without war or armed conflict prevalence of PTSD in general community was 1% for males and 2.2% for female in Germany (Perkonigg, Kessler, Storz, & Wittchen, 2000) and 4.6% for males and 10.0% for females in the USA (Kibler, 2009).

The differences from one country to another with respect to the prevalence of PTSD and the patterns of post-traumatic distress may be due to many factors. The following factors have been proposed by Braquehais and Sher (2010):The magnitude and severity of the events, the instruments which have been used to diagnose the symptoms of PTSD, and the personal flexibility and comprehension of the suffering. In addition, the society culture may play a role in developing or estimating PTSD. Therefore, it appears

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<sup>1</sup> The DSM-5 was released in May 2013 after the current study has been finished using definition and criterion of DSM-IV, many changes have been med in PTSD criteria and its symptoms clusters in DSM-5 (see the postscript p.205 and for more details go to [www.dsm5.org/](http://www.dsm5.org/)).

that there may be a different value or meaning for PTSD symptoms in different cultures and because the instruments used in these studies represent a Western value, the results of these studies may not accurately reflect the prevalence of post-traumatic stress symptoms in other cultures (Nicholl & Thompson, 2004).

In Iraq, there is a unique situation of conflict consisting of a combination of war, terrorism, and sectarian violence. In addition, these events have been spread in Iraq for a long time (see above) and have left people with substantial psychological and health-related problems. Traumatic events may be a risk factor for almost all types of mental disorder, directly or indirectly, where full PTSD has been found to be associated with secondary difficulties like psychosomatic and mood disorder (Perkonigg et al., 2000). However, it is important to note that not all people exposed to trauma will go on to develop PTSD and those that do suffer, may recover without any external support. Therefore, the study of the effect of trauma and the prevalence of PTSD is crucial for treatment and prevention programmers.

#### **1.4 PTSD Model**

PTSD is a psychiatric condition that can occur in anyone who has been exposed to life threatening or traumatic events. Among those who have experienced a traumatic event, some of them will go on to develop the disorder after the traumatic event. However, the majority do not develop PTSD or they may recover on their own (i.e., without any external support) (Keane, Marx, & Sloan, 2009). The studies of onset or development of PTSD using different theoretical bases have been growing in different aspects.

The PTSD criteria in the DSM-III-R and the DSM-IV suggest the inclusion of 17 symptoms that are divided into 3 clusters: Intrusive re-experiencing (5 symptoms); avoidance/emotional numbing (7 symptoms), and hyper-arousal (5 symptoms; Gootzeit & Markon, 2011). This three-factor model was broadly used for PTSD diagnosis and has been supported by many studies e.g. (Buckley, Blanchard, & Hickling, 1998; Carlson, 2001; Cordova, Studts, Hann, Jacobsen, & Andrykowski, 2000).

PTSD symptoms were found to be associated with a wide range of psychological processes. Numerous studies have focused on memory-related PTSD and many changes have been found in response to traumatic events and the aftermath. Buckley, Blanchard, and Neill (2000) found that participants with PTSD had deficits in memory and recall for trauma-related material and the authors argue that these features are similar to those individuals with depression. Furthermore, studies have revealed flashbacks as a memory

function in people with PTSD. These flashbacks may include sensations such as vivid visual, olfactory, and auditory images and sometimes a mixture of these sensations e.g. (Brewin, Huntley, & Whalley, 2012; Clervoy, Andruétan, Benali, & Vautier, 2012; Ehlers & Clark, 2000). Furthermore, dissociation in memory such as depersonalisation "the feeling that the action and speech cannot be controlled", out of body experience, and derealisation "the feeling that things around the person are strange or unreal" or weak linking the past with the future was found to be the most common reaction for people under stress (Kindt & van den Hout, 2003). Research findings over the past 25 years have revealed that people who experience severe trauma and events represent a threat for their life, a feeling of helplessness, were found to have more memory dissociation, and that it was related strongly to PTSD symptoms (Carlson, Dalenberg, & McDade-Montez, 2012; Galatzer-Levy, Madan, Neylan, Henn-Haase, & Marmar, 2011). The strong association between dissociation and PTSD is suggested to discriminate people with PTSD symptoms from those without symptoms after exposure to severe trauma.

The diagnosis of PTSD, according to the DSM-IV, requires experiencing intense fear, horror, and feelings of helplessness during the traumatic event. Brewin, Andrews, and Rose (2000) found there were strong relationships between PTSD and the cognitive-reaction of these feelings. Victims of violent crime who report intense experience to one of these feelings are more likely to develop PTSD than those who report less strong experience of these feelings. Moreover, a study by Kubany, Ralston, and Hill (2010) divided people into three groups as a result of the event: Those who experienced trauma (criterion A), those where the event represented a threat for their life (criterion A1), and those who experienced fear, horror, and helplessness(criterion A2). The study found 43% of the sample experienced all 3 criteria. Those who met the criterion for A2 also met criteria of PTSD compared with only 9% of the sample who experienced fewer than 3 of the A2 criterion (Kubany et al., 2010). Where these emotions are direct results of exposure to trauma, others seem to be a result of the cognitive appraisal of what happened after the exposure to a traumatic event such as shame, guilt, sadness, and anger. These negative emotions are a result of the cognitive appraisal of the cause of the events which are often found to accompany PTSD (Brewin & Holmes, 2003).

In parallel, the negative belief about the self, others, and the society during and after exposure to a traumatic event is found to occur more frequently in people with PTSD than in people without PTSD (Park, Mills, & Edmondson, 2012). Moreover, change in religious belief in people after exposure to traumatic events is often reported and this change is more strongly associated with people with PTSD (Seirmarco et al.,

2012). These negative beliefs are associated with severe trauma such as terrorist attack, combat, and torture (Dunmore, Clark, & Ehlers, 2001; Meiser-Stedman, Dalgleish, Glucksman, Yule, & Smith, 2009). On the other hand, the negative appraisal from others' is one of the predictors of PTSD. Studies have found that people who perceived more negative social support endorsed more PTSD symptoms than people who received positive social support (Belsher, Ruzek, Bongar, & Cordova, 2012). Women were found to receive more negative social support than men and that this was significantly associated with PTSD symptoms (Andrews, Brewin, & Rose, 2003).

A wide range of theories has been established to explain and measure PTSD symptoms. One of the most recent theories of PTSD is the emotional processing theory postulated by Foa, Steketee, and Rothbaum (1989) in an attempt to investigate the relationship between PTSD and awareness pre-trauma, during-trauma, and post-trauma. According to this account, two different viewpoints of traumatised individuals about the self and the world may prevent or lead to increased susceptibility to develop PTSD. First is the positive rigid view about the world as extremely safe and about the self as extremely competent. Second is the negative rigid view about the self as incompetent and the world as dangerous. The exposure to the traumatic event would be contradictory to the positive views or confirm the negative views. Foa et al., propose that the appraisal of such symptoms as disruption in daily activities and response to others, that take place during and after the traumatic event, may enhance the negative views. Moreover, chronic PTSD could be caused by beliefs before, during, and/or after trauma which interact to reinforce negative views that encompass incompetence and danger.

The three factors that were related to the development of PTSD in previous work by Foa and her colleagues were confirmed by Dalgleish (2004) as pre-trauma factors, trauma factors, and post-trauma factors. The pre-trauma factors involve: (i) personal psychiatric history; a lot of studies have confirmed that these factors predict more severe post-traumatic stress; (ii) family psychiatric history; and (iii) previous exposure to trauma; specifically, childhood abuse appears to play role in vulnerability to develop post-traumatic emotional difficulties.

Trauma factors can be classified under two broad classes: The severity of the event and the interpretive and experiential response to the event during the time of its occurrence. Under the severity-of-event class, factors such as bereavement, injury, threat of life, and the type of trauma, are risk factors of developing PTSD. In contrast, risk factors for developing PTSD in the class of interpretive and experiential attitude, include

the cognition and appraisals of the event at the time of occurrence and pre-trauma dissociation (Bessel, 2010).

The post-trauma factors can also be classified under two broad classes: First is the positive support that a traumatised person receives that may lead to a quicker recovery compared to those individuals who receive negative or no support, and second, how a traumatised person interprets the experience such as internal locus of control that is found to be associated with better post-trauma outcome.

There is substantial empirical evidence that supports the emotional processing theory. In their reviews, Brewin and Holmes (2003) and Dalgleish (2004) discuss a number of studies that support the power of the emotional processing theory in its prediction of trauma outcome and some up-to-date research is presented in this chapter.

In the cognitive model, Ehlers and Clark (2000) posit that the appraisals surrounding a traumatic event or its sequel could lead to a sense of current threat. These negative appraisals that lead to a sense of current threat might result in two processes: Traumatized individuals may over-generalise the event as more dangerous than it actually was due to it being connected to poor memory, elaboration about the event, or the way the individual felt or behaved during the event. The negative appraisals contribute to persistent PTSD and a range of negative emotions.

In the new version of dual representation theory, Brewin, Dalgleish, and Joseph (1996) posit that there are two memory systems that operate in parallel: The verbally accessible memory (VAM) system and situational accessible memory (SAM). The VAM system is available for verbal communication with others and registers conscious evaluation at the time of the event and afterwards. The SAM memory contains the information about the sense of the event such as sight and sound. It stores information about the body's response during the trauma such as heart rate, pain, and temperature changes. It is suggested that traumatized people cannot regulate their SAM memory as it does not use verbal code and is outside of consciousness most of the time; the olfactory, auditory, and visual inputs act as reminders of the events. A lot of information in the SAM system is transferred to the VAS system and there is retrieval competition between the two memory systems that may lead to an increased risk in the return of fear and re-experience. As a result, the secondary emotions such as a sense of guilt, anger, distress, and lack of support may lead to PTSD.

According to classical conditioning theory, proximal causes or precipitating events, that is, exposure to traumatic events, lead to the development of fear and PTSD (Barlow, 2002). In classical conditioning theory, the dose-dependent response, which is the

severity and duration of the traumatic event, is the most critical factor for developing or preventing PTSD symptoms (Zoellner, Eftekhari, & Bedard-Gilligan, 2009). Meta-analytic studies have found that the dose of the traumatic event is one of the factors that are able to predict PTSD alongside other factors e.g. (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2008).

However, the two-factor theory by Keane, Zimering, and Caddell (1985) suggests that processing of stimuli generalization requires two factors; neutral external stimuli e.g. the physical nonthreatening environment and internal stimuli such as cognitive and physiological responses that accompanied the exposure to traumatic events. The association of these two factors may serve as conditioned stimuli and elicited high level of distress (Fairbank & Nicholson, 1995). PTSD could emerge as the result of two factors: Fear as a motivation and arbitrary response through fear-reducing reinforcement. The two-factor model explains many protuberant features of PTSD. However, it does not distinguish between the aetiology of PTSD from other disorders such as anxiety (Brewin & Holmes, 2003). Taylor, Kuch, Koch, Crockett, and Passey (1998) used exploratory factor analysis for PTSD factors and suggested the two-factor model should include intrusion and avoidance, hyper-arousal, and numbing.

Moreover, two four-factor models have been suggested by separate authors. The first was by King, Leskin, King, and Weathers (1998). In this model, the factors of PTSD in the DSM-IV of re-experiencing, emotional numbing, effortful avoidance, and hyper-arousal are divided. The second four-factor structure for PTSD symptoms was suggested by Simms, Watson, and Doebbellling (2002) who compared different models in two groups: 1,896 deployed Gulf War veterans and 1,799 non-deployed controls. Simms et al's model included factors of intrusion, dysphoria, avoidance, and hyper-vigilance.

It appears that many factors play a role in the presence of PTSD; the negative appraisal of the trauma and its sequel both contribute to the sense of current threat and seriousness of the event. Trauma-dose represented by severity and duration and the type of trauma enhance the persistence of PTSD. Moreover, emotional status of the traumatised individual during and after the event may lead to the development or prevention of traumatic distress. However, the negative belief about the self and the world may interact with the emotions and exacerbate the individual situation.

### **1.5 PTSD risk factors**

Post-traumatic stress disorder is an anxiety disorder from which people can suffer given exposure to extremely traumatic events (Gilbertson et al., 2010). Although

exposure to trauma is necessary to develop PTSD, not everyone who is exposed to trauma goes on to develop PTSD and there is no single cause of PTSD. However, there are some features of traumatic events and for individuals subjected to trauma that may lead to the development of PTSD. This has motivated researchers to shift the focus of their investigations on particular factors that are thought to lead to the development of PTSD (Yehuda, 1999). These factors may be causes or contributing factors for the development of PTSD that are essential for understanding, preventing, and treating PTSD (Ford, 2009). Many factors have a relationship with PTSD symptoms; either negatively or positively. These factors include biographical factors, personality traits, traumatic events, and coping strategies. The factors which may be more strongly related to the development of PTSD can be classified by 3 criteria: (i) The risk factors of pre-exposure, such as sex (female), the number of traumatic events experienced in the past, and personality traits (Neuroticism, Introversion, and psychiatric disorder); (ii) the risk factors of peri-traumatic events that include the degree of exposure, intensity and duration, and the feeling of horror related to the disaster; and (iii) the risk factors of post-traumatic events such as body injuries caused by traumatic incidents (Maes, Mylle, Delmeire, & Janca, 2001).

The information that has been used to determine risk factors has derived from data analyses of differences between people with and without PTSD who have been exposed to trauma (Yehuda, 1999). However, some individuals still do not develop PTSD even in the presence of these factors and that may be because they have some kind of resistance or invulnerability to the disorder (Ford, 2009). Numerous studies have been conducted to determine the factors that may lead or contribute to the presence of PTSD in individuals exposed to severe events. The results of a meta-analysis by Brewin, Andrews, and Valentine (Brewin, Andrews, & Valentine), of 77 articles on the prediction of PTSD since 1980 have found that there is variation in the types of trauma that can be experienced by an individual including combat war zone trauma, sexual assaults or rape, natural disasters, motor vehicle accidents, or a combination of these traumas. According to these analyses, 14 risk factors were identified. These factors are as follows: Gender (female), age (younger), low socio-economic states, lack of education, low intelligence, race (minority status), psychiatric history, childhood abuse, other adverse childhood, other previous trauma, family psychiatric history, trauma severity, lack of social support, and life stress.

A meta-analysis by Ozer, Best, Lipsey, and Weiss (2003) of 68 studies examining the predictors of PTSD. Found seven predictors that were classified under 2 headings: (i)



characteristics of the individual prior to trauma, such as gender, education, race, IQ, family history of psychopathology, and prior psychological adjustment; and (ii) factors proximal to the traumatic event such as perceived life threat during the trauma, post-traumatic social support, peri-traumatic emotional responses, and peri-traumatic dissociation. The results showed a stronger relationship between PTSD and risk factors with respect to assault target events such as interpersonal violence (severe trauma) compared with less severe traumatic events such as accidents.

Some of these factors have been confirmed by other studies. Yehuda and Sarapas (2009) mentioned that many studies found risk factors for PTSD such as family history of psychopathology and in particular, parental PTSD; cognitive factors such as low IQ, female gender, pre-existing avoidant, antisocial, neurotic personality or behaviour problems, and other traits such as poor social support and negative emotions. Factors such as early life experiences or early abuse may be risk factors that might lead to a change in personality and cognitive abilities that in turn may lead to an increased risk for PTSD (Yehuda & Sarapas, 2009).

With respect to the severity of trauma, the DSM-IV (APA, 1994) identifies that the severity of an event may precipitate PTSD. These factors include events that are directly life-threatening such as sexual and physical assault, combat, accidents, torture, and natural disaster (McFarlane, Golier, & Yehuda, 2002). In 1995, Başoğlu and Paker studied the severity of torture as a predictor of PTSD. They found that the number of exposures to torture did not predict post-torture psychological problems whereas scores of perceived distress did (Başoğlu & Paker, 1995). The severity of traumatic events represents a risk factor for PTSD when the significant predictor is combat exposure (Koenen, Stellman, Stellman, & Sommer, 2003). Engdahl, Dikel, Eberly, and Blank (1997) found that more than half (53%) of a sample of 262 (median age 71 yrs) US World War II and Korean War prisoners had PTSD. The author argued that PTSD was a consequence of exposure to severe trauma.

In their review, Johnson and Thompson (2008) found that factors that predicted PTSD in civilians exposed to war were whether the traumatic event was severe, sudden, prolonged, repetitive, or intentional in addition to the sex (female) and older age of the individual (Johnson & Thompson, 2008). In the same direction, Voges and Romney (2003) found that the severity of the traumatic event was the most salient protector of PTSD alongside gender (female). Female gender was found to be a risk factor for chronic PTSD 30 months after severe acute respiratory syndrome (Mak et al., 2010). In a recent study, data from a sample of 811 people directly exposed to 10 nature disasters were

analysed. Using multivariate analyses, the study posits the predicting factors of PTSD. There are as follows: Female gender, younger age, Hispanic ethnicity, less education, single marital status, pre-disaster psychopathology, injured-in-disaster, saw someone hurt or killed, exposed to aftermath, number of fatalities in the disaster, family or friend hurt or killed, stressful life events after disaster, and time since the disaster (North, Oliver, & Pandya, 2012).

The study of PTSD risk factors in civilians include the personality trait of Neuroticism, family history of psychiatric disorders, social support, pre-existing disorder, and there is an overlap between these risk factors for PTSD and risk factors of exposure to trauma (Breslau, 2012).

In terms of mental health, numerous studies have shown that exposure to trauma and disaster, especially war and conflict, increase the risk of depression, anxiety, and somatic symptoms, in addition to severity of disaster exposure and perceived lack of control during the disaster (Batniji et al., 2006). Bryant (2003) argued that there is vast evidence of anxiety symptoms experienced and high rates of numbing post-trauma exposure. Furthermore, short and long term psychological adjustment problems may appear as post-war consequences.

The literature review showed that there are wide ranges of risk factors for PTSD. In the following sections the risk factors that examined in this study will discuss in details. These factors are essential for presences the PTSD and answering the study questions as well. The correlations of these factors with PTSD in an Iraqi sample do not studied yet. As more studies needed to examine further risk factors in different ages and groups in the future.

### **1.5.1 Traumatic events**

In order to screen the presence of PTSD, an individual needs to be identified as having been exposed to a traumatic event as defined according to DSM-VI-TR, criteria A1. “A stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or another threat to one’s physical integrity; or witnessing an event that involves death, injury or a threat to the physical integrity of another person; or learning about an expected or violent death; serious harm, or threat of death or injury experienced by the family member or other close associate.” (APA, 1994). This means two conditions need to be fulfilled: First, if the person has been exposed to a traumatic event or events and these events represent a real or perceived

threat for his life or relevant other and second, if the person felt fear and helplessness as a consequence of these events.

PTSD is a reaction to traumatic events such as torture, physical abuse, combat, and accidents. In recent years, there has been an increasing interest in studying the relationship between trauma and its negative outcomes (Gilbertson et al., 2010). In spite of exposure to trauma as an essential prerequisite to the development of PTSD, some studies have found that there are some differences in the effect of event-type on PTSD. Some argue that the nature of the traumatic event is one of the predictors of chronic PTSD (Yehuda et al., 1998).

Trauma can be divided into two categories: Natural traumas such as hurricanes, earthquakes, fires, floods, accidents, and illnesses and man-made traumas such as war, conflicts, torture, and terrorism. There has been an increase in the number of civilian victims of traumatic events due to war and armed conflicts engulfing public populations over the world in recent decades (Pedersen, Tremblay, Errazuriz, & Gamarra, 2008). These human-made disasters affect millions of people yearly all around the world with the majority of affected people living outside Western civilisation, especially in resource-poor countries (Batniji et al., 2006). Accordingly, people who have been subjected to such traumas can be divided into two groups: Those who have been exposed to war-related trauma and those who have been exposed to natural trauma. People who have been exposed to man-made traumatic events appear to experience more problems including PTSD, anger, emotional numbness, depression, and withdrawal compared to those who have not been exposed to war-related traumatic events (Pearce, Schauer, Garfield, Ohlde, & Patterson, 1985). It seems that the effect of trauma depends of the type of traumatic event. People who experience traumatic events such as disasters, acts of violence, and terrorism may suffer from anxiety, depression, and behavioural difficulties as well as PTSD (Van der Velden & Wittmann, 2008) and these disorders may affect mental health in the general population (Besser & Priel, 2010).

Many studies have been conducted to explore the effect of trauma on PTSD. For example, a study by Chung, Walsh, and Dennis (2011) investigated the effect of trauma characteristics on PTSD, past trauma life, and psychiatric comorbidity among people after anaphylactic shock experiences. Two groups of participants were recruited. One group comprised 94 anaphylactic shock patients (17 male and 77 female). The second group included a control group of 83 people without anaphylactic shock experience (17 male and 66 female) who had experienced significantly fewer total traumatic life events than the first group. The finding showed that characteristics related to trauma exposure

influenced PTSD when more people with anaphylactic shock experiences met the diagnostic criteria for full PTSD. They also reported significantly more psychiatric comorbidity than the control group

In the same direction, Robinson and Larson (2010) aimed to determine which events could elicit the PTSD symptoms in a sample of 1,190 undergraduate students aged between 18 and 26 years. The sample was divided into three groups depending on their exposure to traumatic events: Undergraduates who reported experience of a traumatic event and no significant stressful events in the past year, students who reported experience only with significant stressful life events, and students who reported experience of both traumatic and stressful life events. The results showed that the two groups who were exposed to only traumatic events and those who experienced stressful life events had a similar number of PTSD symptoms that were fewer than those who experienced both type of events.

In parallel, the number of events is one of the crucial factors on trauma consequences. The effect of exposure to a single trauma and the cumulative effect of many traumas on post-traumatic disorder have been studied by Nilsson, Gustafsson, and Svedin (2010) using questionnaire responses from a normative sample of 400 adolescents with a mean age of 15 years. The result showed that the cumulative effect of traumas, especially interpersonal trauma, had a significant impact on PTSD symptoms. Similarly, to examine whether a single trauma or multiple traumas were more associated with PTSD, Simpson et al., (2011) investigated the effect of single and multiple traumas and the presence of PTSD. A battery of measures was completed by a large sample of 67 mentally-ill patients who met the diagnosis of PTSD. Participants were required to complete the trauma scales twice; one for reporting the worst single trauma they had experience and one for reporting the experience of multiple traumas (i.e. at least two traumas). The results showed that 53.7% of the sample who reported a single trauma met the PTSD criteria whereas this proportion rose to 67.2% when all traumas were considered. There is a huge amount of literature to support the finding that exposure to multiple traumas is more predictive for disorders in general and specifically, PTSD e.g. (Davidson, Stein, Shalev, & Yehuda, 2004; Dyregrov, Gjestad, & Raundalen, 2002; Follette, Polusny, Bechtle, & Naugle, 1996; Huang, Schwandt, Ramchandani, George, & Heilig, 2012; Reiff, Castille, Muenzenmaier, & Link, 2012; Smith, Perrin, Yule, Hacam, & Stuvland, 2002).

Some argue that the trauma criterion A1, direct exposure to traumatic events as defined in the DSM-1V, would be more strongly associated with PTSD than non-

criterion A1 events such as indirect trauma' exposure of relevant other'. Erwin, et al., (2006) examined the differences between a sample of 45 participants who experienced at least one traumatic event with social anxiety stress and compared responses to stressful social events for non-criterion A1 trauma with 30 non-anxiety controls. The results revealed that the two groups differed in the PTSD of symptoms 'avoidance and hyperarousal' severity and more than 30% of the group with trauma criteria A met PTSD criteria in general. However, the PTSD symptom pattern did not differ between trauma criterion A1 group and non-criterion A1 group.

However, Long et al. (2008) investigated whether PTSD was more associated with A1 criteria or non-criteria. A sample of 528 college students whose age over 19 years was recruited; 119 were valid for final analysis. The results revealed that there were a greater probability of PTSD diagnoses and greater PTSD symptoms when the frequency was associated with non-criteria A1 events than criteria A1 events. This may be because the family and social relationship in some cultures, such as in Iraq, increase the probability of PTSD as they are related more with non-criteria A, such as the loss of a family member (Alatrany, 1995).

### **1.5.2 Personality traits**

Personality is a complex term and there is no single definition for personality that is satisfactory for all psychologists. The first definition of personality appeared in Albert (1937) described as follows: "Personality is something that does something" (Caeducci, 2009). When the definition of personality developed as "An individual's characteristic patterns of thought, emotion, and behaviour, together with psychological mechanisms-hidden or not behind those patterns" (Funder, 2001b, p. 2), there was an increase of interest in theories about psychology and personality, particularly in the second half of the 20<sup>th</sup> century (Simanowitz & Pearce, 2004).

The modern models of personality can be classified into three categories according to the methods used in studying personality: Typologies, circumflexes, and factorial models. The typologies-models arose from theories that posit types of people, whereas, the circumflexes'-models came to resemble the relationship between different personality types or factors that may be more related than others. The factorial-models arose to define the dimensions of human personality using factor analysis that is used as a primary tool by theorists composing factorial models (Aurther, 2006). The traits theory of personality was not developed in isolation from alterative theories. The roots of the

traits theory can be found in the works of Froude, Allport, and Cattell (Matthews, Deary, & Whiteman, 2003).

Hierarchical models of personality traits began with Eysenck's Big three-factors model of Neuroticism, Extroversion, and Psychoticism from 1947 to 1970. This was followed by Cattell's sixteen-factors model in 1987, the BIG Five-factors model by McCrae and Costa (1999; (McCrae et al., 2004), the Big six-factors model by Ashton and Lee (2007) who added an Honesty-Humility dimension, and finally, the BIG Five (Van der Linden, Te Nijenhuis, & Bakker, 2010).

Raymond B. Cattell's work was the most influential on the construction of personality traits with the examination of English descriptive terms. About 18,000 of such terms were classified by Allport and Odbert (1936) and divided into four lists. In 1943, Cattell used these trait lists and by adding some of the concepts from the psychological literature, developed a set of 35 bipolar clusters of related terms. By using factor analysis of Cattell's 35 traits, only 5 factors proved to be replicable (Goldberg, 1990). These five factors, also known as 'the BIG-Five factors', have been labelled and numbered as follows: (i) Extraversion (surgency), (ii) Agreeableness, (iii) Conscientiousness (dependability), (iv) Emotional stability vs. Neuroticism; and (v) Openness (culture). These BIG-Five factors are organised by personality trait constructs and has ended an abundance of inconsistent personality traits structures (Funder, 2001a).

The commonly used terms of the BIG-Five traits of personality are Agreeableness, Conscientiousness, Neuroticism (negative emotionality), Extroversion, and Openness. These BIG-Five traits show similar patterns of structure across a wide range of cultures and have been found to be similar in development, validity, and reliability (McCrae et al., 2004). The BIG-Five traits are a set of organised fundamental personality traits; each of which encompasses human characteristics.

Neuroticism refers to an increased sensitivity to react to unpleasant emotions. People who are high in Neuroticism experience more emotional distress and have a wide vicissitude of emotional state such as anxiety, hostility, and depression. Those who are low in Neuroticism tend to be more emotionally stable and have greater self-control. Costa and McCrae (1992) have found that an individual who scores high on the factor of Neuroticism and low on the other four factors is unlikely to do well in relationships that involve social interaction.

Extraversion is the second personality dimension that is characterised by traits of sociability, energy, optimism, friendliness, and self-confidence. The trait has two dimensions; extreme extroversion and extreme introversion. People with high

Extroversion tend to be friendly and enjoy meeting new people. In contrast, people with high Introversion tend to spend less time in social situations and may be less friendly.

Agreeableness represents the individual's ability to be friendly and get along with others. People high on this trait are helpful, trusting, sympathetic, and are concerned of the welfare of other people and prefer co-operation rather than competition. Those who are low on this trait are antagonistic, sceptical, and like to stand up for their interests and beliefs.

The Openness trait refers to being open to new experiences. However, it is a rare personality trait among the population. People high on this trait tend to enjoy new ideas, have an active imagination, and like to meet new people. People low on this trait tends to prefer familiar ideas and places. The Conscientiousness dimension is a tendency to control and regulate. People high on this trait strive more for achievement, are competent, and are often good workers. People low on Conscientiousness tends to be careless, undependable, and is more prone to procrastination (Burger., 2008; Kalat, 1999; Moorhead, 2010).

Numerous studies have revealed that personality type is one risk factor for PTSD as well as many other disorders. Research has shown that personality trait dimensions can also mediate both sensitivity and exposure to stress and pre-trauma personality is an important determiner of post-traumatic disorder. The personality traits that have been found to consistently correlate with PTSD are Neuroticism and Extroversion (Watson, Gamez, & Simms, 2005). Neuroticism has been found to be associated with higher negative affect and is a part of a general susceptibility to stress. There is a significant correlation between Neuroticism and psychiatric comorbidity in general (Chung, Symons, Gilliam, & Kaminuteski, 2010). Those who are high on the dimension of Neuroticism react strongly to adverse events perhaps because they are more sensitive to stress and respond more rapidly to negative events (Matthews et al., 2003). In contrast, people who are low on the Neuroticism trait tend to be more able to 'shake off' the effects of traumatic events (Paris, 2000). Extroversion was found to be related to higher positive affect, thus people who are high on the Extroversion trait tend to experience a more pleasant mode (Watson, 2000). It has been found that individuals who scored high on Neuroticism and Extroversion are more likely to be exposed to traumatic events and are at greater risk of developing PTSD than people with low scores on these traits (Breslau, Davis, & Andreski, 1995; Hyer et al., 2003). Chung et al. (2005) found the personality trait of Neuroticism interacted with other factors such as coping strategies that led to an increase in the emergence or maintenance of PTSD. The overlap of

Neuroticism (i.e., the negative emotion) with social inhibition is called by Denollet as personality Type D and was found to be a risk factor for the presence of PTSD (Denollet, 2000). In their study, Pederson and Denollet (2004) proposed that the factor that may increase the risk for PTSD is the high level of negative affectivity that is associated with social inhibition for the expression of emotions in social interactions after exposure to traumatic events (Pedersen & Denollet, 2004).

Man Cheung, Berger, Jones, and Rudd (2006) argued that Neuroticism is the only personality trait that predicts all PTSD symptoms and general health problems whereas antagonism predicts only hyperarousal symptoms. Furthermore, there is no relationship between Extraversion, Openness to experience, and Conscientiousness with post-Myocardial Infarction (MI), PTSD, and general health problems. This study was conducted on 96 older MI patients (78 males and 18 females) with ages ranging from 60 to 91 years (average age, 70 years). In the same direction, Chung, Berger, and Rudd (2007b) found that a group of patients with full PTSD had more personality traits associated with Neuroticism and fewer traits associated with Agreeableness than the groups with partial and no PTSD whereas there were no significant differences between the three groups in Extroversion, Openness to experience, and Conscientiousness.

Many studies found a positive relationship between PTSD and personality traits in cases of prolonged or early childhood trauma (Daud, Klinteberg, & Rydelius, 2008). Lauterbach and Vrana (2001) aimed to explore how personality traits and demographic variables were related to the possibility of experiencing a trauma. A sample of 402 undergraduate students was chosen that consisted of 225 men and 177 women. Traumatic events were measured using a questionnaire alongside four self-report measures of personality. The results suggested that 80% of the participants had been exposed to trauma at least once in their lives. Moreover, those exposed to one or more traumatic events were found to have high levels of antisocial personality traits. It was also established that exposure to trauma and experience of PTSD was related to certain personality traits such as those who are high Neuroticism. In contrast, people with low traits of Neuroticism were found to be less likely to develop PTSD (Lauterbach & Vrana, 2001). Additionally, individuals with full PTSD were found to have higher traits of Neuroticism than those individuals without PTSD (Chung, Berger, & Rudd, 2007). Therefore, higher traits on the Neuroticism scale may be more predictive of PTSD symptoms (Bramsen, Van der Ploeg, Van der Kamp, & Adèr, 2002). Alternatively, exposure to tension or trauma may lead to an increase in neurotic traits and negative emotional experience (Roberts, Wood, & Smith, 2005). It was also revealed that there is



an overlap between personality traits and successive traumatic situations with the availability of other factors.

In a study of 70 civilians after exposure to air attacks in Belgrade, Knežević, Opačić, Savić, and Priebe (2005) found that only the personality trait of Openness predicted PTSD. They stated that a higher degree of Openness may increase susceptibility to develop post-traumatic stress after being exposed to traumatic events. However, there was no significant association between personality traits before air attacks and PTSD after exposure.

Impulsivity is another personality trait found to be a risk factor in some instances of PTSD. The gene-environment interaction is mediated by the Impulsivity trait that is influenced by the exposure to stress. People who have the characteristics of Impulsivity such as acting quickly and taking risks have been found to have more experiences of being exposed to stressful experiences than other experiences (Kendler & Eaves, 1986). Thus, people with Impulsivity trait experience more stress that may be lead to more risk for PTSD.

In contrast, several studies have found positive post-trauma growth (PTG), that some people become their inner strength after exposure to trauma or the stress and trauma is good for them(Haidt, 2006). The growth or the positive change occurred for people after being exposed to trauma and that personality traits play a role in this growth (Merecz, Waszkowska, & Wezyk, 2012). People high in Agreeableness, extraversion, openness and Conscientiousness had more positive growth after traumatic events. Whereas, There is no correlations found between PTG and Neuroticism (Tedeschi & Calhoun, 1996).

Personality traits play crucial role in outcomes after exposure to trauma. Some of these traits are more related to behavioural disorder and develop PTSD symptoms. Others same mediate the relationship between trauma and its consequences and help to make people more strong and develop PTG.

### **1.5.3 Coping strategies**

There is a substantial literature surrounding the psychology of the human response to stressful events and unpleasant situations. This was first documented by Freud with the concept of repression and defence in his early psycho-analytic writings. His theory of repression is the foundation of the structure of psycho-analysis from his perspective (Parker & Endler, 2009). Folkman and Lazarus (1980) stated that coping is not a personality trait but a response to particular stressful situations. Moreover, Lazarus, and

Folkman (1984) thought that coping is a process by which a personal effort is needed to manage a stressful situation and they defined coping as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demand that are appraised as taxing or exceeding the resources of the person" (p.114). The emotional response from the individual with PTSD depends on the evaluation and appraisal of whether or not the traumatic situation was stressful (Ehlers & Clark, 2000). There are two kind of appraisal; primary and secondary. In the Primary appraisal the person evaluate the situation as stressful or not. The secondary appraisal includes two processes: The availability of coping options, and the likelihood of the application of this specific coping method or set of coping strategies at the stressful situation.

There are different classifications of coping strategies. In his review of coping, Skinner et al., (2003) found more than 400 different coping methods. However, there is no single coping strategy classification that is accepted in the coping research. Coping strategies can be classified in many different ways depending on what aspect of trauma is focused on such as problem-focused or emotion-focused (Aldwin, Yancura, & Boeninger, 2010). Problem-focused coping strategies include individual efforts to change or remove the source of the traumatic event. In contrast, traumatised people may use emotional-focused coping strategies in order to control the negative emotional outcome of the event (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). According to Skinners et al. (2003) review, five coping strategies represent the core structure of coping which are as follows: (i) avoidance; (ii) problem-solving; (iii) distraction;(iv) positive cognitive restructuring; and (v) support-seeking.

Another classification of coping strategies is the approach-oriented strategy and coping through avoidance. In the approach-oriented strategy, the traumatised person may reappraise the situation as positive and directly deal with the event or related emotion by taking problem-solving actions and seeking guidance and support. The avoidance-coping strategy is one whereby an individual may withdraw from or disregard the stressful situation or its consequential negative emotions resulting in resigned acceptance and cognitive avoidance (Goldberger & Breznitz, 1993; Holahan, Moos, & Schaefer, 1996; Litman, 2006).

In their effort to reduce the number of coping strategies for analytic purposes, Jorgensen and Dusek (1990) studied 12 coping scales using factor analysis. They found two fundamental factors. One was characterised by salutation that was associated with the positive utilisation of the social environment such as making decisions, seeking social support, and talking about problems with family. The second consisted of less mature

coping strategies; that is, less salutation such as verbal aggression, alcohol use, and minimising the importance of the problem.

In their review of studies into the coping strategies that are used by children and adolescents since 1988, Compas et al. (2001) classified coping in three categories:(i) problem-focused; (ii) emotional-focused; and (iii) engagement or disengagement. Each of these categories includes three strategies as described below: Problem-focused strategies comprise problem-solving, information-seeking, and problem-focused coping and support. Emotional-focused strategies comprise emotional expression, denial, and wishful thinking. Engagement-coping comprises problem-solving, emotional expression and support-seeking while disengagement coping strategies comprise problem-avoidance, cognitive-avoidance, and social withdrawal.

Despite the importance of classifying coping strategies that numerous studies have focused on, what is more important here is how these coping strategies are related to different stressful events and the consequences thereafter. A number of studies have described the links between different coping strategies and trauma and its consequences. For example, Folkman and Moskowitz (2000) found that people adapted the function of positive affect when faced with chronic stress. They displayed suitable meaning-based coping processes that may support positive affect during chronic stress. Active coping may help people deal with trauma or even prevent the development or onset of PTSD (Olf, Langeland, & Gersons, 2005). Another study established that problem-focused coping and positive-oriented appraisal provided protection from the effects of exposure to on-going traumatic events (Braun-Lewensohn et al., 2009). A study by Johnson and Thompson (2008) revealed that strategies that prevented victims from developing PTSD following war-related trauma and torture was how they understand the torture, the support that they received from family and society, and religious beliefs (Johnson & Thompson, 2008).Religious belief, as a positive coping strategy, can help people to heal after traumatic events. This was concluded given the findings that there were relationships between positive religious coping such as "religious forgiveness, seeking spiritual support, and spiritual connection" and Post-Traumatic Growth PTG and between negative religious coping such as "spiritual discontent, interpersonal religious discontent, and demonic reappraisal" and PTSD (Gerber, Boals, & Schuettler, 2011).

Haden, Scarpa, Jones, and Ollendick (2007) studied the role of social support as a coping strategy in PTSD.A sample of 150 undergraduate students participated; 50 males and 100 females aged between 17and 22 years with a mean age of 19 years who reported experience of different types of trauma. The study used scales of trauma characteristics,

coping behaviour, perceived social support, and PTSD symptoms. The results showed that trauma survivors showed less severe PTSD when they perceived strong support from their family and friends. The study also found that perceived injury and disengagement behaviour led to more severe PTSD.

The coping strategy of self-efficacy was found to play a role in PTSD. Cieslak, Benight, and Caden Lehman (2008) studied the mediators of self-efficacy between negative cognition and PTSD. Two studies were conducted. In the first study, participants comprised 66 women aged between 18 and 55 years with a mean age of 34 years who had been sexually abused as a child. Three scales were used to measure negative cognitions, sexual abuse coping self-efficacy, and post-traumatic distress. The results showed that there were positive correlations between post-traumatic distress and cognition about the self, negative cognition about world, and the total score on the Post-traumatic Cognitions Inventory. Likewise, self-efficacy was negatively related to post-traumatic distress. In the second study, 70 participants were recruited (25 males and 45 females who were aged between 18 and 72 years with a mean age of 40 years) who had been exposed to a motor vehicle accident. Three scales were used: Negative cognitions at the time of the accident and seven days after (time 1), coping self-efficacy one month after the accident (time 2), and post-traumatic distress after 3 months (time 3). The results showed that coping self-efficacy at time 2 was negatively related to post-traumatic distress at time 3. The above research findings suggest that negative cognitions about the self, about the world, and the Post-traumatic Cognitions Inventory total score are related to PTSD.

Moreover, coping strategies may moderate the acute stress response and distress. Benight and Harper (2002) studied the role of coping self-efficacy (CSE) as a moderator between acute stress responses (ASR), PTSD, and global distress (GD) in a sample of 50 participants who lived in affected areas affected by fire and floods. Participants were assessed after 3 to 8 weeks of flooding (time 1) and again after one year (time 2;  $n = 46$ ). The sample included both males and females; men represented 51% of the sample at time 1 and 59% at time 2 and had a mean age of 54 years. The results showed that ASR and CSE predicted PTSD and GD at time 1. PTSD symptoms at time 1 and CSE at time 2 predicted PTSD at time 2 and the CSE played a moderator role between ASR and both PTSD and GD.

Individuals who use avoidance coping strategies may find that the situation becomes much worse. The relationship between avoidance coping strategies and PTSD was studied. A study by Bryant and Harvey (1995) found that avoidance coping is

associated with PTSD symptom severity in a sample of 56 people who had been involved in a motor vehicle accident after 12 months. The results confirmed that avoidance coping was the main predictor of PTSD) and that PTSD, through avoidance, increases significantly after a long time post trauma (Benotsch et al., 2000).

The use of avoidance coping may increase the presence of PTSD. One study aimed to examine avoidance coping using a heart rate measure as a moderator of the association between reaction to trauma shortly after the event and PTSD. The study included 55 females who had a mean age of 29 years and were survivors of assault. The study used self-report questionnaires, a trauma monologue task, and diagnostic interviews after one month of the assault (time 1) and after 3 months (time 2). The results showed that individuals who were highly reliant on avoidance coping strategies and showed moderately higher actions to trauma reminders may be at greater risk of maintaining or potentially increasing their PTSD symptoms 3 month later. Individuals who were less reliant on avoidance coping strategies and who had fewer trauma reminders displayed less severe PTSD 3 months following the trauma (Pineles, Mostoufi, Ready, et al., 2011). Moreover, people with high community violence used disengagement coping as an avoidance coping style and those who perceived little social support from family and friends were found to record more PTSD symptoms than others (Scarpa, Haden, & Hurley, 2006). Similarly, another study found that there was a strong relationship between avoidance coping strategies and PTSD in people with a history of alcohol abuse (Hruska, Fallon, Spoonster, Sledjeski, & Delahanty, 2011).

Studies have shown that the majority of people use problem- and emotion-focused coping strategies in 80% of situations (Folkman & Lazarus, 1980) whereas emotion regulation is used more by adults who use less escapist, avoidant, and hostile strategies (Aldwin, 1991, 2011). However, coping strategies that are used at the time of the trauma may be influenced by the situation and personality characteristics (de Ridder & Kerssens, 2003).

Coping strategies have been used for predicting PTSD in many studies. In their meta-analysis of 476 studies, Ozer et al. (2008) found 7 predictors of PTSD. Two of these coping strategies are post-trauma social support and emotional responses. A further study consisted of a sample of 81 undergraduate students who were exposed either directly or indirectly to bus accidents. The study aimed to explore which of three characteristics of coping (i.e. novelty-seeking, harm avoidance, and reward dependence) were more predictive of developing PTSD post-exposure to the attack. The result showed that participants with PTSD scored higher on harm avoidance and lower on novelty-

seeking compared to those without PTSD (Gil, 2005b). Individuals who used more maladaptive coping strategies were most vulnerable to stress and develop PTSD (Roesch, Wee, & Vaughn, 2006).

On the other hand, emotional coping style was associated with high levels of PTSD. Increased usage of emotional coping styles such as rumination is predictive of PTSD (Baschnagel, Gudmundsdottir, Hawk, & Gayle, 2009). Gil (2005a) studied the role of individual coping styles in predicting PTSD among 185 undergraduate students; 81 reported being exposed to an explosion directly or indirectly. The sample included 38 males and 43 females who had a mean age of 23 years. Coping was measured two weeks before the attack " the initial evaluation was conducting to identify predictors of academic achievement during class time and the attack has happened two week later" to assess pre-trauma coping style traits and one month after the attack to assess post-trauma coping styles. Participants were then re-evaluated six months after the explosion to assess the formal diagnosis of PTSD. The results showed that 18% of participants met the full criteria of PTSD and four coping styles were predictive of PTSD: High levels of emotion-focused coping style, high levels of avoidance coping style, and low levels of problem-focused coping style. An additional study also found that cognitive avoidance is associated with increased PTSD (Khamis, 2008). Studies have found that strong predictors of post-traumatic stress are avoidance coping styles (Bryant & Harvey, 1995). Avoidance coping was found to be associated with acute stress reactions (Eid, Johnsen, & Thayer, 2001).

In sum, numerous studies have found an association between traumatic events, PTSD, and different coping styles. These studies differed in methodology with samples inconsistent with respect to age and sex as well as in the kind of traumatic events documented and in the measurement of coping strategies. There is a positive correlation between negative avoidance coping and the development of PTSD whereas there is a negative association between positive social support, problem-focused coping strategies, and PTSD. Moreover, some studies have argued that personality traits and personal characteristics of the situation play a vital role in developing PTSD rather than the use of coping strategies. Since social culture and religions could play a role in preventing PTSD after exposure to traumatic events, it is important to use all individual characteristics to maintain and prevent disorders.

#### **1.5.4 Sense of coherence**

The concept of sense of coherence (SOC) was developed by Antonovsky (1987) who officially defined it as “a global orientation that expresses the extent to which one has a pervasive, enduring through dynamic feeling of confidence that; 1- the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable; 2- the resources are available to one to meet the demands posed by these stimuli; and 3- these demands are challenges, worthy of investment and engagement” (Antonovsky, 1987; p.19). Antonovsky thought that SOC is a global orientation and this orientation makes the person feel that life is manageable, comprehensible, and meaningful. According to these three mechanisms, the person can form a coherent understanding of the world and the events around him (Pallant & Lae, 2002).

SOC refers to cultural factors that provide bases for coping successfully with stressors. Although SOC is not a specific coping strategy or personality trait (Feldt, Metsäpelto, Kinnunen, & Pulkkinen, 2007) it does correlate positively with coping strategies (Racklin, 1999) and negatively with the personality traits of Neuroticism and Conscientiousness (Feldt et al., 2007) as well as Extroversion (Frommberger et al., 1999).

According to Antonovsky, the SOC consists of three interrelated combined elements: Meaningfulness, comprehensibility, and manageability. Meaningfulness refers to the strong sense of meaning that people give to their experiences and their ability to cope with the event. Comprehensibility is the cognitive sense of understanding and prediction that people give to the distressing event. Manageability is the strong sense of belief that people give to their adverse experiences; that they have control over their experiences and do not feel victimised by them (Vossler, 2012). Antonovsky (1987) argued that people who score high on SOC would experience better well-being and less stress than those who score low on SOC when exposed to stress. The SOC is described as a resource for stress resistance (Albertsen, Nielsen, & Borg, 2001).

This was confirmed by Phum et al. (2010a) who found an association between SOC and exposure to traumatic events, PTSD, and depression. This study assessed a sample of 2,635 civilian people in a conflict area from the Eastern Democratic Republic of the Congo. Their average age was 37 years; 50.2% were male and 49.8% were female. The results showed that lower SOC scores were associated with an increase in the number of exposures to trauma, an increase in PTSD symptoms, and depression.

In addition, SOC may have a moderating effect between stressful life events and strain. People with a strong SOC have been thought to find life events less stressful. This may be because they believe that life events happen for a reason and it is under control; albeit not at a personal level but by the means of logic (Amirkhan & Greaves, 2003). The mediator role of SOC between exposure to war stress and its negative outcome has been studied by Kimhia, Eshela, Zysberg, Hantman, and Enosh (2010). A sample of 870 adults (60% women, 40% men; mean age 44 years) was recruited from a border city in Israel after the second Lebanon war. Scales of SOC, stress symptoms, perceived post-traumatic recovery, and exposure to traumatic war events, gender, and economic condition were administered. The study revealed that high SOC was positively related to perceived post-traumatic recovery and negatively related to stress symptoms and provided a mediator between demographic characteristics and positive and negative recovery of war outcomes. Moreover, the study suggested that SOC may enhance people's ability to cope with traumatic events. The SOC gives meaning to the stressful event by making the subjected individual more able to cope with the traumatic event. Frommberger et al. (1999) found that SOC correlated negatively with PTSD and anxious cognition after traffic accidents.

In addition, through its central role in generating flexible choices of coping strategies to deal with life stressors, SOC has a role in promoting the individual's health (Hakanen, Feldt, & Leskinen, 2007). This is associated with Brucefors, Hjelte, and Hochwalder (2011) study who found that meaningfulness correlated negatively with somatic symptoms, insomnia, depression, and anxiety whereas comprehensibility correlated negatively with anxiety, insomnia, and depression. Another study found a correlation between a strong SOC and health behaviour such as a reduced use of alcohol and tobacco and better care of oral health (Mattila et al., 2011). With respect to emotional health, SOC was found to be inversely associated with depression and anxiety (Moksnes, Espnes, & Lillefjell, 2012). Vossler (2012) argues that a strong SOC enables people to deal with stress and stay healthy. Nielsen, Matthiesen, and Einarsen (2008) found that SOC functions as a protective factor in the relationship between work-place bullying and symptoms of PTSD. Moreover, strong SOC mitigates the effect of traumatic exposure (Racklin, 1999). SOC is a self-mechanism defence that enables people to deal with adverse situations by means of using positive coping strategies. Moreover, SOC works alongside personality traits to promote personal health after exposure to stress events (Von Bothmer & Fridlund, 2003). People with a weak SOC may suffer from more



PTSD symptoms, have poorer physical and emotional health, and reduced life satisfaction.

### **1.6 PTSD and comorbidity**

People who are exposed to traumatic events do not usually develop a single disorder. A lot of studies have indicated that exposure to a traumatic event may lead to the development of different disorders alongside PTSD symptoms. The concurrent presence of more than one disorder in an individual is known as comorbidity that affects symptom severity, prediction, and treatment of mental health disorders (Somberg, 2008). Numerous studies have shown that exposure to trauma and disaster, especially war and conflict, increases the risk of depression, anxiety, and somatic symptoms, in addition to severity of disaster exposure and perceived lack of control during the disaster (Batniji et al., 2006). Bryant (2003) argued that people experience disorder post trauma exposure such as anxiety and high rates of numbing such as reduced awareness of subjected person's environment and intrusive thought. In addition to the short and long term consequences of post-shocking war events may lead to psychological adjustment problems.

In terms of the association between depression and PTSD after exposure to traumatic events, Breslau, Davis, Andreski, and Peterson (1991) found that 93 out of 394 adults from the general population had PTSD after being exposed to traumatic events. Eighty-three percent of people with PTSD met criteria for other psychiatric disorders including depression. Moreover, O'Donnell, Creamer, and Pattison (2004) posited that depression disorder can occur concurrently with PTSD after exposure to traumatic events. In this study, a sample of seriously injured survivors of trauma were recruited and diagnosed at 3 months and 12 months after trauma. The study found equal proportions of the sample meeting the diagnosis of PTSD, depression, and comorbid PTSD/depression at 3 months (4%, 6%, and 5%, respectively) and at 12 months (4%, 4%, and 6%, respectively). This finding is consistent with Kessler, McGonagle, Zhao, and Nelson (1994) who found that in a sample of 5,877 people aged between 15 and 54 years, major depression and alcohol dependence was the most common psychiatric disorder and 79% of lifetime disorders were comorbid with PTSD.

A study by Shalev et al. (1998) aimed to evaluate the onset, overlap, and course of PTSD and depression following a traumatic event. A sample of 211 trauma survivors was recruited. Of the sample, 29.9% met criteria for PTSD at 1 month post trauma and 17.5% at 4 months post trauma, 19% met criteria for depression at 1 month post trauma

and 14.2% at 4 months post trauma. Depression occurred in 44.5% of PTSD patients at 1 month and 43.2% at 4 months. The authors suggest that depression and PTSD occurred independently and interact to increase distress and dysfunction. Another study assessed the level of PTSD, depression, and anxiety in a sample of 109 internally displaced adults in Colombia. The results showed that 88.3% of the sample met the criteria of PTSD diagnosis and 59% met the full criteria of PTSD. Of those who met PTSD criteria, 54.1% reported moderate levels of anxiety and 41% had depression. Women also had significantly higher rates of PTSD than men (Richards et al., 2011).

A review study of 26 articles was carried out by Quarantini et al. (2009) to evaluate the comorbidity between PTSD and major depression and between PTSD and anxiety disorders in victims of violence. The meta-analysis revealed that there was a high comorbidity rate between PTSD and depression and other anxiety disorders. Moreover, major depression and other anxiety disorders were more frequent in individuals with PTSD than individuals who had been exposed to trauma but did not have PTSD. These PTSD comorbidities were found to be associated with functional impairment, the severity of medical health, and poor quality of life. Many factors contribute to the elevated rates of PTSD and depression. In a meta-analysis, Steel et al. (2009) found that high rates of PTSD and depression were associated with factors such as the degree of exposure to violence, torture, and/or on-going conflict. In addition, some studies suggest that an increase in the risk factors for depression and somatoform disorders are associated with the presence of PTSD symptomology e.g. (Glaesmer, Kaiser, Brähler, Freyberger, & Kuwert, 2012).

There is a relationship between PTSD and somatic complaints. Van Ommeren et al. (2002) investigated whether this relationship could result in the comorbidity of depression and anxiety. Two groups of refugees were recruited: One group comprised 526 individuals who had been tortured and the other comprised 526 individuals who had not been tortured. The average age for both groups was 42 years. The study showed that the group who had been tortured more frequently reported PTSD symptoms and somatic complaints than the group who had not been tortured. Moreover, PTSD, somatic complaints, torture status, anxiety score, and depression all correlated significantly.

The aforementioned studies show that PTSD is not the only disorder that occurs as a result of exposure to traumatic events. There are many other disorders that are comorbid with PTSD such as depression, anxiety, alcohol abuse, general health problems, and poor quality of life. These may be related more to the type of exposure or

other individual conditions which may increase the susceptibility of an individual to experience more trauma and stressful situations.

### **1.6.1 Health-related life satisfaction**

The World Health Organisation (WHO) defines quality of life as physical, mental, and social well-being (Organization, 1948). Life satisfaction is an individual domain that may be compromised by trauma and PTSD. PTSD is associated with lower life satisfaction and well-being and both depression and PTSD symptoms have been found to be negatively related with life satisfaction (Schnurr, Lunney, Bovin, & Marx, 2009). Many studies agree that the impact of exposure to traumatic events, especially military conflict and terrorism, is not limited to PTSD symptoms. Such studies have found that satisfaction with life has emerged as a central domain of life structure and well-being. Moreover, exposure to trauma may impact negatively on life satisfaction (Besser & Neria, 2009). Another study found that people with depression and PTSD report the lowest levels of health satisfaction (Rauch et al., 2010). Another study of a civilian sample of 160 adults (49.4% men and 50.6% women, mean age 33 years) who had been exposed to an missile attack were compared to a control sample of 181 adults (49.7% men and 50.3% women, mean age 35 years) who had not been exposed to such an attack. The study aimed to compare PTSD and life satisfaction between the two samples. Twenty-seven percent of the group who had been exposed developed PTSD symptoms compared to only 3% of the unexposed group. Those exposed also reported lower levels of life satisfaction. The study found that there was negative association between PTSD and life satisfaction. Moreover, the study reported that exposure to on-going life threatening events intensifies this association (Besser & Neria, 2009).

In parallel, many studies have revealed an association between PTSD symptoms and health-related quality of life such as the significant correlations between avoidance and psychosocial and physical health that are related to quality of life (Wang, Cao, Wang, Zhang, & Li, 2012). Also, the factor of emotional numbing was associated with psychosocial quality of life and the factor of dysphoric arousal was associated with physical health-related quality of life (Gootzeit & Markon, 2011). The studies on war survivors revealed that veterans with PTSD had low quality of life and weak interpersonal and social relationships and lower occupational functioning (Schnurr et al., 2009).

Studies have found that PTSD is a factor that mediates the relationship between traumatic events and physical health. For example, it has been found that when a patient

with PTSD is officially diagnosed, they report more health conditions and poorer physical health when compared with a patient with other disorders or with those without PTSD (Stam, 2007). Rauch et al. (2010) found that veterans with comorbid depression and PTSD had the lowest levels of health satisfaction. The researchers concluded this given that the veterans diagnosed with PTSD reported significantly more health care utilisation and more recent and chronic medical conditions (O'Toole & Catts, 2008).

Moreover, civilians exposed directly to terrorist attacks have been found to suffer from high levels of anxiety, anger, hostility, and dysphoria as well as high levels of rumination and other blame and low levels of perceived social support compared to civilians indirectly exposed or not exposed to terrorist attacks (Besser & Priel, 2010).

Another study found the injured survivors show a decline in health that is related to quality of life 3 months after injury (Aitken et al., 2007). The impact of war-related trauma and political conflict are not limited to PTSD. Many studies have found that these events impact negatively on health via heart disease, blood-pressure, depression, mental health, anger, disability, and functioning e.g. (Barnes, Treiber, & Ludwig, 2005; Boscarino, Adams, & Figley, 2004; Calderoni, Alderman, Silver, & Bauman, 2006; DiMaggio, Galea, & Richardson, 2007; Salguero, Cano-Vindel, Iruarrizaga, Fernández-Berrocal, & Galea, 2011; Schulden et al., 2006; Wang & Yang, 2012).

People who have been developed PTSD symptoms seem to be less healthy than without, and many of their health problems such as anxiety, anger, hostility and other diseases were related to PTSD. As the studies found that people who exposed to traumatic events and develop PTSD feel they had lower life satisfaction and well-being than without.

### **1.6.2 PTSD and cortisol level**

Many studies have found that there is an association between the characteristics of the hypothalamus-pituitary-adrenal endocrinological system and stressful life events. It has been suggested that low levels of basal plasma, urinary, or saliva cortisol are an endocrinological characteristic of PTSD (Stam, 2007). Yehuda, Halligan, and Bierer (2002) have found that cortisol levels are different in individuals with depressive disorder and PTSD. They found that in a sample of 39 adult children of Holocaust survivors with parental PTSD symptoms, the effect of depression on cortisol appeared to be opposite to that of PTSD, as those participants whose parents had PTSD had the lowest cortisol levels.

Luecken et al. (2004) studied the “alteration in morning cortisol association with PTSD in women with breast cancer”(p. 13). The study consisted of 71 women aged 34 to 82 years who had recently been diagnosed with breast cancer. The results showed that 18% of women diagnosed with breast cancer had PTSD symptoms. They found that there was a negative correlation between PTSD symptoms and cortisol levels. Also, lower cortisol levels were found in women with past or current PTSD.

The focus on the interaction between cognitive factors and biological responses may be useful in predicting who will develop PTSD after being exposed to trauma (Bryant, 2003). Cortisol level is one of the best indicators for predicting PTSD. The study by McFarlane et al. (1997) showed that lower cortisol levels immediately after motor vehicle accidents is a better predictor of PTSD outcome at 6 months post-trauma than acute psychological indicators.

Freidenberg et al. (2010) confirmed that the basal cortisol level was lower in women with PTSD than men with PTSD. The cortisol level was higher in the morning compared to later in the day. The study was administrated on 9 motor vehicle accident survivors; 6 women and 3 men. The average age of the sample was 35 years. The main limitation of this study is the conservative sample size which may that affected the result. Yong et al., (2004) studied the relationships between cortisol levels, PTSD, and major depression in a sample of women from a low income community. They studied three groups of women at different periods of time: In 1997, (753 respondents), in 1998, (693 respondents), and in 1999 (632 respondents). The study found that recent trauma exposure had the effect of increasing levels of saliva cortisol in the morning whereas there was no effect on cortisol levels with past trauma. The results referred to the small effect of depression in which, compared to those who had experienced trauma in the past, those with recent trauma were found to have increased cortisol levels in the evening.

Cortisol is associated with negative life events that threaten a person’s own life or the lives of close relatives. A study by Witteveen et al. (2010) found that not only did PTSD contribute to lower basal cortisol levels but also a bad experiences event in the past. The sample in this study comprised 1,880 police officers and fire fighters who had more frequently been exposed to disaster than PTSD. Three samples of saliva and blood cortisol levels were collected in the morning, at noon, and in the afternoon.

In contrast to this, some studies have found that there is an increase of evening cortisol levels in comorbid PTSD and Major Depression Disorder (MDD) for both genders. This result was found in both saliva and urinary-free cortisol that had been collected from a sample of 1,200 randomly selected people aged between 21 and 30 years

from a large health maintenance organisation in the USA (Young & Breslau, 2004). This study was consistent with other study results such as that by Lemieux and Coe (1995) who revealed a cortisol increase in a sample of 300 female adults with current PTSD or MDD and in women and men with PTSD (Maes, Lin, et al., 1998).

An individual's cortisol response may differ with both PTSD and MDD since these conditions work against each other in terms of cortisol secretion. Analyses of traumatised individuals showed an interaction between PTSD and MDD which indicated that the levels of cortisol were higher in depression when PTSD was not present (Yehuda, Halligan, Golier, Grossman, & Bierer, 2004).

Cortisol levels affected by negative life events as well as by PTSD, the level of cortisol differ in people accordance to acute or chronic PTSD. However, studies found that the effect of depression on Cortisol level is in contrast of that of PTSD.

### **1.6.3 PTSD and aggression**

People who have been exposed to severe military aggression are more likely to be involved in aggressive and antisocial behaviour. The exposure to stress has been associated with increasing maladaptive or impulsive behaviours (Lightsey & Hulse, 2002). Indeed, a strong positive correlation was found between PTSD and aggression (Taft et al., 2007) and those under high levels of stress have been found to be more aggressive than those under low levels of stress (Verona & Kilmer, 2007).

In their study, Qouta, Punamaki, Miller, and El-Sarraj (2008) assessed the effect of exposure to war and conflict on aggressive behaviour of children in Gaza. The authors designed two studies. The first study included 640 children aged between 6 and 16 years. Data were collected via parental (n=622) and teacher (n=457) report. Exposure to military violence was assessed by an 18-item event list and aggressiveness was measured by scales of aggressive and antisocial behaviour that consist of 34 questions (Ontario Child Health Scale). The second study included (225) Palestinian school children (39% and 61% were girls and boys, respectively) aged between 10 and 15 years. The data were collected by self-report on the military trauma scale of a 25-item event list. The results shows that children who had been exposed to severe military violence (e.g., victimising or witnessing) displayed more aggressive behaviour than children with less exposure and older children were more affected by trauma than younger children. The first study suggested that good parental support practices moderate the relationship between exposure to military violence and child aggressive behaviour (Qouta et al., 2008). The problem with the approach these authors took was that it depended on samples of

children and not adults; other factors that have an effect on aggression such as personality traits and the social environment were not taken into account.

Additionally, the relationship between crime and PTSD symptoms has been studied. Dansky et al. (1997) studied the crimes related to PTSD among 119 patients (substance use disorder). The average age of these patients who received in-patient or out-patient services was 34 years and 58% of them were women. The clinical interview and the self-report scale of PTSD that were used were based on DSM-III-R criteria. The results showed that 92% had experienced some type of sexual or physical assault and 38% of them met criteria for crime-related PTSD. This suggests that the traumatic event caused PTSD symptoms and PTSD symptoms were related to crime. These results confirmed the study carried out by Verona and Kilmer (2007) that examined stress and negative affect following trauma. A sample of 101 student volunteers took part. The participants completed self-report questionnaires before and after laboratory stress and a set of questionnaires related to laboratory aggression. The results showed that men under high stress were more aggressive than those under low stress. It was revealed that aggression increases rapidly with the level of stress. Taft et al. (2007) reached a similar conclusion based on a study involving a sample of 1,328 Vietnam veterans. The PTSD module of a structured clinical interview based on the DSM-III-R was used to measure the PTSD symptoms and aggression was examined using a 6-item measure. The results showed that there was a positive correlation between traumatic events and aggression, which may explain why some people commit antisocial behaviour after exposed to trauma and developed PTSD.

The studies were established that there was a strong positive association between traumatic event, PTSD and aggression or antisocial behaviour. There is suggesting that aggression behaviour increase after exposed to trauma and develop PTSD.

### **1.7 Iraqi studies**

The studies review showed that most of work reported in this chapter has been done in Westerns societies. However, the current study focuses on exposure to traumatic events and PTSD in Iraqi sample. In this section, the studies conducted in Iraq sample either inside or outside Iraq from the period between 1990 and 2012. Medline, PsychINFO, and Science Direct as well as available studies published in Arabic were reviewed. The studies in Iraq were conducted on different sample and in different period of time. In this section the studies were divided into five participant's categories

for reviewing; the studies with sample of Iraqi's children, sample of Iraqi's adults, Iraqi ex-war prisoners, Iraqi refugees and PTSD and other factors in Iraqi samples.

### **1.7.1 Main finding**

#### **1.7.1.1 Iraqi children**

There are high rates of physical and mental health problems and a long-standing history of traumatic event experience among Iraqi people as a result of the effect of war and conflict (Murthy, 2007). Many scholars have studied the effect of war on children's health including PTSD. Children's physical and mental health has been deeply compromised by war and conflict in Iraq (Al-Obaidi, Budosan, & Jeffrey, 2010). High levels of threat were reported by Iraqi adolescents after the 2003 invasion of Iraq (Carlton-Ford et al., 2008). In one study, 13 disorders were found in a sample of 149 children (mean age, 8 years) attending child psychiatric clinics in Baghdad. These disorders included anxiety disorder (22.1%), behavioural disorders (18.1%), non-organic enuresis and encopresis (15.4%), stuttering (14.1%), depression and drug abuse (1.3%; Al-Obaidi, Scarth, & Dwivedi, 2010). Many studies revealed that PTSD is a common disorder among children in Iraq due to the exposure to stressful events.

Abdulbaghi Ahmad, von Knorring, and Sundelin-Wahlsten (2008) aimed to assess effect of traumatic events on PTSD among Kurdish children in their home country and those in exile. A random sample of 201 school children from Duhok in Iraq and 111 Kurdish children living in Uppsala city in Sweden aged 6 to 18 years completed the interview. The results showed that children in Duhok reported higher rates of traumatic events and PTSD than children in exile. Furthermore, in the Duhok sample, girls reported higher rates than boys (Ahmad, et al. 2008). Al-Jawadi and Abdul-Rhman (2007) investigated mental health disorders among children in Mosul city, north of Iraq. A sample of 3,079 children, both male and female aged between 1 and 15 years were interviewed with their mothers at a primary health care centre. The interviewer used standardised questionnaires that used the diagnostic criteria of the DSM-IV-TR (2000). The results showed the top ten disorders among the sample were as follows: PTSD disorder was at the top of these disorders affecting 10.5% of the children, followed by enuresis (6%), separation anxiety disorder (4.3%), specific phobia (3.3%), refusal to attend school (3.2%), learning and conduct disorder (2.5%), and depression (1.5%). The highest prevalence of mental health disorder was documented in older children (Al-Jawadi & Abdul-Rhman, 2007).



To investigate the mental health of Iraqi children after war and conflict, studies were conducted in the cities of Baghdad, Mosul, and Dohuk by Razokhi, Taha, Taib, Sadik, and Al Gasseer (2006). In Baghdad, 600 children from 16 primary schools (mean age, 10 years) were recruited. The study found that 283 (47%) of the sample reported being exposed to a major traumatic event during the past 2 years. Eighty-four of them (14%) had PTSD; girls reported nearly twice as many PTSD symptoms as boys (17% and 9%, respectively). In Mosul, 1,090 adolescents from 8 secondary schools were recruited (481 boys and 609 girls). In general, 323 (30%) had PTSD symptoms (127 boys and 196 girls) and the older adolescent had more rate of PTSD symptoms than younger. The third study in Dohuk recruited 240 children (120 children who left the schools and worked in street and 120 school children). The prevalence rate of mental health disorders was found to be higher in working street children, (42% and 36%, respectively) than in school children (16% and 13%, respectively; Razokhi, Taha, Taib, Sadik, & Al Gasseer, 2006). Al-Kubaisy and Al-Atrany (1997) investigated the rate of PTSD in Iraqi children following the bombardment of the Amiriya Shelter, Baghdad in 1991 (US bombed and destroyed Amiriya Shelter, 403 people were killed, of the 52 children and 261 women and 90 men). The sample comprised 150 secondary school children, close relatives or friends of the victims, and 150 controls. The results showed that 37% of the victims had PTSD and females had higher rates of PTSD than males. Dyregrovet al. (2002) studied a group of 94 children in Iraq following the 1991 Gulf War. During this time, children were exposed to, or were witnesses of shelter bombing and more than 750 were killed. Semi-structured interviews were conducted at 6 months, 1 year, and 2 years after the war. The results showed that the negative outcome of post-traumatic stress in children and adolescents persisted. Moreover, the events continued to affect the children and adolescents' lives and may have affected their personality development as well. Eighty percent of children met criteria of PTSD but this conclusion was taken with caution since an independent clinical diagnosis for PTSD would be needed to confirm this. Ahmad (2008) studied the impact of stress and the prevalence of PTSD in a randomly selected sample of Iraqi-Kurdistan children. The sample comprised 871 children (461 girls and 410 boys). The study found that 33.5% of children met the criteria for PTSD.

Children exposed to war trauma in Iraq were studied to assess the prevalence of PTSD after 2003. A sample of 70 students, both female and male aged between 10 and 12 years, was recruited. The results found that the children developed PTSD and females had higher instances of PTSD than males (Ghalib, 2004). In parallel, to investigate the experiences of war trauma, Al-Mashat et al. (2006) interviewed 12 Iraqi children from

Mosul city (6 boys and 6 girls aged between 9 and 14 years) after the war had officially ended. The researchers used the Children Reaction to Traumatic Events Scale (CRTES). The results revealed that the entire sample had experience of war such as missile bombardments and the threat of close war sites. They reported feeling of being uncertain about the future, had nightmares, fear, and insecurities (Al-Mashat, Amundson, Buchanan, & Westwood, 2006).

### **1.7.1.2 Iraqi adults**

Many studies have investigated the prevalence of PTSD among the general population in Iraq after the 2003 war. Abdel-Hamid and his research team explored the prevalence of PTSD among adults in Baghdad city after the allies' military operation in 2003. They found that 35.27% of the sample of 402 adults (202 male and 200 female) between 18 and 70 years of age reported PTSD symptoms that were higher than average on the scale of PTSD based on the DSM-IV. Acute PTSD was present in 12.43% of the adults and 3.98% had chronic PTSD. With respect to gender, females reported higher rates of PTSD than males (Abdel-Hamid, Salim, AlQaisi, & Ahmad, 2004). Al-Kubisy and Alasdi (2004) aimed to evaluate the prevalence of PTSD among women in Baghdad. A sample of 300 females was recruited from a female Education College at the University of Baghdad (age ranged from 17 to 37 years with an average of 21 years). The results showed that 62% of the sample had been exposed to at least one stressor event; 82% of those who had been exposed to a traumatic event also experienced PTSD symptoms and 63% of them met full criteria for PTSD. Partial criteria for PTSD were met for 19% of the sample only 18% had no symptoms related to PTSD. Another study in university students evaluated PTSD symptoms in a sample of 284 Iraqi university students aged between 17 and 54 years was recruited. One-hundred and ninety-six of the participants reported having been exposed to at least one war-related event; 61% of them suffered from PTSD. The PTSD symptoms found were hyper-arousal (69%), re-experience (65%), and avoidance (41%) (Al-Kubaisy, Hassan, & AL-kubaisy, 2009). Jaber (2012) aimed to screen PTSD, depression, and anxiety in a sample of 505 Iraqi university students (199 males and 306 females). The Scales of Post-traumatic Stress Symptoms (SPTSS), Baghdad Trauma History Screen (BTHS), and the Hospital Anxiety and Depression Scale (HADS) were used. The study found that 84% of the participants had been exposed to at least one traumatic event. Of these traumatised individuals, 35% met DSM-IV criteria for full PTSD and displayed high levels of depression and anxiety.

A national survey of mental health in the Iraqi population was carried out in 2007 to 2008 by the co-operation of Iraqi Ministry of Health along with the Iraqi Ministry of Planning, the World Health Organisation (WHO), and World Mental Health (WMH). The sample consisted of 4,332 adults. To assess DSM-IV disorders related to PTSD, the WHO's Composite International Diagnostic interview (CIDI) was used. An unexpectedly low rate of 2.5% prevalence of PTSD was found in this study (Alhasnawi et al., 2009). Many objections may be raised against this result. First, regions such as Anbar and Baghdad where the study was conducted were very dangerous at these time, so recruited participants for studying were very difficult if not impossible. Moreover, the study was conducted by Iraqi official bodies during the occupation by the USA in Iraq. This raises doubts about the political purposes of these results. Finally, an Arabic version of the CIDI that was used in this study may have been inappropriate for an Iraqi sample in terms of translation and the results are not consistent with previous study results in Iraq.

#### **1.7.1.3 Iraqi Ex-prisoners**

In addition, many studies have been conducted in Iraq to assess the prevalence of PTSD on ex-prisoners of the Iraqi-Iranian war that took place between 1980 and 1988. The study found that 32.3% of the interviewed ex-prisoners of Iraqi-Iranian war had PTSD (Hassan, 1991). The PTSD symptoms were identified among Iraqi ex-prisoners: 53% of the sample included individuals who suffered from acute PTSD, 47.7% from chronic PTSD, and 2% from delayed PTSD (AL-Kubaisy, 1998). Moreover, other mental health disorders among war captives were studied. The studies found that prisoners suffered from one or more disorders such as depression, anxiety, schizophrenia, and psychological maladjustment as a result of long captivity (Al-Samurai, 1994; Fahmi, 1996).

#### **1.7.1.4 Iraqi refugees**

As a result of extended exposure to war and man-made trauma in Iraq, many waves of refugees left the country seeking security and a better family life around the world. Many scholars have focused their attention on studying the effects of suffering and war on the health and prevalence of PTSD of refugees. The studies found that Iraqi refugees in the US suffered from more health problem and PTSD symptoms compared to refugees from other Arab countries (Jamil et al., 2002). The separation from their home country and lack of social and family support may exacerbate the problems of Iraqi refugees. The study aimed to examine the importance of social factors in a sample of 84 male Iraqi refugees aged between 18 and 59 years in the UK. The results suggest that social factors

whilst in exile, especially the level of social support that traumatised individuals received and severe levels of trauma, play an important role in determining the severity of PTSD and depression (Gorst-Unsworth & Goldenberg, 1998).

In addition to the political situation in Iraq, the long procedure for asylum in exile was found to be associated with psychiatric disorder. The prevalence rate of anxiety, depression, and somatoform disorder was found to be high in Iraqi citizens seeking asylum in the Netherlands (Laban, Gernaat, Komproe, & Jong, 2007; Laban, Komproe, Gernaat, & Jong, 2008; Laban, Gernaat, Komproe, Schreuders, & De Jong, 2004; Laban, Gernaat, Komproe, van der Tweel, & De Jong, 2005). They may have been influenced by the political events in their home country and by negative events in the host country in Sweden (Söndergaard, Ekblad, & Theorell, 2001).

Iraqi refugees in Arab countries after the war in 2003 reported that they were exposed to a wide range of war-related traumatic events. From the sample of 60 Iraqi refugees living in Jordan, Syria, and other Arab Gulf states, 80% of them suffered from PTSD at different levels (Al-Kubaisy & Al-Khubaisy, 2010). The Iraqi child refugees, age between 3 to 18 years who were settled in Egypt after suffering from war and conflict in Iraq, were found to have suffered from health problems and psychological challenges and received little social support (Al Obaidi, 2010).

#### **1.7.1.5 PTSD and other factors in Iraqi samples**

The relationship between PTSD and other variables in Iraq has been studied. For example, Fulayyih (2004) found a significant relationship between PTSD and aggression in a sample of children aged range between 11 and 13 years and Hassan (2005) found a negative relationship between PTSD and self-control among 200 University students in Baghdad. Two further studies found that adults with PTSD tended to increase their consumption of alcohol and drugs (Al-Kubaisy, Alkrkhi, Lafta, & Al-Kubaisy, 1995; Alkrkhi, 1994). Furthermore, one study found the presence of PTSD after severe diseases (Al-Kubaisy & Al-Kubaisy, 2002).

The reviewed studies in Iraqi participants showed that Iraqi people have been exposed to variety traumatic stress and developed disorder behaviours included PTSD symptoms. In the Iraqi adult's sample, studies found that the prevalence of PTSD ranged between 2.5% and 63%, and reached to 80% in Iraqi refugees. The prevalence of PTSD in the Iraqi children was ranged between 10.5% and 80% of the samples. In addition to PTSD, the studies found there are other physical and mental disorders were presences such as anxiety, depression, specific phobia and learning difficulties. These disorders,

PTSD in specific, were found correlated with other maladjustment behaviours such as aggression and alcohol substance.

## **1.8 Discussion**

The literature review showed that many people world-wide have been exposed to traumatic events for a long time. The events can be classified as natural incidents such as, earthquakes, floods, fires, and man-made disasters such as war, violence, torture, and rape, or different transport accidents. Exposure to these events may lead to feelings of fear, horror, and helplessness. These events, associated with other pre-trauma factors (e.g. sex, and personality traits) and post-trauma factors ( e.g. social support, and coping strategies) can lead to health problems and a wide range of disorders including PTSD, anxiety, and depression. Many studies found that the prevalence of PTSD ranged from 0% to 80% in different societies, and those who have been exposed to war and conflict have higher prevalence of PTSD than others who have been exposed to another events such as transport accidents. Numerous theories have been proposed to account for the effect of trauma and its consequences on traumatised people and many models of PTSD have been documented since PTSD was first diagnosed. The ‘three symptoms of PTSD’ model described in the DSM-IV is the most common model used world-wide (Buckley, Blanchard, & Hickling, 1998; Carlson, 2001). Many factors are associated with PTSD and have been studied as risk factors for PTSD and other disorders as a result of exposure to traumatic events. Risks factors can be classified into three groups: Pre-trauma, the trauma, and post-trauma. Pre-trauma factors include family history, personality, gender, and personal psychiatric history. The trauma factors include severity of events, feeling of fear, horror, and helplessness. Post-trauma factors include coping strategies, awareness, social, and family support. Most studies have found that, although males are more often exposed to traumatic events, it is females who are more likely to develop PTSD. The literature also argues that PTSD is comorbid with other mental health disorders such as anxiety and depression.

Coping strategies can play a role in the relationship between exposure to trauma and its consequences. Some of these coping strategies such as problem-focused coping strategies can moderate the development of PTSD whereas emotional-focused coping strategies may exacerbate PTSD. Social and family support after trauma exposure may play a vital role in moderating the development of PTSD. In terms of personality, the majority of previous studies have found that some personality traits, such as neuroticism, were more strongly associated with the development of PTSD than other personality traits. According to studies, sense of coherence (SOC), which is the individual’s

orientation to deal with the event, was found to moderate PTSD and people with a high SOC have less severe PTSD symptoms than people with a low SOC.

People's physical and mental health is affected by PTSD. Studies have revealed that people with PTSD have poorer physical and mental health than people without PTSD. Moreover, the neuroendocrine system is found to change in people after traumatic events. Many studies have found that PTSD symptoms are associated with saliva cortisol levels and people with PTSD have lower cortisol levels than people without PTSD whereas depression increases the cortisol level.

The studies of traumatised people in the different parts of the world were conducted to investigate or diagnose PTSD after a single or specific traumatic experience such as survivors of rape, sexual abuse or vehicle accidents in children, adults, and women. Others have studied the complex trauma when people were exposed to more than a single event such as survivors of war. In all these studies, events happened in the past and the subjected people in most of these cases received help or treatment. However, traumatized people in Iraq suffering from PTSD and other disorders did not receive any systematic help even now, that may be making the situation worst for those people.

Moreover, all the theories of PTSD were based on Western societal values to assess the PTSD symptoms and copies of Western instruments have been used in the East, and especially in Muslim communities, without account of these society values. Previous studies that explored the prevalence of PTSD in Iraq used specific samples such as women, university students, or children rather than a general adult population sample. Furthermore, the studies have assessed the prevalence of PTSD directly after the occupation of Iraq or a short time later. This means that these studies could not account for the impact of the political conflict and terrorism that followed the war on the prevalence of PTSD. In addition, people in Iraq have been exposed to a variety of war and conflict trauma that may have meant that people developed PTSD from the early trauma and were then exposed again to another traumatic stress or to similar events. That may have affected their personality, health, or behaviours such as aggression and alcohol abuse. In fact there is no literature available that refers to exposure to traumatic events after someone has developed PTSD symptoms. The current study aims to bridge the gap in our understanding of PTSD symptoms and its relation with personality traits and other factors in the unique situation in Iraq. Almost all predictors and models of PTSD in previous literature depend either on veterans or civilians survival from single traumatic events, which it may not apply in conditions of repeated on-going exposure. The situation in Iraq is unique and the current study carried out for several reasons:

First, Iraqi civilians have been exposed to traumatic events for a long time; even now (see page 1). The effect of these events becomes cumulative over a long time and these differ from other societies. Second, Iraqi people experience a wide range of events such as war, economic sanctions, foreign invasion, occupation, terrorism, and sectarian conflict that have taken place over three decades. This could mean that Iraqi families have experienced all these events that have not been experienced by another group, except perhaps in Afghan civilians and there are no studies available from Afghanistan. Third, these on-going events have driven and spread feelings of fear throughout Iraqi people and there is a constant threat to their own lives, family, and close relatives. This may make the results of previous studies inapplicable to the Iraqi situation as they have focused on different societies. Fourth, the culture and family values in Iraqi are such that family members sharing the experience of the event and the feelings of fear were surrounding it on a daily basis. Thus, there is family support. The effect of these events may transfer to all family members as "communicated vessels". This may mean that the researchers need to pay more attention to conduct studies inside the family for more understanding of PTSD symptoms in the whole family. Fifth, previous studies in Iraq have focused on one event or repeated events to determine the prevalence of PTSD and have not included other experiences, continuous events, and threat. Sixth, studies in Iraq have been conducted to diagnoses or screens for the presence of PTSD and another disorder related traumatic events such as anxiety and depression. There are no or very few Iraqi studies that have been conducted to investigate the relationship between exposure to trauma and PTSD with factors such as personality traits, cortisol level, and sense of coherence. Seven, although previous studies have emphasised the importance of cultural factors, there are no studies in Iraq that have tried to examine the relation between the culture characteristics of the society and PTSD, the symptoms of exposure to traumatic events, and PTSD, through personal interviews in an Iraq adult sample.

For all the aforementioned reasons, the current study will focus on the relationships between cumulated traumatic events and PTSD and different risk factors that have not been studied before in Iraq such as personality traits, life satisfaction, and sense of coherence. As to examine the predictors, factors such as coping strategies and cortisol level in an adult sample of Iraqi people. Also, to further our understanding and exploration of the characteristics of traumatic events and disorders thereafter, as well as to examine the effect of social context on the trauma and PTSD experiences in Iraq for how Iraqi people deal with these events, an interview was conducted with an Iraqi civilians sample that had experienced war-related trauma. In the current study, the

qualitative study was conducted to understand the PTSD symptoms and what people used to cope with their stress situation and how they describe their experiences. This may provide a good scientific basis and evidences about PTSD symptoms in different population to use in the future research. As the current study aims to compare the cortisol levels between individuals who have been exposed to traumatic events and have developed PTSD and those who have been exposed to similar traumatic events but have not developed PTSD symptoms.

### **1.9 Research questions**

The current study aims to answer the following question:

What is the prevalence of PTSD and other mental health problems in a sample of Iraqi civilians with long-lasting exposure to traumatic events and what are the risk factors and protective factors for PTSD?

### **1.10 The study objectives**

- 1- To examine the rate of exposure to traumatic events;
- 2- To examine the prevalence of PTSD, depression, and somatoform disorders using self-report scales;
- 3- To examine psychological personality traits, coping strategies, and sense of coherence;
- 4- To develop a predictive model of PTSD;
- 5- To examine the secretion level of saliva cortisol in groups with and without PTSD for comparing;
- 6- To examine health, life satisfaction, and aggressive behaviour patterns;
- 7- To examine and disclose the nature of experiences and consequences of war-related trauma in an Iraqi civilian sample in a qualitative study.

In the next chapters, the methodology of studies and selecting of studies samples as well as the development and validation of study self-reports scales will be described. Four studies were carried out to achieve the aims and answer the study questions. The first study conducted in the Iraqi sample of 408 people to screen the exposure to traumatic events and examine the prevalence of PTSD, as well as to examine the predictor's of PTSD. The second study will examine the differences between those who develop PTSD and those without in personality traits health-related, aggression and cortisol level. Two studies conducted on Iraqi samples in the UK, the first examined the prevalence of PTSD in Iraqi sample who move to live in a safe environment place after exposed to traumatic events in Iraq as well as to examine the relationship between personality and PTSD



symptoms. The second study used qualitative approach for more understanding the experiences of trauma and PTSD symptoms as well as coping strategies that the traumatised people used. In the finale chapter, the general discussions for the four studies results will be discussed as well as the study limitations and prospective studies in the future.

## **Chapter 2 Study Methodology and Scales Validation**

### **2.1 Overview**

The literature review shows that Iraqi people have been exposed to a wide range of traumatic events on an on-going basis. These events lasted for long periods of time and consisted of different man-made disasters. There are many consequences of the effects of these events; one of most common disorders among traumatised people is Post Traumatic Stress Disorder (Gilbertson et al., 2010). People with PTSD may seek support and treatment or recovery by themselves, and others may suffer from chronic PTSD symptoms for a long time. This depends on many factors such as PTSD risk factors that include trauma history, coping strategies, personality traits, sense of coherence, and gender. In addition, there are factors associated with PTSD such as physical health, life satisfaction, and depression (Glaesmer et al., 2012).

Despite extensive suffering, the literature shows that little attention has been paid to studying the effect of these events on different aspects of life in an Iraqi population. Furthermore, there is little known about these risk factors and their relationship with PTSD in an Iraqi society. Therefore, four studies were conducted to investigate and understand the effect of traumatic events on people's health and the characteristics of those people who develop PTSD after being exposed to traumatic events. The studies investigated the biological effect of PTSD, which was the first time such study was conducted in Iraq, by comparing cortisol levels between people with and without PTSD. In addition, the study aimed to understand the unique situation and conflict in Iraq, the effect of culture, and the roles of social and family support in developing or preventing PTSD by interviewing a sample of Iraqi civilians.

### **2.2 Study design**

Four studies were designed to achieve the study aims as well as to validate self-report scales, collect data about the prevalence rate of PTSD, and its associated risk factors including trauma history, personality traits, coping strategies, and sense of coherence. The depression and psycho-somatic diseases, life satisfaction, and the cortisol levels were also assessed. The self-report scales were used in three studies; two studies took place in Iraq and two in the UK. Development and validation of self-report scales was undertaken for use in the three studies. All scales that had previously been used with an Iraqi population were used either with permission from the author or were open access for research purposes. The participants in Iraq were a general population sample chosen

at random from families and the participants of the two studies in the UK were either Iraqi students or refugees. The self-report scales have been used widely within counselling, clinical, and educational psychology for three reasons. First, what people feel and say represent the definition of many states of psychological problems and feelings. Second, self-reports represent a unique position for people to report their feelings and thoughts. Third, self-reports are efficient to administer especially for a large sample (Kazdin, 2002). So, one of the current study aims is to screen the history of trauma and the prevalence of PTSD in a large Iraqi sample.

There are several factors associated with the delivery of the reported studies. First, the time to conduct four studies was very limited for the researcher. Second, due to the situation and high risk of harm in Iraq, Heriot-Watt University did not allow the primary researcher to go to Iraq to collect data. Thus, the researcher used third parties for this purpose. Furthermore, the research assistants were PhD and Masters students who had limited time (see details below). These factors made it very difficult to use another methodology than self-report in Iraq.

However, to understand further the feelings of traumatised people and the effect of culture on PTSD symptoms, the researcher administrated a qualitative study in a sample of 17 Iraqi people living in the UK. Many scholars argue that there may be a different value or meaning for PTSD symptoms in different cultures and because the instruments used in these studies represent a Western value, the results of these studies may not accurately reflect the prevalence of post-traumatic stress symptoms in other cultures (Nicholl & Thompson, 2004). Furthermore, most of the studies, which defined post-traumatic responses by Western values, have found quite low rates of PTSD symptoms among survivors of war trauma and torture within other world samples (Johnson & Thompson, 2008). Therefore, it is important to examine how PTSD is established in other cultures and social relationships (Kienzler, 2008). In addition, the major issue in the aetiology of PTSD is the explanation of the role of pre-morbid factors such as personality characteristics and previous psychiatric illness in shaping a person's vulnerability to the disorder (McFarlane, 1990).

In addition, some issues may not be as easy to explore through quantitative methods such as how the traumatised person develops a subjective understanding and makes sense of complex events, particularly in war-related trauma (Jones, 2002). Moreover, quantitative studies do not provide a conceptualised view of the experiences of traumatic events and humanitarian responses to disaster. In contrast, qualitative methods are more applicable to situations concerning public health than quantitative

methods are unable to examine (Batniji et al., 2006). Bills et al. (2009) argue that qualitative evaluation of experiences of traumatised groups may provide a good understanding of trauma outcomes. Such information would be more helpful to a scientist in order to understand the individual and the social impact of traumatic events and to the therapist who is trying to help traumatised individuals.

Therefore, in this study, a mixed approach between quantitative and qualitative methods was used to assess the impact of traumatic experiences on both males and females using questionnaires and interviews for those who have lived in a war and conflict zone in Iraq. Using different methods to collect data and comparing the results provides rich information about the phenomenon and will also allow to test quantitative information against qualitative information so as to provide different sources of evidence for the meaning given to such events (Mehmetoglu & Altinay, 2006).

The procedure of collecting data and choosing the sample for each study is discussed in detail below.

## **2.3 Study 1**

Study 1 aimed to examine differences in the level and frequency of individual experiences of traumatic events, as well as to examine the prevalence of PTSD symptoms in a representative sample of Iraqi family members living within a high-stress environment. Further to this, study 1 aimed to examine the roles of sense of coherence and differences in coping strategies in association with the emergence of PTSD symptoms and other negative outcomes.

### **2.3.1 Population**

The sample was chosen from the area of Al-Moulemein district where the region contains different socio-economic and educational levels. It is a residential area located in the city of Baquba; 60 km North-East of the capital Baghdad. The residents of this city comprise several denominations and religions that are representative of those prevalent across the country and representative of the demographics of the country. They are the major and predominant denominations in Iraq. This region has been exposed, like other parts of Iraq, to the different types of trauma such as war, fighting, terrorism, and displacement. This region comprises nearly 5,000 people, approximately 800 families in which the average number of family members totals 6.

In compliance with the regulations put forward by Heriot-Watt University, the primary researcher was unable to gain permission to collect data in Iraq in person. Instead, the Department of Counselling and Education Guidance (DCEG) at the School

of Basic Education at Diyala University hired research assistants in accordance with a contract between HWU and DCEG (see Appendix 1). The head of the School of Life Sciences at Heriot-Watt University proposed this strategy. The Psychology department within the School of Basic Education at Diyala University studies psychosocial issues within a broad spectrum of specialisations and undertakes teaching at both undergraduate and postgraduate levels. Professor Muhaned Al-Naymi at Diyala University was in direct supervision of the data collection process ensuring that collection of data follows stringent procedures. He put forward the instruction to ensure that the research assistants would collect data from no more than ten people a day from a specific area. He received application forms daily and kept them in a secure place. In addition, the department's council got the necessary local ethical approvals for data collection. Moreover, the department adhered to all the procedures to ensure the safety of the research assistants. Furthermore, informal opportunities for counselling were made available to participants by Al-Naymi and other departmental staff if required as a consequence of participation in the study.

### **2.3.2 Sample selection**

Study 1 recruited 466 participants to ensure adequate statistical power and to increase generalizability. In this area where houses are divided into odd and even numbers, the groups of odd numbers were selected randomly for the study.

We chose people between 25-50 years of age from both genders and only one person from each household was allowed to participate. In cases where there was more than one person in the household, the eldest person in each household was selected due to their anticipated greater experience of stressful situations and also to ensure consistency. Iraqi people in this age range have been living with stress for more than ten years on an on-going basis and hence this age range was chosen as a criterion for participant selection. If the family members did not wish to participate or did not fit with the age-group specification, they were thanked for their time and the research assistant approached the next household for potential recruitment.

### **2.3.3 Training instructions for research assistants**

Four Masters students and two PhD students at the Department of Counselling and Educational Guidance (DCEG) administered the questionnaires. Previous to their participation in this study, the students employed for the administration of questionnaires received training as part of their Master's degree, including courses in experimental psychology and survey application. Also, as they are domestic citizens, they would be

more sensitive to the traditional habits of participants in the study as well as being better able to deal with the participant's sensitivity.

A meeting in the department was held with these students and it was explained to them the mode of application and clarity of standards after reading the measures. In addition, discussion at the meeting emphasised paying particular attention to the possibility of participants re-experiencing the stressful situation(s) and that this should not be allowed. In cases where this situation may arise, the research assistants were required to cease data collection from that participant. However, the research assistants would advise the participant to contact the department for counselling. The research assistants had previously participated in a pilot study with a sample of 34 individuals for training and for scales validation. Their role was to assist the primary researcher in the data collection process, in dealing with participants as well as to follow the exact procedures as part of their training. The pilot study found that there was no risk of re-experiencing traumatic events for participants nor was there an issue of sensitivity in its application of dealing with research assistances and providing required information, and subsequently, was of no risk to the research assistants.

#### **2.3.4 Procedures**

Each research assistant knocked on a door and presented themselves as a student who was collecting information for a study for research purposes. For those who agreed to take part in the study, a more detailed description of what participation entailed was provided. The research assistants followed the procedures from previous studies' conducted in this field in Iraq. They collected data from ten people per day in order to allow for easier monitoring of any problems or errors in the data collection process. They had explored potential difficulties that they may be facing. For example, if the family did not allow the administrator to wait inside their home while the questionnaires were being completed, the administrator would go to the next house, giving them adequate time to finish filling in the forms. If participants asked the administrator to return at another time, they would be given enough time and privacy to answer the scales. If the participant was illiterate, the research assistant would read the questions aloud to the participant and would enter answers for the participant. In addition, in order to address the issue that some items may be unclear to participants, the research assistant presence would allow for participants to ask any questions. For example, if there were no response options that applied to the participant, they would be advised to select the response that was most

applicable, or if a participant was unsure of the exact frequency of a response, they were asked to make as close an estimate as possible

At this point, it was clearly explained to potential participants that involvement in the study was entirely voluntary, and that if they wished to withdraw at any time they would be free to do so. They could find that guarantee in the written consent form. The potential participants were asked to read the participants' information sheet and to sign the participant consent.

### **2.3.5 Ethical issues**

Studies that employ human participant responses to self-reports contain some ethical issues. In the current studies, this included responses to self-report scales about traumatic stress and PTSD symptoms that might evoke some distressful feelings. In addition, the studies used many scales, cortisol samples, and interviews. In the two studies in Iraq, for distressful feeling, it was agreed with the Department of Counselling and Educational Guidance (DCEG) at the School of Basic Education at Diyala University to offer the participants any help they may need; participants were given the e-mail address and contact information of the DCEG.

In fact, it was felt that it would be unethical, in an exploratory study, NOT to collect a number of carefully chosen measures with which to compare PTSD symptoms in this unique sample. The problems with recruitment had to be weighed against the importance of making sure that the study provided new and valid information. Furthermore, (a) we chose short version scales, (b) gave the participant a rest time, and (c) participants could stop when they wanted to.

For confidentiality, all the materials pertaining to the data were kept in a secure place with the study supervisor at the Diyala University to send to the primary researcher. Consent forms were kept separately as they contained the names of the participants and their identification numbers. They were linked with the questionnaires by the numbers.

Ethical approval was obtained from The Ethical Committee in Heriot-Watt University for the four studies as these studies recruited human participants. A consent form (Appendix 2) was presented to the participants to sign before they participated in the studies. The form included the purposes of the study (i.e., administering questionnaires), and the study procedures including the response to paper-based questionnaires about traumatic events, post-traumatic stress symptoms, sense of coherence, coping strategies, depression and somatic symptoms, life satisfaction,

neuroticism traits, and self-report of disease. In addition, the participants were informed that those who fit the criteria for the second study would be asked to take part in that study. They were also told that the second study included questionnaires and the collection of a saliva cortisol sample. It was explained that due to their responses to the questionnaires, some distress might be experienced. In this case, they were told to call Prof. Muhaned Al-Naymi at of the DCEG for help. In terms of conditions of participation, participants were told that they would be free to withdraw their consent and discontinue participation at any time without negative consequences, that their participation in the study would be confidential, anonymous, and voluntary, and that data from this study may be included in publications.

### **2.3.6 Data collection**

Self-report scales were used to measure the variables of this study. These scales comprised the following: The Baghdad Trauma History Screen (BTHS; Jaber, 2012) Sense Of Coherence Scale (SOC; Antonovsky, 1987), Brief Cope (Carver, 1997), the Scale of Neuroticism (John & Srivastava, 1999), Depression and Somatic Symptoms Scale (DSSS; Hung, Weng, Su, & Liu, 2006), Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Sharon Griffin, 1985), and the Screen for Posttraumatic Stress symptoms (SPTSS; Carlson, 2001); details below). In addition, self-report of health and demographic characteristics were requested. The participant was required to complete the above measures so as to tap into each of these facets central to answer the research questions. The research assistants emphasised that there were no wrong or right answers. The research assistants waited for the participant to complete all answers of the questionnaires. After the questionnaires had been completed by the participant, the scales were placed in an envelope by the participant and sealed with the details of the house address to be given to the direct supervisor of administration so that, provided the participant had given consent, they could be approached again at a later date to check the form had been completed correctly and if another testing session was required. The direct supervisor of the data collection selected randomly 10% of the participants for auditing to make sure those participants involved in the study went on to answer the measurements by themselves. This procedure was carried out so as to prevent fraudulent activity on the part of the research assistant such as creating answers to questions that the participant had missed. Moreover, the questionnaires from this procedure were used in scales validation thereafter in the current study. After the completion of the application process, the department sent the answers via a safe recorded delivery service (DHL) to



the primary researcher where the process of data analyses and data interpretations commenced using SPSS software for debriefing. Also, the primary researchers shared information about the study procedure and data collection with departmental staff.

### **2.3.7 Scales translation**

Most of the scales that have been used in this study were established in English language. Therefore, they were translated into Arabic by the researcher and an Iraqi interpreter who works for the City of Edinburgh Council who has good experience with both Arabic and English languages. The two translations were matched and merged to produce one version. Then, the Arabic versions were discussed with four Iraqi psychologists in the Department of Counselling and Education Guidance (DCEG) at the School of Basic Education at Diyala University. They suggested some modifications of some items and re-writing of others to be consistent with the English version and to make it more suitable for the Iraqi general population. The Arabic versions were tested in 25 Iraqi adults (15 men and 10 women aged over 25 years) to discuss the contents of items to ensure the Arabic versions were readable and understandable. As a result, all items provided a similar meaning to the English version and were understandable for the sample.

### **2.3.8 Scales validation**

In study 1, 7 self-report instruments were validated. These instruments were a checklist to evaluate trauma history and scales to measure sense of coherence, Neuroticism traits, depression and somatic symptoms, life satisfaction, coping strategies, and posttraumatic stress symptoms.

### **2.3.9 Participants**

As stated in this chapter, the selection of participants was conducted through two stages. First, we chose the odd houses randomly from the Al-Moulemein sector. Second, one person aged between 25-50 years old from each household was selected. All potential participants in each household were presented with a brief about the study aims and procedure and were then asked to participate in the study by research assistants (see above). They were told that they would be free to withdraw from the study at any time without any objection. Four-hundred and sixty-six people agreed to participate. The participants who agreed to take part in the study were asked to sign a written consent form later.

The study recruited 466 people from both genders (as described above). All responded to the study questionnaires. Fifty-eight of them were removed because participants had provided too little information in their questionnaires. Questionnaires from 408 participants (males, 251, 61.5% ; females, 157, 38.5%) were valid for final analyses. The average age was 35.35 years (SD=7.72) (range 25-50), 284 (70%) of them were married, 116 (28.6%) were single or widowed, and the rest were either divorced or separated. More than 65% had less than \$500 income per month. In terms of the highest level of education achieved, the sample was distributed as follows: Primary school (8.6%), secondary school (23.5%), university (61%), and post-graduate study (6.9%). Eighty-three percent of participants had a family size between 3 and 8 members. The average family size in Iraq is 6 members. Table 2.1 displays the demographic information for the sample in this study.

**Table 2.1** Demographic information of study sample

Demographic information	Number of people	Percentage of sample
	n	%
Male	251	61.5
Female	157	38.5
Married	284	70
Single or widow	116	24.9
Divorced or separated	6	1.5
Income Less than \$500	260	65.5
Income More than \$500	136	34.5
Primary school	35	8.6
Secondary school	95	23.5
University	247	61
Post-graduate	28	6.9

All instruments were administered in the same session. The average time to complete the scales was 45 minutes. The detailed descriptions instrument is presented in the following sections.

### 2.3.10 Baghdad Trauma History Screen

There is a wide range of traumatic events that people have experienced in Iraq even now so most instruments designed to evaluate trauma history do not cover all events. For that purpose, Alatrany (2012) designed a new checklist to examine the traumatic history for traumatised people in Iraq. The Baghdad Trauma History Screen (BTHS) was designed to measure the prevalence of the traumatic events and had tested the BTHS among Iraqi university students.

The questionnaire represents 22 traumatic events. Participants indicate the event to which they had been exposed; either they themselves or significant others around them. The participant's responded to the kind of accident by putting a (√) under YOU if s/he was personally exposed to the event, under FAMILY MEMBER if a person close to the participant had been exposed to the events, or under both of them if s/he and significant others had been exposed to the event. In the cases of having experienced the event, s/he indicated the number of the times they had been exposed, age of first exposure, and if s/he felt fear, horror, helplessness, anger, or sadness. Test-retest reliability was assessed and the correlation coefficient was 0.85 for the reported exposure to traumatic events and 0.73 for the related emotions. This shows that the BTHS is internally consistent. A group of six specialists in psychology and psychiatry evaluated face validity and found that the events included in the BTHS cover the most common events in Baghdad (Jaber, 2012). The checklist was initially devised in Arabic and was translated into English by Jaber and two Arabic-English translators. Table 2.2 displays the list of traumatic events that were included in the checklist of trauma history.

**Table 2.2** List of traumatic events included in the final scale

Events
Aerial bombing
Raid of house by military
Roadside explosion
Losing a close person
Shooting
Car bomb
Sudden death of a family member
Watching of video clip of a real murder
Witnessing a violent death
Arrested

Attack by military force  
Dangerous car accident  
Serious fire  
Armed robbery  
Kidnapping or attempt to kidnap  
Hanging of a close person  
Robbery at gunpoint  
Severe illness  
Assassination attempt  
Physical torture  
Chemical attack  
Rape/sexual abuse  
Others

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#### **2.3.10.1 Face validity of BTHS of Arabic version in this study**

For face validity and suitability for the current study sample, a group of 8 specialists at the Department of Counselling and Educational Guidance (DCEG) at Diyala University evaluated the checklist. The researcher met with them personally and separately to discuss the events included in the BTHS that cover the most common events in Iraq and the emotional responses to it. It was agreed that the list of events was comprehensive and that the BHST was an appropriate measure of history of traumatic events and appropriate for use in the general population.

#### **2.3.10.2 Reliability of BTHS in this study**

Test-retest reliability was assessed by re-administering the BTHS to a sample of 34 people (10%) that were randomly selected from the original sample who had agreed to respond again to the questionnaires as previously mentioned. The time interval between the two administrations ranged between 2 to 3 weeks. The correlation coefficient was .78 for the reported exposure to traumatic events and .70 for related emotions suggesting that the BTHS was internally consistent (see appendix 3 for the final version).

#### **2.3.11 Screening of Posttraumatic Stress Symptoms (SPTSS)**

In the DSM-IV (APA, 1994), PTSD is recognised as a disorder that may be evoked in relation to experiencing traumatic events. A variety of methods have been used to assess PTSD according to the aims of the studies, screening, or diagnosis. A lot of studies

have used different scales for different purposes and all were reviewed in order to select an appropriate measurement for the current study. The Screen for Posttraumatic Stress Symptoms (SPTSS) (Carlson, 2001) was used to measure the PTSD symptoms in the current study. The reasons for this were as follows (i) the current scale was translated into Arabic by an Iraqi PhD student (Jaber, 2012) who obtained the validity and reliability of the translation from an Iraqi sample and was used for screening PTSD in the sample of Iraqi university students; (ii) other scales are either based on previous versions of the DSM-IV or have been developed for screening of a specific trauma, problems, or population sample and some scales have a large number of items (Jaber, 2012).

The scale of the SPTSS is that of a Likert-type 17-item, self-report short form version. The scale is designed to assess the symptoms of PTSD experienced within the month prior to completing the measure. Response items range from 0 ("Not at all") to 4 ("More than once every day") and are based on the criteria outlined in the DSM-IV-TR (APA, 2000). Total scores range from 0 to 68. The English version of the scale is widely used and has good psychometric properties (Pratt, Brief, & Keane, 2006). The items are listed in Table 2.3.

**Table 2.3** Items of the SPTSS

<b>Items</b>
<b>Avoidance Items</b>
1. I don't feel like doing things that I used to like doing.
2. I can't remember much about bad things that have happened to me.
3. I feel cut off and isolated from other people.
4. I try not to think about things that remind me of something bad that happened to me.
5. I feel numb: I don't feel emotions as strongly as I used to.
6. I have a hard time thinking about the future and believing that I'm going to live to old age.
7. I avoid doing things or being in situations that might remind me of something terrible that happened to me in the past.
<b>Arousal Items</b>
1. I have trouble concentrating on things or paying attention to something for a long time.
2. I feel very irritable and lose my temper.

3. I am very aware of my surroundings and nervous about what's going on around me.
4. I get startled or surprised very easily and "jump" when I hear a sudden sound.
5. I have trouble getting to sleep or staying asleep.

#### **Re-Experiencing Items**

1. I find myself remembering bad things that happened to me over and over, even when I don't want to think about them.
  2. I have bad dreams about terrible things that happened to me.
  3. I get very upset when something reminds me of something bad that happened to me.
  4. When something reminds me of something bad that happened to me, I feel shaky, sweaty, nervous and my heart beats really fast.
  5. 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.
- 

In terms of reliability, the internal consistency of the English version of SPTSS items revealed a Cronbach's alpha of .91 and item-total correlations were all statistically significant ( $p < .001$ ) and ranged from  $r = .49$  to  $r = .75$  in a sample of 136 in-patients (73 females, 63 males) whose mean age was 37.6 years. The criterion-related validity found that SPTSS had significant relationships with other measurement instruments such as the structure interview for PTSD and the symptoms checklist-90-revised-anxiety subscale (Carlson, 2001).

The validity of the Arabic version SPTSS was examined by calculating the sensitivity and specificity of the SPTSS. Compared to the DSM-IV, in Bedouin men who are an Arab minority, those who served in Israeli forces (317; mean age 30.4 years  $SD = 8.4$ ) were found equal for both of sensitivity and specificity (.89%; Caspi, Carlson, & Klein, 2007).

An Arabic version of the SPTSS was used by Jaber (2012) with Iraqi University students in Baghdad in a sample of 505 participants (199 males, 306 females) whose age ranged from 18 to 45 years. In terms of validation, internal consistency for the subscales of re-experience, avoidance, hyper-arousal, and total score yielded Cronbach's alpha scores of .90, .84, .82, and .67 for the total scale, respectively. Test-retest reliability was calculated based on results from 20 participants. The correlations between test and retest for the subscales of re-experience, avoidance, hyper-arousal, and total score were .83,

.80, .78, and .77, respectively. All inter-item correlations between items and their subscales were significant as there were significant correlations between subscales and the total score of the SPTSS.

Moreover, the discriminative power of items was tested to determine the ability of items to differentiate between the participants who had been exposed to traumatic events and those who had not. Two groups were selected: 81 participants who had not reported experience of a traumatic event and 424 participants who had reported experience of at least one event that met criterion A. The results showed that there were significant differences between the two groups. This result confirmed that the SPTSS was able to differentiate between people who had been exposed to traumatic events and those who had not (Jaber, 2012).

### **2.3.12 Validation of SPTSS**

#### **2.3.12.1 Internal consistency**

To ensure internal consistency of the SPTSS in the current study sample, Cronbach alpha was conducted based on data of 408 for first study. The result showed good internal consistency; Cronbach's alpha scores for the subscales of re-experience, avoidance, hyper-arousal, and total score were .82, .78, .64, and .86 for the total scale, respectively.

#### **2.3.12.2 Test-retest Reliability**

To ensure that the SPTSS was constant over time, 34 participants were randomly selected (10%) from the 408 participants to re-complete the scale after an interval time of between 2 to 3 weeks. The correlations between test and retest for the subscales of re-experience, avoidance, hyper-arousal, and total score were .78, .74, and .72 and .80 for the total scale, respectively. The significant correlations showed that the SPTSS was constant over time.

#### **2.3.12.3 Construct validity, inter-items correlation**

The correlation between the items and their subscale scores and the scale total scores were calculated based on data of 408 participants in first study (see Table 2.4). The correlations were all significant suggesting that the SPTSS had sufficient construct validity.

**Table 2.4** Items correlation with their subscales and the total scores of the scale

Items	Correlations With subscales	Correlations with total subscales
<b>Avoidance Items</b>		
1. I don't feel like doing things that I used to like doing.	.51**	.33**
2. I can't remember much about bad things that have happened to me.	.45**	.39**
3. I feel cut off and isolated from other people.	.55**	.43**
4. I try not to think about things that remind me of something bad that happened to me.	.51**	.45**
5. I feel numb: I don't feel emotions as strongly as I used to.	.55**	.45**
6. I have a hard time thinking about the future and believing that I'm going to live to old age.	.56**	.45**
7. I avoid doing things or being in situations that might remind me of something terrible that happened to me in the past.	.47**	.45**
<b>Arousal Items</b>		
8. I have trouble concentrating on things or paying attention to something for a long time.	.56**	.45**
9. I feel very irritable and lose my temper.	.64**	.57**
10. I am very aware of my surroundings and nervous about what's going on around me.	.63**	.54**
11. I get startled or surprised very easily and "jump" when I hear a sudden sound.	.63**	.54**
12. I have trouble getting to sleep or staying asleep.	.54**	.47**
<b>Re-Experiencing Items</b>		
13. I find myself remembering bad things that happened to me over and over, even when I don't want to think about them.	.66**	.66**
14. I have bad dreams about terrible things that happened to me.	.71**	.55**
15. I get very upset when something reminds me of something bad that happened to me.	.71**	.62**
16. When something reminds me of something bad that	.72**	.58**



happened to me, I feel shaky, sweaty, nervous and my heart beats really fast.

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. .73\*\* .61\*\*

---

\*\*Correlation is significant at the .01 level (2-tailed).

The correlations between the subscales and the total score of the SPTSS were calculated as another indication of construct validity. All correlations were significant (see Table 2.5).

**Table 2.5** Correlation between SPTSS and its subscales

	Arousal	Re-Experience	SPTSS
Avoidance	.52**	.52**	.82**
Arousal		.61**	.84**
Re-experience			.86**

---

\*\*Correlation is significant at the 0.01 level (2-tailed).

#### 2.3.12.4 Discriminative power of items

The item discriminative power is the ability to differentiate between the responders in the behaviour measured by the scale (Anastasi & Urbina, 1997). This calculation needs two groups of participants; those who experience traumatic events and those with no experience. Unfortunately, in the current study, very few participants (23 out of 408) reported that they had not been exposed to traumatic events directly and some of them had been exposed to events indirectly. Therefore, the researcher could not test the discriminative power of SPTSS items.

In conclusion, the SPTSS (see appendix 4) Arabic version scale is a reliable and valid instrument to measure PTSD symptoms in individuals who have been exposed to multiple traumatic events. Thus, the instrument seems appropriate to use to screen the symptoms in a general population sample of Iraqi participants who have experienced multiple events and meet criteria A of PTSD in the DSM-IV. It is important to note that the instrument in this study was not used for diagnosis of PTSD but for screening symptoms in accordance with the aims of these studies in the next stages.

### **2.3.13 Brief Cope**

A variety of self-report scales has been used to measure coping strategies. These scales depend on the type of trauma or stress and the characteristics of people who have been exposed to stress. For example, Wadsworth et al.,(2009) used a 57- item questionnaire to measure the coping strategies of people who had been displaced following Hurricane Katrina. The scale included 19 subscales that comprise 5 broad factors: (i) Primary Control Engagement, (ii) Secondary Control Engagement, (iii) Voluntary Disengagement, (iv) Involuntary Engagement, and (v) Involuntary Disengagement. In (1996), Valentine et al., developed a scale of 26 items. Three coping scales were constructed according to factor analyses: (i) Mobilising Support, (ii) Positive Distancing, and (iii) Wishful Thinking. A 72-item measure of Coping Strategies Inventory was used to assess the avoidance- and approach- coping strategies in a specific event of 55 female survivors of assault (Pineles, Mostoufi, & Ready, 2011). Folkman and Lazarus (1988) developed the Ways of Coping Checklist (WOC) which is a 67-item questionnaire. The WOC classified strategies on the basis of problem-focused or emotion-focused functions of coping that was used by Chung et al. (2004). Finest et al. (2002) developed a brief Approach/Avoidance coping questionnaire that included 12 items.

In the current study, the Arabic Brief Cope that was developed from Carver's Brief Cope scale (1997) was used to examine coping strategies. This scale has been widely used with both stressful events and traumatic stress in different languages (Bader, 2004; Benhaijoub, Ladenburger, Lighezzolo, & de Tychev, 2008; Gil, 2005a; Llewellyn, McGurk, & Weinman, 2007). In addition, the scales of Brief Cope strategies are assessed using 14 subscales, each with two items that because of the length and redundancy of the original version, causes impatience to the participants(Carver, 1997).The 14 subscales are as follows: Self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion, and self-blame. The validation of Brief Cope English version was obtained from a sample of 168 community residents with experience of natural disaster. Chronbach's alpha scores for the 14 subscales range from .50 to .90. The factor structure of the Brief Cope measure was similar to the original version (Carver, 1997). Responses range from 1 (e.g. "I haven't been doing this at all"), 2 (e.g. "I've been doing this a little bit"), 3 (e.g. "I've been doing this a medium amount"), and 4 (e.g. "I've been doing this a lot"). The subscales and their items are listed in Table 2.6.

**Table 2.6** Subscales and their items of the Brief Cope

## Coping strategies

Subscales	Items
Active coping	1- I've been concentrating my efforts on doing something about the situation I'm in. 2- I've been taking action to try to make the situation better.
Planning	1- I've been trying to come up with a strategy about what to do. 2- I've been thinking hard about what steps to take.
Positive Refraining	1- I've been trying to see it in a different light, to make it seem more positive. 2- 2. I've been looking for something good in what is happening.
Acceptance	1- I've been accepting the reality of the fact that it has happened. 2- I've been learning to live with it.
Humour	1- I've been making jokes about it. 2- I've been making fun of the situation.
Religion	1- I've been trying to find comfort in my religion or spiritual beliefs. 2- I've been praying or meditating.
Using Emotional Support	1- I've been getting emotional support from others. 2- I've been getting comfort and understanding from someone.
Using Instrumental Support	1- I've been trying to get advice or help from other people about what to do. 2- I've been getting help and advice from other people.
Self-Distraction	1- I've been turning to work or other activities to take my mind off things. 2- I've been watching TV, reading, daydreaming, sleeping, or shopping.
Denial	1- I've been saying to myself "this isn't real." 2- I've been refusing to believe that it has happened.
Venting	1- I've been saying things to let my unpleasant feelings escape.

	2- I've been expressing my negative feelings.
	1- I've been using alcohol or other drugs to make myself feel better.
Substance Use	2- I've been using alcohol or other drugs to help me get through it.
Behavioural Disengagement	1- I've been giving up trying to deal with it.
	2- I've been giving up the attempt to cope.
Self-Blame	1- I've been criticizing myself.
	2- I've been blaming myself for things that happened.

---

Jaber (2012) translated and validated the Brief Cope into Arabic for use in his study in Iraq. Cronbach's alpha scores of denial, venting, humour, and acceptance were less than .50. Therefore, these subscales were removed from the scale. The remaining items of the Arabic version of the Brief Cope were submitted to a principal-component factor analysis. The results of the new scale included 4 factors equating to 20 items: Seeking support; 7-items included all items from the use of emotional support, the use of instrument support, the self-distraction subscales, and one item from the religion subscale. Active coping strategies; 6-items included all items from the active coping and planning subscales, one item from the positive reframing subscale, and one item from religion subscale. Non-problem focused coping strategies; 5-items included all items of behavioural disengagement and self-blame subscales and one item from the positive reframing subscale. Substance use; 2-items included the two items of substance use. The new Arabic version items are shown in table 2.7.

**Table 2.7** Arabic Brief Cope version and their subscale items

---

Seeking Support factor

- 1- I've been getting emotional support from others
- 2- I've been getting comfort and understanding from someone
- 3- I've been getting help and advice from other people
- 4- I've been trying to get advice or help from other people about what to do
- 5- I've been turning to work or other activities to take my mind off things
- 6- I've been watching TV, reading, daydreaming, sleeping, or shopping

7- I've been praying or meditating

#### Active Coping factor

- 1- I've been concentrating my efforts on doing something about the situation I'm in
- 2- I've been taking action to try to make the situation better
- 3- I've been trying to come up with a strategy about what to do
- 4- I've been thinking hard about what steps to take
- 5- I've been trying to see it in a different light, to make it seem more positive
- 6- I've been trying to find comfort in my religion or spiritual beliefs

#### Non-problem focused

- 1- I've been giving up trying to deal with it
- 2- I've been giving up the attempt to cope
- 3- I've been criticizing myself
- 4- I've been blaming myself for things that happened
- 5- I've been looking for something good in what is happening

#### Substance use

- 1- I've been using alcohol or other drugs to make myself feel better
  - 2- I've been using alcohol or other drugs to help me get through it
- 

Cronbach's alpha scores of the 4 factors of the Arabic Brief Cope version were .82, .79, .67, and .70 for seeking support coping strategies, active coping strategies, non-problem focused coping strategies, and substance use factors, respectively. Moreover, factors total score correlated significantly among respective items themselves and with the factor total scores for the 4 subscales. The test-retest reliability was tested in a sample of 23 participants and the correlation between the two tests ranged from .74 to .83.

### **2.3.13.1 Validation of Brief Cope for study 1**

#### ***- Internal consistency***

Cronbach's alpha was calculated to ensure that subscales were internally consistent. Alpha scores were .70, .70, .65, and .76 for seeking support coping strategies, active coping strategies, non-problem focused coping strategies, and substance use factors, respectively.

#### ***- Items-total factors correlations***

The correlation among the items and the factor-total minus the items score of the four subscales of the strategies pertaining to Brief Cope were all significant at the levels

of .05 and .01, and the tables 2.8, 2.9, and 2.10 represent the items correlations of seeking supports, active coping, and non-problem focusing subscales, respectively.

**Table 2.8** Items-total correlation of seeking support coping strategies factor

	2	3	4	5	6	7	8
Seeking Support factor	0.59**	0.58**	0.76**	0.76**	0.5**	0.5**	0.5**
1. I've been getting emotional support from others		0.33**	0.35**	0.35**	0.14*	0.13*	0.18*
2. I've been getting comfort and understanding from someone			0.28**	0.28**	0.16*	0.25**	0.22**
3. I've been getting help and advice from other people				0.88**	0.19*	0.21**	0.23**
4. I've been trying to get advice or help from other people about what to do					0.19*	0.21**	0.25**
5. I've been turning to work or other activities to take my mind off things						0.88**	0.29**
6. I've been watching TV, reading, daydreaming, sleeping, or shopping							0.67**
7. I've been praying or meditating							

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

\*\*. Correlation is significant at the 0.01 level (2-tailed).

**Table 2.9** Items-total correlation of active coping factor

	2	3	4	5	6	7
Active Coping factor	0.59**	0.68**	0.6**	0.69**	0.61**	0.51**
1. I've been concentrating my efforts on doing something about the situation I'm in		0.28**	0.43**	0.28**	0.26**	0.12*
2. I've been taking action to try to make the situation better			0.28**	0.5**	0.31**	0.26**
3. I've been trying to come up with a strategy about what to do				0.33**	0.27**	0.16*
4. I've been thinking hard about what steps to take					0.32**	0.27**
5. I've been trying to see it in a different light, to make it seem more positive						0.17*
6. I've been trying to find comfort in my religion or spiritual beliefs						

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

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table 2.10** Items-total correlation of non-problem focused coping factor.

	2	3	4	5	6
Non problem focused coping factor	0.48**	0.48**	0.64**	0.67**	0.43**
1. I've been giving up trying to deal with it		0.24**	0.12*	0.18*	0.14*
2. I've been giving up the attempt to cope			0.13*	0.14*	0.12*
3. I've been criticizing myself				0.44**	0.12*
4. I've been blaming myself for things that happened					0.13*
5. I've been looking for something good in what is happening					

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

\*\* Correlation is significant at the 0.01 level (2-tailed).

- *Substance use*

A significant correlation of .60 was found between the two items of substance use factor. The significant correlations reported among subscale items and the Cronbach's alpha scores demonstrate that the internal consistency of the Arabic version of Brief Cope was adequate.

- *Test-Retest reliability*

Test-retest reliability was conducted to ensure that the Arabic Brief Cope measure was constant across time. Thirty-four participants had agreed to re-complete the scale after the interval time of 2 and 3 weeks. The correlations between the test and retest ranged from .73 to .80. The results of these significant correlations show that Brief Cope was reliable over time, for final version see Appendix 5.

**2.3.14 The sense of coherence scale (SOC): (Antonovsky, 1987)**

The literature review showed that sense of coherence plays an important role in enhancing health and protecting traumatised people after being exposed to traumatic events. Antonovsky (1987) identified what he called the general resistance resources against the life stress that included the characteristics of the individual. These included characteristics such as intelligence, knowledge, group (e.g. social support), subculture (e.g. norms), and values or society (e.g., the political system). Antonovsky developed a scale of the Orientation to Life questionnaire that comprised 29 items and a short version of 13 items is also available (Vossler, 2012). This scale consists of 3 components: (i) Comprehensibility, (ii) Meaningfulness, and (iii) Manageability.

These two scales have been used widely in different languages and cultures to assess the sense of coherence in stressful times and its correlation with health and different psychological issues (Brockhouse, 2011; Fujisato & Kodama, 2011; Mizuno, Iwasaki, Sakai, & Kamizawa, 2012; Pallant & Lae, 2002; Vogel et al., 2012). A Chinese version of the SOC 13-item scale was used to test the psychometric properties in China. A sample of 238 women with cervical cancer was recruited. Cronbach's alpha coefficient for the scale was .82 (Ding, 2012) when used in China by (Ho, 1997). In Germany, a study assessed the differences in SOC between two groups. A sample of parents of sick children (n= 441) and parents of healthy children (n=174) was recruited. The mothers of sick children showed lower SOC than mothers of healthy children. The study found a negative correlation between SOC and neuroticism ranging between -.50 and -.75



(Schubert et al., 2012). A similar result was found with two different parent groups; parents of sick children had lower SOC than the parents of normal children in Israel (Manor-Binyamini, 2012).

The SOC 13-item version has been widely used when there have been time or space limitations and is valid and reliable in different cultures.

The SOC13-items version consists of 3 subscales: (i) Comprehensibility (5 items), (ii) Manageability (4 items), and (iii) Meaning (4 items). The responses to the 13 items indicate are represented on a 7-point scale ranging from 1 to 7. The total score is computed by summing participants' responses. Total scores range from 13, indicating a low sense of coherence, through to 91, indicating a high sense of coherence after reverse scoring of five items. The subscales and their items are listed in Table 2.11.

**Table 2.11** The SOC subscale and their items

	1	2	3	4	5	6	7
<b>Comprehensibility</b>							
1- Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?	Never happened						Always happened
2- Do you have the feeling that you are in an unfamiliar situation and don't know what to do?	Very often						Very seldom or never
3- Do you have very mixed-up feelings and ideas?	Very often						Very seldom or never
4- It happen that you have feelings inside you would rather not feel?	Very often						Very seldom or never
5- When something happened, have you generally found that	You overestimated or underestimated its importance						You saw things in the right proportion
<b>Manageability</b>							
1- Has it happened that people whom you counted on disappointed you	Never happened						Always happened
2- Do you have the feeling that you're being treated unfairly?	Very often						Very seldom or never

3- Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?	Never	Very often
4- How often do you have feelings that you're not sure you can keep under control?	Very often	Very seldom or never
<b>Meaning</b>		
1- Do you have the feeling that you don't really care about what goes on around you?	Very seldom or never	very often
2- Until now your life has had	No clear goals or purpose at all	Very clear goals and purpose
3- Doing the things you do every day is	A source of deep pleasure and satisfaction	A source of pain and boredom
4- How often do you have the feeling that there's little meaning in the things you do in your daily life?	Very often	Very seldom or never

### 2.3.15 The structure of SOC

The structure of the SOC has been examined in numerous studies. A review of SOC in 20 different countries was conducted. Twenty-six of these studies used SOC, 29 found that Cronbach's alpha of internal consistency ranged from .82 to .95. Sixteen of these studies used the SOC13-items version and found that Chronbach's alpha ranged from .74 to .91. Test-retest reliability showed considerable stability (Antonovsky, 1993).

Frenz, Carey, and Jorgensen (1993) examined the structure of the SOC scale. Two samples of 374 (psychotherapy patient n= 98) (age range from 17 to 60; M=23.6 SD= 8.4) and a sample of non-patients (N= 276 mean age 23.2 years; SD=8.3) were recruited. The principal-components analysis that was conducted revealed 5 factors which

are:(i)Comprehensibility, (ii) Life interest, (iii) Self-efficacy, (iv)Interpersonal, and (v)Trust and Predictability.

Gana and Garnier (2001) examined the structure of both versions of the SOC scale; the 29-item and 13-item versions, in a sample of 647 French adults. Satisfactory reliability and stability were found for the two versions. The study revealed that the best-fitting model for both versions was the 3-correlated-factor model that included:(i) Manageability, (ii) Meaningfulness, and (iii) Comprehensibility. Feldt, Leskinen, and Kinnunen (2005) aimed to investigate the structure and the factorial invariance of the SOC13-item version in a 5-year follow-up study. A sample of 352 Finnish technical designers aged between 25-40 years was tested twice. The results of the confirmatory factor analysis revealed three factors: (i) Meaningfulness, (ii) Comprehensibility, and (iii) Manageability and the results indicated that the scale was best used as an 11-item measure for SOC. A German version of the SOC 13-item version was examined in a sample of 1,107 Swiss students (535 aged 14 or younger and 572 aged 15 or older). A two-factor model of SOC was found. The first factor encompassed Comprehensibility and Manageability items and the second factor reflect items pertaining to Meaningfulness (Zimprich, Allemand, & Hornung, 2006).

The results of these studies support the usefulness of the original construct as it supports,in general, the reliability and validity of Antonovsky's SOC scale.

### **2.3.16 Translation of the SOC scale into Arabic**

The SOC has been translated into more than 10 different languages. However, an Arabic version was not available. Therefore, the SOC was translated into Arabic by the researcher and an Iraqi interpreter (see scales translation).

### **2.3.17 Validation of SOC of Arabic version in this study**

#### **2.3.17.1 Internal consistency**

Cronbach's alpha was conducted to examine the internal consistency of SOC. The alpha score was .70 on based on data from 408 for study 1, which is in the acceptable range compared to previous studies.

#### **2.3.17.2 Items-Total Factors Correlations**

Correlations between items and subscales minus the item score and the total SOC scale were conducted. Table 2.12 shows that all the correlations were significant at the level of .01.

**Table 2.12** Item-total subscale and item-total SOC scale correlation

Items	Comprehensibility	Manageability	Meaning	Total SOC
1. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?	0.42**			0.39**
2. Do you have the feeling that you are in an unfamiliar situation and don't know what to do?	0.61**			0.31**
3. Do you have very mixed-up feelings and ideas?	0.59**			0.44**
4. It happen that you have feelings inside you would rather not feel?	0.66**			0.53**
5. When something happened, have you generally found that	0.34**			0.48**
6. Has it happened that people whom you counted on disappointed you		0.62**		0.53**
7. Do you have the feeling that you're being treated unfairly?		0.58**		0.50**
8. Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?		0.58**		0.45**
9. How often do you have feelings that you're not sure you can keep under control?		0.57**		0.45**
10. Do you have the feeling that you don't really care about what goes on around you?			0.58**	0.41**
11. Until now your life has had			0.64**	0.25**
12. Doing the things you do every day is			0.70**	0.30**
13. How often do you have the feeling that there's little meaning in the things you do in your daily life?			0.57**	0.46**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The correlation between the subscales themselves and between subscales and the total SOC scale were conducted. Table 2.13 shows that all correlations were significant at the level of .01.

**Table 2.13** Total subscale and SOC scale correlations

Subscales	2	3	Total SOC
Meaning subscale	.26**	.29**	.69**
Comprehensibility subscale		.40**	.76**
Manageability subscale			.76**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The significant correlation between items and total subscale minus item score and the significant correlation between subscale and total SOC score as well as the Cronbach's alpha score demonstrate the internal consistency of the Arabic SOC-13 version.

### 2.3.17.3 Test-retest reliability

Test-retest reliability was conducted to ensure that the SOC was constant over time. Thirty-four participants agreed to recomplete the scale after an interval time of between 2 to 3 weeks. The correlation between test and retest score was .80. The significant correlation shows that the SOC was reliable across time.

The psychometric properties of the Arabic SOC-13 version (see Appendix 6) had both internal and external consistency and therefore, it was a valid and reliable instrument to measure the SOC in a general Iraqi population.

### 2.3.18 The scale of neuroticism (John & Srivastava, 1999)

The literature review of personality showed that there are many models used to measure personality traits. These models are 16 factors model (Cattell, 1987), Big Three factors of Psychoticism, Extraversion, and Neuroticism by (Eysenck, 1970), and the Big Six (Ashton & Lee, 2007). One of the most commonly accepted personality dimensions are the Big Five Inventory (BFI) by (McCrae & Costa, 1999). The BFI was derived from factor analyses of the language people use to describe themselves with respect to emotion, thought, and behaviour, and others around them and do not represent a particular theoretical perspective (Plaisant, Courtois, Réveillère, Mendelsohn, & John,

2010). The BFI consists of five traits: (i) Extraversion, (ii) Agreeableness, (iii) Conscientiousness, (iv) Neuroticism, and (v) Openness. Costa and McCrae (1992) developed the NEO Personality Inventory with a 240-item questionnaire to assess the Big Five domains. John et al., (1999) developed a 44-item questionnaire. The use of a shorter inventory of 44-items is more specific than that of the broader Big Five with 240-item (Soto & John, 2009).

The BFI has been used widely in different languages and cultures (Jensen-Campbell, Knack, Waldrip, & Campbell, 2007) such as in French (Plaisant, Courtois, Réveillère, Mendelsohn, & John, 2010), Turkish (Karaman, Dogan, & Coban, 2010), Korean Americans (Roesch et al., 2006), and German (Hahn, Gottschling, & Spinath, 2012).

The scale is broadly used and has good psychometric properties. The alpha reliabilities averaged .72 from a range of .63 to .84 in a community sample of 642 adults (mean age, 50.98 years, SD=12.52) and alpha levels averaged .70 from a range of .53 to .83 in an undergraduate student sample of 829 individuals (mean age, 21.68 years, SD=3.90; (Soto & John, 2009). The alpha reliabilities of the BFI scales typically range from .75 to .90 and average above .80. Three-month test-retest reliabilities range from .80 to .90 with a mean of .85 (John & Srivastava, 1999).

One of the largest studies that was conducted using the BFI 44-item version translated it into 28 languages including Arabic. It was administered to 17,837 individuals from 56 nations. The internal reliability Cronbach's alphas of the BFI scales across all cultures were .77, .70, .78, .79, and .76 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness, respectively. The Arabic version was administered on sample of 275 Jordan College students, the Cronbach alpha was calculated for all region of Middle East and it were .74, .67, .77, .76, and .75 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness, respectively (Schmitt, Allik, McCrae, & Benet-Martínez, 2007).

For the BFI 44-item version, 8 items pertain to traits associated with Extraversion and Neuroticism, 9 items pertain to traits associated with Agreeableness and Conscientiousness, and 10 items pertain to traits associated with Openness. Responses to items range from 1 (Disagree strongly) to 5 (Agree strongly) when answering the question "I see myself as someone who....". Scores range from 44 to 220. The BFI scale items and its subscales are displayed in Table 2.14.

**Table 2.14** The BFI and subscale items

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Extraversion:

1. Is talkative
2. Is reserved, R
3. Is full of energy
4. Generates a lot of enthusiasm
5. Tends to be quiet. R
6. Has an assertive personality
7. Is sometimes shy, inhibited R
8. Is outgoing, sociable.

Agreeableness:

1. Tends to find fault with others R
2. Is helpful and unselfish with others
3. Starts quarrels with others R
4. Has a forgiving nature
5. Is generally trusting
6. Can be cold and aloof R
7. Is considerate and kind to almost everyone
8. Is sometimes rude to others R
9. Likes to cooperate with others

Conscientiousness:

1. Does a thorough job
2. Can be somewhat careless R
3. Is a reliable worker
4. Tends to be disorganized R
5. Tends to be lazy R
6. Perseveres until the task is finished
7. Does things efficiently
8. Makes plans and follows through with them
9. Is easily distracted R

Neuroticism:

1. Is depressed, blue

2. Is relaxed, handles stress well R
3. Can be tense
4. Worries a lot
5. Is emotionally stable, not easily upset R
6. Can be moody
7. Remains calm in tense situations R
8. Gets nervous easily

Openness:

1. Is original, comes up with new ideas
2. Is curious about many different things
3. Is ingenious, a deep thinker
4. Has an active imagination
5. Is inventive
6. Values artistic, aesthetic experiences
7. Prefers work that is routine R
8. Likes to reflect, play with ideas
9. Has few artistic interests R
10. Is sophisticated in art, music, or literature

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R= reverse-scored items

In study 1, used 7 scales so as to reduce the length of the testing time and to avoid participants' boredom. In addition, numerous studies found strong associations between PTSD and Neuroticism traits of personality (see Chapter 1). Therefore, the researcher conducted the Neuroticism 8-item subscale (see Table 2.13). However, the researcher conducted the whole BFI44-item scale in the third study.

### **2.3.19 Translation of BFI scale into Arabic**

The BFI has been translated from English into 28 languages and has been administered to people from 56 nations. As the Arabic version was conducted in an Arab country other than in Iraq, the Arabic version may not be applicable to an Iraqi population. Therefore the scale was translated (see scales translation).



### **2.3.20 Neuroticism subscale Validation Arabic version**

#### **2.3.20.1 Internal consistency:**

To assess that the Neuroticism subscale was internally consistent, Cronbach's alpha was conducted and Cronbach's alpha score was .72.

#### **2.3.20.2 Items-Total Factors Correlations**

Correlations between items and total scale minus the item score were conducted. Table 2.15 shows that all the correlations were significant at the levels of .01 and .05.

**Table 2.15** Item-total Neuroticism scale correlation

Items	Neuroticism							
	2	3	4	5	6	7	8	Total scale
1. Is depressed, blue	0.11**	0.18**	0.32**	0.19**	0.25**	0.11*	0.23**	0.53**
2. Is relaxed, handles stress well		0.12*	0.13**	0.29**	0.13*	0.3**	0.16**	0.46**
3. Can be tense			0.32**	0.14**	0.16**	0.15*	0.36**	0.5**
4. Worries a lot				0.24**	0.31**	0.12*	0.33**	0.63**
5. Is emotionally stable, not easily upset					0.18**	0.12*	0.22**	0.54**
6. Can be moody						0.12*	0.33**	0.57**
7. Remains calm in tense situations							0.24**	0.44**
8. Gets nervous easily								0.66**

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

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### **2.3.20.3 Test-retest reliability**

Test-retest reliability was conducted to ensure that the Neuroticism subscale was constant across time. Thirty-three participants re-completed the scale after an interval time of between 2 to 3 weeks. The correlation between test and retest was .82. The significant correlation shows that the Neuroticism subscale was reliable over time.

The psychometric properties of the Arabic subscale of Neuroticism version (see Appendix 7) had both internal and external consistency and therefore, it was a valid and reliable instrument to measure Neuroticism traits in a general Iraqi population sample.

### **2.3.21 The Satisfaction With Life Scale SWLS:(Diener, Emmons, & Larsen, 1985)**

The literature review showed that many scales have been used to assess life satisfaction with different groups of people and in different situations. For example, Sawatzky et al. (2009) used the Multidimensional Life Satisfaction Scale (MSLSS), a 40-item scale to measure adolescents' satisfaction with family, friends, living environment, school, self, and general quality of life. The factor analysis found a correlation of a five-factor model. The scale consisted of 18-items.

Zullig, Valois, Huebner, and Drane (2005) developed a 6-item Brief Multidimensional Students' Life Scale (BMSLSS) based on the 6 domains of the 40-item MSLSS: Family, friends, school, self, living environment, and a global item, overall life quality. Seven response options for the scale questions were used. Based on sample of 5,021 public high school adolescents, Cronbach's alpha for the BMSLSS was .85.

To identify the structure and life satisfaction in later life, McQuillen, Licht, and Licht (2001) used two scales of life satisfaction: The SWLS 5-item and the 20-item Life Satisfaction Index (LSIA) use a 5-point scale designed by Neugarten, Havinghurst, and Tobin, (1961). A sample of 45 older adults (mean age, 72.69; 29% men) was recruited. Cronbach's alpha for SWLS was .84 and for LSIA was .85. The correlation between the two scales was significant  $r(43) = .64, p < .01$ . The study found that there were no differences between the two scales.

In Study 1, the 5-item SWLS version was used (Diener, Emmons, Larsen, & Griffin, 1985) to assess a person's global judgment of life satisfaction. In this scale to assess the quality of individual's life, processes of a judgement depend on the basis of individual's own criteria. This scale was not designed to assess specific life areas such as health, work, or life stress, but allows people to assess all these in a way they choose (Pavot & Ed Diener, 1993).

The construction of the SWLS initially consisted of a list of 48 items and a self-report scale was generated to assess life satisfaction. The factor analyses revealed 3 factors with 10 items. In the second step and because of high semantic similarity of some items, 5 items were dropped and the final scale consisted of 5 items. The scale was demonstrated on sample of 176 undergraduates students and the coefficient alpha was .87 whereas the test-retest correlation coefficient on 76 of these students after two month was .82 (Diener et al., 1985).

Numerous studies have used the SWLS in different languages and have assessed the validation and reliability. The scale was found to be reliable and valid in different languages and cultures(e. g. (Besser & Neria, 2009; Lewis, Shevlin, Smékal, & Dorahy, 1999; Pavot & Diener, 2008; Pavot & Ed Diener, 1993; Shevlin, Brunsten, & Miles, 1998; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012; Wu & Wu, 2008).

The scale consists of 5 items and participants respond to each item using a 7-point Likert-type scale from 1 to 7 (1=strongly disagree, 2= disagree, 3= slightly disagree, 4= neither agree nor disagree, 5= slightly agree, 6= agree, 7=strongly agree). The overall score for the SWLS is the average score across the 5 items. The scale evaluated the subject's total score as 31-35 (extremely satisfied), 26-30 (satisfied), 21-25 (slightly satisfied), 20 (neutral), 15-19 (slightly dissatisfied), 10-14 (dissatisfied), and 5-9 (extremely dissatisfied). Table 2.16 show the scale items.

**Table 2.16** The SWLS items

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In most ways my life is close to my ideal.
The conditions of my life are excellent.
I am satisfied with my life.
So far I have gotten the important things I want in life.
If I could live my life over, I would change almost nothing.

---

### **2.3.22 Translation of the SWLS into Arabic**

The scale of SWLS was translated into 30 different languages including Arabic (see <http://internal.psychology.illinois.edu/~ediener/SWLS.html>). To assess the Arabic version, the researcher and the Iraqi interpreter translated the SWLS into Arabic again and compared the two copies with the Arabic version and the meaning with the English

version. The three Arabic versions were matched and merged to produce one version. This version was discussed and conducted on Iraqi groups (see scales translation).

### 2.3.23 Validation of SWLS Arabic version

#### 2.3.23.1 Internal consistency

Cronbach's alpha was conducted to ensure that the SWLS was internally consistent. Cronbach's alpha score was .75.

#### 2.3.23.2 Items-Total factor correlations

Correlation between items and total minus the item score were conducted. Table 2.17 shows that all the correlations were significant at the level of .01.

**Table 2.17** Item-total SWLS scale correlation

Items	2	3	4	5	Total score of SWSL
In most ways my life is close to my ideal.	0.45**	0.43**	0.36**	0.26**	0.69**
The conditions of my life are excellent.		0.59**	0.49**	0.25**	0.76**
I am satisfied with my life.			0.56**	0.24**	0.77**
So far I have gotten the important things I want in life.				0.29**	0.75**
If I could live my life over, I would change almost nothing.					0.59**

\*\*Correlation is significant at the 0.01 level (2-tailed).

#### 2.3.23.3 Test-retest reliability

Test-retest reliability was conducted to ensure that the SWLS was constant across time. Thirty-four participants re-completed the scale after an interval time of between 2 to 3 weeks. The correlation between the test and retest was .84. The significant correlation shows that the SWLS was reliable over time.

The psychometric properties of the Arabic version of SWLS (Appendix 8) had both internal and external consistency. Therefore, the Arabic version was a valid and reliable instrument to measure the satisfaction with life in the general Iraqi population.

### **2.3.24 Depression and somatic symptoms scale (DSSS; Hung et al., 2006)**

The literature review showed that depression and somatic symptoms are widely spread over psychological patients (Glaesmer et al., 2012).

Therefore, numerous studies have developed and used depression scales and somatic scales to assess and diagnose depression and somatic symptoms. The most common scale used to evaluate depression was the Hamilton Depression Rating Scale (HDRS; (Hamilton, 1967)). The original version contains 17 items and there are numerous versions of this scale with varying lengths. The scale has been translated into different languages. Another common scale is the Montgomery-Asberg Depression Rating Scale (MADRS) with 10 items and has good internal reliability and high correlation with the HDRS scale (Montgomery & Åsberg, 1979). Furthermore, Ebesutani et al. (2012) developed a shortened 10 item depression scale from a 25 item version of the Revised Child Anxiety and Depression scale. The new scale was administered in two child samples: a school-based sample of 1,060 children (median age 7 years) and a clinic-referred sample of 303 children. Alpha coefficients for the 10 item depression scale were .80 and .79 in the clinical and school sample, respectively. Wong, Wu, Guo, Lam, and Snowden (2012) in their study combined an 'emic' approach with item response analysis to develop a comprehensive measure of depression for Chinese-American individuals. Two scales were used in 3 studies: The 42-item Chinese American Depression Scale (CADS-42) and the scale for screening in primary care and community organisation; a 9-item scale (DADS-9). The analysis yielded a 9-item scale for depression. The Edinburgh Depression Scale (EDS) is a self-report questionnaire consisting of 10 items that are scored from 0 to 3 and has been used in different languages (Bunevicius, Kusminuteskas, Pop, Pedersen, & Bunevicius, 2009; de Cock, Emons, Nefs, Pop, & Pouwer, 2011). The scale has high predictive and concurrent validity (Bergink et al., 2011).

In Study 1, the Depression and Somatic Symptoms Scale (DSSS; (Hung et al., 2006) was used. Hung et al., found that it is important for depression diagnosis to study somatic symptoms for many reasons since studies have found that patients with somatic symptoms have more and longer depression than without (Lipowski, 1990). Moreover, there is a negative impact on depression diagnosis and treatment due to the presence of physical symptoms and most of the depression scales developed do not include somatic symptom items (Fava, 2003).

Therefore, Hung et al. (2006) merged the depression symptoms and somatic symptoms in one scale. They used 44 items that included 16 depression items and 28

somatic items to produce the Depression and Somatic Symptoms Scale (DSSS). The items were modified from several sources including the DSM-IV and many other scales of depression and somatic scales. The new scale composed 22 items with two subscales: Depression Subscale (DS, 12 items) and Somatic Subscale (SS, 10 items) including a 5 item Pain Subscale (PS). The scale of DSSS and HDRS were administered to a sample of 135 individuals (mean age, 31.3years, SD=8.2, 34 male and 101 female) who had experienced major depression. Of those participants, 95 (25 male and 70 female) underwent one month of treatment. It was also administered to a group of 139 individuals with non-Major Depression (mean age 32.6, SD=8.1; 50 males and 89 females). The internal consistency reliability of the DSSS and DS had a Cronbach's alpha of  $>.80$  for the two groups. The test retest reliability one week later was .92 for DSSS, .88 for DS, .90 for SS, and .90 for PS (all significant at  $p<0.01$ ). Furthermore, significant correlations were found between the scores of HDRS and DSSS and their subscales for convergent validity.

The scale was used in many depression studies and found significant correlation with other depression and somatic symptoms subscales (e.g. (Hung, Liu, Wang, Yao, & Yang, 2012; Hung, Wan, & Liu, 2009; Hung, Liu, Wang, Juang, & Yang, 2010). It has been used in different languages and cultures. For example, it has been used in Korea to assess the presence or absence of somatic symptoms with major depression and suggested that the assessment of a depressive patient should include painful physical symptoms items (Bahk et al., 2011). It has also been used in Slovenia (Plesničar, 2010) and the US (Kanter, Rusch, & Brondino, 2008).

In the DSSS, participants are asked to evaluate the severity of these symptoms they had experienced in the past week on a 4- point scale consisting of absent (there are no symptoms), mild (symptoms caused slight discomfort or disturbance), moderate (symptoms caused significant discomfort or disturbance), and severe (symptoms caused very significant discomfort or disturbance). The severity of each item of the DSSS was scored from 0 to 3. Scores range from 0 indicating no symptoms to 66 indicating high depression and somatic symptoms. Table 2.18 shows the DSSS and subscale items.

**Table 2.18.**The DSSS and their subscale items

Somatic subscale	Depression subscale
1. Headache *	2. Loss of interest in daily or leisure activities
3. Tightness in the chest	4. Insomnia
5. Muscle tension	6. Irritable mood
7. Back pain*	8. Unable to feel happy or decreased ability to feel happy
9. Dizziness	10. Depressed mood or tearful
11. Chest pain*	12. Feelings of self-reproach or guilt
13. Neck or shoulder pain*	14. Loss of interest in sex
15. Shortness of breath or difficulty breathing	16. Anxious or nervous
17. Soreness in more than half of the body's muscles*	18. Unable to concentrate
19. Palpitations or increased heart rate	20. Thoughts of death or suicidal ideas
21. Fatigue or loss of energy	22. Decreased appetite or loss of appetite

\*=Pain subscale item

### **2.3.25 Translation of the DSSS into Arabic**

The DSSS has been translated from English into different languages (see above) and administered to different cultures. An Arabic version was not available. Therefore, the DSSS was translated into Arabic by the researcher and Iraqi interpreter (see scales translation)

### **2.3.26 Validation of DSSS Arabic version**

#### **2.3.26.1 Internal consistency**

To ensure that the DSSS was internally consistent, Cronbach's alpha was conducted. Cronbach's alphas were .91 for DSSS, .87 for SS, and .85 for DS based on 408 participants in study1.

#### **2.3.26.2 Test-Retest Reliability**

To ensure that the DSSS was consist over time, 10% (36) participants were randomly selected from 408 participants to re-complete the scale after an interval time of between 2 to 3 weeks. The correlation between the test and retest were .87, .82.and .84



for the total scale, somatic symptom, and depression symptoms, respectively. The significant correlations showed that the DSSS was constant over time.

### 2.3.26.3 Construct validity, inter-items correlations

Correlations between items and their subscale' scores and the scale total score were conducted. Table 2.19 shows that all the correlations were significant at the level of .01 which indicates that the DSSS had construct validity.

**Table 2.19** Items correlation with their subscales and the total scores of the scale

	Correlation	
	with subscale	Correlation with total
<b>Somatic symptoms SS</b>		
1. Headache	.55**	.53**
2. Tightness in the chest	.71**	.65**
3. Muscle tension	.70**	.64**
4. Back pain	.61**	.57**
5. Dizziness	.68**	.66**
6. Chest pain	.70**	.63**
7. Neck or shoulder pain (or soreness)	.73**	.63**
8. Shortness of breath or difficulty breathing	.71**	.66**
9. Soreness in more than half of the body's muscles	.73**	.70**
10. Palpitations or increased heart rate	.67**	.65**
<b>Depression Subscale</b>		
1. Loss of interest in daily or leisure activities	.24**	.35**
2. Insomnia	.53**	.62**
3. Irritable mood	.49**	.62**
4. Unable to feel happy or decreased ability to feel happy	.46**	.60**
5. Depressed mood or tearful	.53**	.69**

6. Feelings of self-reproach or guilt	.41**	.58**
7. Loss of interest in sex	.34**	.49**
8. Anxious or nervous	.53**	.66**
9. Unable to concentrate	.49**	.64**
10. Thoughts of death or suicidal ideas	.40**	.49**
11. Fatigue or loss of energy	.56**	.67**
12. Decreased appetite or loss of appetite	.35**	.45**

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\*\* . Correlation is significant at the 0.01 level (2-tailed).

Another indication of construct validity was tested. There were significant correlation between the subscales themselves and the total score of the DSSS. The correlations are showed in Table 2.20.

**Table 2.20** The correlation between DSSS and its subscales

	Somatic symptoms	DSSS
Depression symptoms	0.73**	0.93**
Somatic symptoms		0.92**

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\*\* . Correlation is significant at the 0.01 level (2-tailed).

In conclusion, the DSSS (Appendix 9) was a valid and reliable instrument to measure Depression and Somatic symptoms following exposure to traumatic events. Therefore, it seems the scale was appropriate to use the DSSS to screen the symptoms in the Iraqi general population.

### 2.3.27 Self-report of Health

Participants were asked to indicate the emergence of diseases after exposure to trauma. There was no formal questionnaire, the participants need to indicate to which of these disease were presence such as diabetes, high blood pressure, heart disease, and skin problems. Participants were asked if they had experienced or are experiencing any of the above health issues and to indicate their responses in the form of yes/no. The scale is placed with the scale of DSSS see (Appendix 9).

### **2.3.28 Demographic characteristics**

Demographic information was requested, there is no formal questionnaire, and just a list of questions was presented to participants before the sense of coherence scale. Participants were asked to give demographic information such as sex, age, marital status, education, economical statuses, and the number of family members they have (see Appendix 6).

## **2.4 Methods and validation of Study 2**

This study aimed to test and validate three more scales that have not been used in Iraq before. The scales were the Health-Related Quality of Life SF-8 to measure the dimensions of the following: General health, physical functioning, role-physical, bodily pain, vitality, social functioning, mental health, and role emotionally. The Health-relevant 5-factor Personality inventory (HP5i) was used to measure 5 health-related facets of personality traits based on the Big Five: (i) Negative Affectivity (a facet of Neuroticism), (ii) Impulsivity (a facet of Conscientiousness), (iii) Hedonic Capacity (a facet of Extraversion), (iv) Alexithymia (a facet of Openness to experiences), and (v) Antagonism (a facet of Agreeableness). The Aggression Questionnaire (AQ) was used to measure aggressive behaviour.

### **2.4.1 Population and Participants**

The current study aimed to recruit 100 participants from the first study sample of 408 who had agreed to participate in this study. The primary researcher selected 30% of individuals from the group who had reported the highest rates of exposure to trauma and who had developed PTSD symptoms as well as 30% of individuals who did not report exposure to trauma and who had not developed PTSD symptoms. The research assistant team contacted 120 participants who fulfilled the above criteria. The participants were recruited according to the results of the first study and had provided written agreement to participate that they had signed in the first study. They provided the research team with their name and address details. PTSD symptoms were assessed using an SPTSS scale in the first study. All 120 of participants agreed to be a part of the second study during the first study application, and were informed they are free to withdraw any time if they did not want to continue in the study. Ten participants had been chosen in the 10% of first study validation (see study one) and had refused to participate again in the current study. Twenty individuals were unavailable. Only 60 of the original 120 individuals those who had been chosen to participate agreed to take part in this study.

In compliance with the regulations put forward by Heriot-Watt University, the primary researcher was not permitted to collect data in Iraq in person; similar to the first study. The same procedures of test administration were followed as in study 1.

Four master students at the DCEG at Diyala University administered the second study according to a contract between DCEG and HW (see Appendix 10). The primary researcher identified the target individuals whose responses came within the appropriate range of PTSDs scale in the first study. Persons whose PTSD scores were in the highest 30% or the lowest 30% selected for this study. The research assistants had received training by the DCEG to administer the measures in the second study and to collect the cortisol samples using the instructions provided by the primary researcher. They went to each eligible person and gave them verbal and written instructions with an explanation of the procedures of the study and on saliva collection (see the instruction for training of research assistant above).

Five saliva samples were collected on the same day. The first sample was collected immediately upon waking, the second after 15-30 minutes, the third at midday, the fourth in the evening (about 4pm), and the fifth before sleeping. The five times of sampling allowed testing the diurnal variation in the saliva concentration during a day. That because Cortisol is normally 10 times higher in the morning than at night and there is changing in cortisol pattern release, therefore, at least 4 sampling are needed throughout the day (<http://labtestsonline.org/understanding/analytes/cortisol/tab/sample>). The research assistants provided each person with suitable equipment and a plastic tube containing a cotton-wool swab on which the participants were instructed to chew lightly for saliva sampling, and to write their name and the time of sampling on it.

The participants were instructed not to eat, drink, or brush their teeth, as well as to desist from smoking prior to giving the first sample in the morning. Information for these behaviours, medications, as well as wake time and timing of each sample were collected to assess adherence to sampling instructions and possible confounding variables. Participants were instructed to store the samples in the fridge until a research assistant collected them on the second day when they administered the health-related quality of life scale, health-related personality traits scale, and the Aggression Questionnaire. The research team explained the instructions for sampling to those who agreed to take part in the study. A more detailed description of what participation entailed was provided. At this point, it was clearly explained to potential participants that involvement in the study was entirely voluntary and that if they wished to withdraw at any time, they were free to do so. The potential participants were asked to read the participant's information sheet

and to sign the participant consent form (Appendix 11). After the completion of the application process, the department sent the saliva and the answers via a safe recorded delivery service (DHL) to the primary researcher where the process of data analyses, data interpretations, and debriefing commenced. The saliva samples were sent to the Universitaet Trier FB I Psychologie lab in Germany via DHL for analysis. Two tests for each sample were conducted and the mean level of cortisol was obtained. The lab sent back the results. All the saliva samples were found to be valid for analysis and there were no damaged samples.

#### **2.4.2 Ethical issues**

Ethical approval was obtained from the Ethics Committee at Heriot-Watt University for this study as that mentioned in detail in the first study.

#### **2.4.3 Scales translation**

In the current study another two scales were used, Arabic version were not available. Therefore, the scales of Health-Related Quality of Life SF-8, Health-relevant 5- Factor personality inventory (HP5i) and Aggression Questionnaire (AQ) were translated into Arabic and back-translated by the researcher and Iraqi interpreter, who has good experience in both Arabic and English languages and who works for the City of Edinburgh Council. The two translations were matched and merged to produce one version. Then, the Arabic version was discussed with four Iraqi psychologists at the Department of Counselling and Education Guidance (DCEG) at the School of Basic Education at Diyala University. They suggested some modifications for some items and re-writing for some others to be consistent with the English version and to make it more suitable for an Iraqi general population. The Arabic version was conducted on 14 Iraqi general population individuals (9 men and 5 women aged over 25 years) to discuss the contents of items to ensure the Arabic versions was readable and understandable. As a result, all items provided similar meaning to the English version and understandable for the sample.

#### **2.4.4 Data collection**

Self-report scales were used to measure the variables of this study. These scales were Health-Related Quality of Life SF-8, the Health-Related 5-factor personality inventory (HP5i) scale (Gustavsson, Jönsson, Linder, & Weinryb, 2003), and the Aggression Questionnaire (Buss & Perry, 1992) details below). In addition, five saliva samples were requested. The participants were required to complete the above measures

so as to tap into each of these facets central to answer the research questions. The research assistants emphasised that there are no wrong or right answers. The research assistants gave the participants the saliva kit and clear instructions in one day and agreed to collect the samples along with the responses to the questionnaires on the second day. After the questionnaires had been completed by the participant, the scales were placed in an envelope by the participant and sealed with the details of the house address to be given to the direct supervisor of administration so that, provided the participant had given consent, they could be approached again at a later date to check the form had been completed correctly and if another testing session may be required. The direct supervisor of the data collections selected randomly 20% of the participants for auditing to make sure those participants involved in the study went on to answer the measurements by themselves. This procedure was carried out so as to prevent fraudulent activity on the part of the research assistant such as creating answers to questions that the participant may have missed. Moreover, the questionnaires from this procedure were used in scales validation after the current study. After the completion of the collection process, the department sent the answers and the saliva samples via a safe recorded delivery service (DHL) to the primary researcher where the process of data analyses, data interpretations using SPSS software, and debriefing commenced and sent the saliva samples to the lab for analysis. Also, the primary researcher shared information about the study procedure and also on collecting data with departmental staff.

#### **2.4.5 Participant description**

The study recruited 60 people from both genders (as described above). All responded to the study questionnaires and gave saliva cortisol samples. Of the group, 52 (33, 63.5% male; 19, 36.5%, female) questionnaires were valid for the final analyses. The average age was 36.46 years (range 25-50). Thirty-seven (71.2%) were married, 13 (25%) were single or widowed, and the rest were either divorced or separated. More than 65.4% had less than \$500 income per month. In terms of the highest level of education achieved, the sample was distributed as follows: Primary school (7.76%), secondary school (21.2%), university (65.4%), and post-graduate (5.8%). Eighty-three percent of participants had a family size of between 3 and 8 members. The average family size in Iraq is 6. Table 2.21 displays these demographics.

**Table 2.21** Demographic information of the study sample

Demographic Information	Number of people	Percentage of People
Male	33	63.5
Female	19	36.5
Married	37	71.2
Single or widow	13	25.0
Divorced or separated	2	3.8
Income Less than \$500	34	65.4
Income More than \$500	18	34.6
Primary school	4	7.7
Secondary school	11	21.2
University	34	65.4
Post-graduate	3	5.8

#### **2.4.6 Validation Study 2**

#### **2.4.7 Health-Related Quality of Life SF-8**

The literature review showed that Health-Related Quality of Life (HRQL) was assessed using different scales. These scales are those such as HRQL SF-36 based on 36 items, HRQOL, 31 items, and SF-12 based on 12 items, have been used extensively with the general population and with samples of different patients worldwide (Aitken et al., 2007; Endermann & Zimmermann, 2009; Lin et al., 2009; Sciolla, Patterson, Wetherell, McAdams, & Jeste, 2003; Tucker, Adams, & Wilson, 2010; Vogel et al., 2012; Wang et al., 2012; Ware, Bayliss, Rogers, & Kosinski, 1996).

In the Study 2, the short form of HRQL-SF-8 was used. Using the SF-36 with the general population or with specific patient groups showed that a lot of them did not complete the scale or they needed assistance (Lefante Jr, Harmon, Ashby, Barnard, & Webber, 2005). Therefore, Quality Metric developed an 8-item short scale for the HRQL using the standard SF-36 and SF-12 questionnaires. The new short scale (HRQL-SF-8) achieved a correlation of .88 in prediction with mental component (MCS-36) and .82 with physical component (PCS-36). Test- retest reliability of the SF-8 was investigated and was confirmed to be strong (Ware, Kosinski, Dewey, & Gandek, 2001). The scale was used by Lefante Jr et al. (2005) and stated that the scale is useful as a comparison

tool between a population with chronic illness and that with the sample in the current study suffering from PTSD disorder.

The SF-8 was constructed to provide a shorter measurement for use with a large general population sample or with a specific patient group (Turner-Bowker, Bayliss, Ware, & Kosinski, 2003). Therefore, Bayard, John, Kaducu, Thomas, and Egbert (2008) used the SF-8 to assess the general physical and mental health among a population who had been affected by conflict in Northern Uganda and to test the validity and reliability of the SF-8. A sample of 1,206 adults with and without PTSD symptoms and depression was recruited. Using a principal component analysis, the study found that the SF-8 consisted of two constructs: Physical and mental health. Inter-class correlations test-retest reliability from 82 individuals were .61 using Physical Component Summary (PCS) and .68 for Mental Component Summary (MCS). The items 1-4 were associated strongly with PCS ( $r \geq .70$ ) and these items were weakly associated with MCS ( $r \leq .30$ ). Items 6-8 showed a strong correlation with MCS ( $r \geq .70$ ) and a weak correlation with PCS ( $r \leq .30$ ). Item 5 'vitality' had a stronger correlation with PCS than with MCS. The study found that the SF-8 subscale had moderate correlations with PTSD and depression.

The scale was widely used and validated in different cultures such as Irish (Houghton & Cowley, 2005), Spanish (Valles et al., 2010), Japanese (Miyashita et al., 2008; Tokuda et al., 2008; Tokuda et al., 2009), in the USA (Lefante Jr et al., 2005; Williams, Wagner, Kannan, & Bolge, 2009), and in German (Beierlein, Morfeld, Bergelt, Bullinger, & Brähler, 2012).

Cronbach's alpha for the Spanish version of the SF-8 was .92 in a sample of 2,991 patients over 18 years old (Valles et al., 2010). The reliability was assessed using SF-36 and SF-12 in many studies (Turner-Bowker, Bayliss, Ware, Jr, & Kosinski, 2003).

Turner-Bowker, Bayliss, Ware, et al. (2003) tested the convergent-discrimination validity of the SF-8 by comparing the SF-8 and SF-36v2 correlation on a sample of 7,557 participants who had responded via the internet. The convergent correlations for the two scales ranged from .67 to .84. The SF-8 correlated highly with the SF-36v2 scale ( $r = .77$ ).

The SF-8 is a single item scale. Each item has a 5 or 6 point response. The PCS was derived from subscales 1-4 and MCS was derived from subscales 5-8. The scale and its items are displayed in Table 2.22.



**Table 2.22** The SF-8 and its items

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1. Overall, how would you rate your health during the past week?					
Excellent	Very good	Good	Fair	Poor	Very poor
2. During the past week, how much did physical health problems limit your usual physical activities (such as walking or climbing stairs)?					
Not at all	Very little	Somewhat	Quite a lot	Could not do physical activities	
3. During the past week, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?					
None at all	A little bit	Some	Quite a lot	could not do daily work	
4. How much bodily pain have you had during the past week?					
None	Very mild	Mild	Moderate	Severe	Very Severe
5. During the past week, how much energy did you have?					
Very much	Quite a lot	Some	A little	None	
6. During the past week, how much did your physical health or emotional problems limit your usual social activities with family or friends?					
Not at all	Very little	Somewhat	Quite a lot	Could not do social activities	
7. During the past week, how much have you been bothered by emotional problems (such as feeling anxious, depressed or irritable)?					
Not at all	Slightly	Moderately	Quite a lot	Extremely	
8. During the past week, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities?					
Not at all	Very little	Somewhat	Quite a lot	Could not do social activities	

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#### **2.4.8 Translation of the SF-8 into Arabic**

Different versions of SF-8 have been developed, translated and used in more than 30 different countries (Turner-Bowker, Bayliss, Ware. Jr, et al., 2003; Valles et al.,

2010). There are three versions of the SF-8 depending on the recall period: 4-week, acute 1-week, and acute 24-hour. The acute 1-week was adopted in the current study due to ongoing event changes in Iraq. A systematic study was conducted to review 20 studies that reported Arabic translations to identify measures translated into Arabic. The study confirmed that the health-related quality of life measures that translated into Arabic were SF-36, RAND-36, the World Health Organization Quality of Life WHOQOL-Brief, COOP/WONCA charts, and Quality of Life Index (QLI) but the SF-8 is not available in Arabic (Al Sayah, 2013). Therefore, the SF-8 was translated into Arabic and back-translated by the researcher and Iraqi interpreter see scales translation

#### **2.4.9 Validation of SF-8**

##### **2.4.9.1 Internal consistency**

Cronbach's alpha was conducted to ensure that the SF-8 was internally consistent. The Cronbach's alpha score for the whole scale was .60. Thus, with a short scale of fewer than ten items, as in this case, it is common to find low Cronbach's values (e.g. .5; (Pallant, 2010). The sample in the study 2 was very small; only 46 individuals were included for the final analysis.

##### **2.4.9.2 Test retests reliability**

To ensure that the SF-8 was consistent across time, 12 participants were randomly selected from the 46 participants to re-complete the scale after an interval time of 2 to 3 weeks. The correlation between the two tests was .82, .78, and .76 for total scale, PCS, and MCS, respectively.

The psychometric properties of the Arabic version of the SF-8 (Appendix 12) had both internal and external consistency. Therefore, the instrument of SF-8 Arabic version was reliable and valid to measure the Health-Related Quality of Life in the Iraqi general population.

#### **2.4.10 Health-relevant 5-Factor personality**

##### **inventory (HP5i): (Gustavsson et al., 2003).**

A significant amount of literature has shown that personality traits related to health, although there are many instruments to measure the personality traits such as FFM and BF5, has been widely used in personality research (see Neuroticism section). However, exposure to traumatic events may lead to different disorders in addition to PTSD. Therefore, the assessment of the differences between those individuals who develop

PTSD and those who do not is essential to understand the effect of stress and its consequences on health-related personality.

In the Study 2, the Health-relevant 5-Factor Personality inventory "HP5i" (Gustavsson et al., 2003) was selected to assess the health related to personality traits after exposure to traumatic events.

Gustavsson et al. (2003) aimed to construct a short inventory of health-related-personality traits applicable to health and personality research. In the development of the new scale, 135 items were pooled from the Karolinska Scale of Personality (KSP). In addition to items of the new version of the KSP that were developed in Sweden, the items of the Swedish university Scale of Personality (SSP) were used as well. Two samples of participants were used. One comprised 183 individuals from the general population forming a normative sample aged between 20 and 75 years. The second sample comprised 139 health volunteers. Three other samples were used as cross-validation samples.

The scale included five personality constructs that were either theoretically or empirically related to health outcomes. The five subscales were as follows: (i) Antagonism as a health-relevant facet of Agreeableness, (ii) Impulsivity as a health-relevant facet of Conscientiousness, (iii) Hedonic capacity as a health-relevant facet of Extraversion, (iv) Negative affectivity as a health relevant facet of Neuroticism, and (v) Alexithymia as a health-relevant facet of Openness. The principal axis factor extracted five factors and factor analyses revealed a scale of 20 items; 4 items for each of the 5 subscales. The cross-validation for the items and the five subscales was conducted. The items total correct correlation ranged between .23 and .58, and between .33 and .60 in the patient sample. In conclusion, the scale had good internal consistency with mean inter-correlation of .30. Cronbach's alpha levels for the first sample were .65, .66, .66 and, .54 and .69, and for second sample were .67, .67, .76, .65, and .70 for the scales of Antagonism scale, Impulsivity, Hedonic , Negative Affectivity, and the Alexithymia scale, respectively. Overall, the scale was a valid and reliable measurement to assess health-related personality traits.

The development and construction of a short personality inventory specifically for measuring health and personality traits was needed for many reasons: (i) The aetiology of disorder may be related to specific personality traits; (ii) Personality traits may play an important role in enhancing unhealthy behaviours; (iii) The individual psychosocial responses to life event and diseases may be affected by personality traits such as coping and social support or treatment.

The scale has been used around the world to assess personality traits with different illnesses (Damberg et al., 2003; Gunnarsson, Gustavsson, Tengström, Franck, & Fahlke, 2008). Axelsson et al. (2009) aimed to determine whether personality traits were related to asthma in young adult asthmatics and examined the influences of personality traits on adherence to asthma treatment. A sample of 268 individuals with an average age 20 years was selected. The sample was divided into two groups: The first group comprised 159 individuals who did not take regular asthma medication and the second group comprised 109 individuals who took regular asthma medication. Cronbach's alpha for the HP5i in the study for the first group was .62, .64, .72, .70, and .72, for Negative affectivity, Antagonism, Impulsivity, Hedonic capacity, and Alexithymia, respectively. The study found that some of the personality traits were associated with adherence.

The scale consisted of 5 subscales each with 4 items and the responses to each item used a 4-point Likert-type scale from 1 (Does not apply at all), 2 (Does not apply very well), 3 (Applies pretty much), and 4 (Applies completely). Table 2.23 shows the scale and subscales items.

**Table 2.23** The HP5i and its subscale items

Antagonism	<ol style="list-style-type: none"> <li>1. I'm good at making sarcastic comments.</li> <li>2. If someone treats you badly, I basically feel you should treat them the same way back.</li> <li>3. If someone criticises me, I'm not afraid of giving sharp and sarcastic answers</li> <li>4. Anyone who offends me or my family or friends can expect trouble</li> </ol>
Impulsivity	<ol style="list-style-type: none"> <li>1. I have a tendency to act on the spur of the moment without really thinking ahead.</li> <li>2. I often take on things too hastily.</li> <li>3. I usually talk before I think.</li> <li>4. I consider myself an impulsive person.</li> </ol>
Hedonic capacity	<ol style="list-style-type: none"> <li>1. I often feel uplifted when I listen to good music.</li> <li>2. I find it easy to enjoy life.</li> <li>3. I often feel happy and sort of elated when I'm about to meet a close friend.</li> <li>4. I'm always keen to try out new things.</li> </ol>

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Negative affectivity	<ol style="list-style-type: none"> <li>1. I often feel uneasy and uncomfortable for no apparent reason.</li> <li>2. I'm easily pressured when told to speed up my work.</li> <li>3. I often get so tense it wears me out.</li> <li>4. An unexpected noise makes me jump.</li> </ol>
Alexithymia	<ol style="list-style-type: none"> <li>1. I don't usually analyse my feelings.</li> <li>2. I think people often tend to exaggerate the importance of their emotions.</li> <li>3. I often find it hard to understand what people mean when they talk about their feelings.</li> <li>4. I prefer not to get involved in other people's problems.</li> </ol>

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### **2.4.11 Translation of the HP5i into Arabic**

The HP5i scale has been translated from English into different languages (see above) and administered to different cultures. An Arabic version was not available. Therefore, the HP5i was translated into Arabic by the researcher and an Iraqi interpreter (see study two scales translation).

### **2.4.12 Validation of HP5i Arabic version**

#### **2.4.12.1 Internal consistency**

To ensure that the HP5i had internal consistency, Cronbach's alpha was conducted and the scores were .50, .61, .68, .66, and .70 for Antagonism , Impulsivity, Hedonic capacity, Negative affectivity, and Alexithymia, respectively.

#### **2.4.12.2 Items-total factors correlations**

Correlations between items and subscale minus the item score were conducted. Table 2.24 shows that all the correlations were significant at the level of .01.

**Table 2.24** Correlation between subscales of HP5i and their items.

Subscales items	Correlation with subscale
<b>Antagonism</b>	
I'm good at making sarcastic comments.	0.50
If someone treats you badly, I basically feel you should treat them the same way back.	0.73
If someone criticises me, I'm not afraid of giving sharp and sarcastic answers	0.68
Anyone who offends me or my family or friends can expect trouble	0.52
<b>Impulsivity</b>	
I have a tendency to act on the spur of the moment without really thinking ahead.	0.71
I often take on things too hastily.	0.64
I usually talk before I think.	0.6
I consider myself an impulsive person.	0.76
<b>Hedonic capacity</b>	
I often feel uplifted when I listen to good music.	0.64
I find it easy to enjoy life.	0.67
I often feel happy and sort of elated when I'm about to meet a close friend.	0.48
I often find it hard to understand what people mean when they talk about their feelings.	0.50
<b>Negative affectivity</b>	
I often feel uneasy and uncomfortable for no apparent reason.	0.56
I'm easily pressured when told to speed up my work.	0.43
I often get so tense it wears me out.	0.58
An unexpected noise makes me jump.	0.68
<b>Alexithymia</b>	
I don't usually analyse my feelings.	0.57
I think people often tend to exaggerate the importance of their emotions.	0.63
I often find it hard to understand what people mean when they talk about their feelings.	0.59
I prefer not to get involved in other people's problems.	0.57

The correlations among subscales themselves were conducted. Table 2.25 shows that all correlations were significant at the levels of .01 and .05. However, some

correlations among the personality scales were not significant or relatively low or negative which could be explained by fewer items in the HP5i as found in Gunnarsson et al. (2008) and may be due to the small sample used in this study as well.

**Table 2.25.**The correlation among subscales of HP5i

Subscale	2	3	4	5
1. Antagonism	-0.46**	0.18*	0.25*	0.30**
2. Impulsivity		-0.11	0.12	-0.31**
3. Hedonic capacity			-0.14*	0.25*
4. Negative affectivity				0.28*
5. Alexithymia				

\*\*p<.01, \*p<.05.

#### 2.4.12.3 Test-Retest Reliability

To ensure that the HP5i was consistent over time, 15 participants were randomly selected from a sample of 52 to re-complete the scale after an interval time of between 2 to 3 weeks. The correlations between test and retest were .87, .82, .76, .78, and .84 for Antagonism, Impulsivity, Hedonic capacity, Negative affectivity, and Alexithymia, respectively. The significant correlations showed that the HP5i was constant over time.

The psychometric properties of the Arabic version of the HP5i (Appendix 13) had both internal and external consistency. Therefore, the Arabic version was a valid and reliable instrument to measure the satisfaction with life in a general Iraqi population.

#### 2.4.13 Aggression Questionnaire (AQ)

The literature review showed that there are correlations between aggressive behaviour and conflict as an adolescent is described as more aggressive and revengeful in war zone situations than in normal environment (Qouta, Punamaki, Miller, & El-Sarraj, 2008). Furthermore, personality traits, in particular Neuroticism and Agreeableness, were found to correlate to some kind of aggressive behaviour (Burt & Donnellan, 2008; Tremblay & Ewart, 2005). Therefore, examining the aggressive behaviour in people exposed for a long time to war and conflict was very important in the current study.

A variety of scales have been used to measure aggressive behaviour. The most common scale widely used between 1960 and 1989 was developed by Buss and Durkee (1957). The Buss-Durkee Hostility Inventory (BDHI) consists of 66 items divided into 7 subscales. Items with true/false responses measure different types of hostility (Bushman, Cooper, & Lemke, 1991). For example, in the assessment of aggression in

children and adolescents, Raine et al. (2006) developed a 23-item scale of two factors model; the Reactive-Proactive Questionnaire (PRQ). The scale measured general aggression in adolescents. The scale confirmed the two factors and was found to be valid and reliable in a sample of 334 boys aged 16. The scale was administered to a sample of 1,447 Italian adolescents and had good consistency (alpha .90 and .91 for proactive and reactive, respectively; (Fossati et al., 2009). Furthermore, in the Turkish model of the PRQ, confirmatory factor analysis found the same structure of two factors and there were no differences between boys and girls in their sample of 1,081 children (544 boys and 537 girls aged 9 to 14 years; (Baş & Yurdabakan, 2012).

In the study 2, the 29-item Aggression Questionnaire (AQ) that was developed by Buss and Perry (1992) was used to assess aggressive behaviours in an Iraqi sample who had been exposed to traumatic events. The AQ may be the most widely used questionnaire to measure aggression in the research. The scale consists of 29 items that measure 4 aggression traits: (i) Physical aggression, (ii) Verbal aggression, (iii) Anger, and (iv) Hostility. The questionnaire was constructed and based on 52 items derived from an earlier hostility inventory conducted on a large group of college students. The sample consisted of 1,253 students (612 men and 641 women; aged 18 to 20 years), who were divided into 3 subsamples. Four rotated factors were provided from the correlation matrix of factor analysis of 52 items; Physical, Verbal, Anger, and Hostility. In the final form of the questionnaire, only 29 of 52 items met the criteria of loading at least .35 on its factor. The internal consistency for the total questionnaire and the 4 subscales as assessed using alpha levels using the whole sample were .89, .85, .72, .83, and .77 for the total score, Physical aggression, Verbal Aggression, Anger, and Hostility, respectively. The 4 subscales were found to correlate moderately with each other and with the total score range from .25 to .48. The reliability of the questionnaire was examined by test-retest on a sample of 372 subjects with an interval time of 9 weeks. The correlations between test and retest for the total and the 4 subscales were; .80, .80, .76, .72, and .72 for total score, Physical Aggression, Verbal Aggression, Anger, and Hostility, respectively (Buss & Perry, 1992).

A recent study examined the structure of the AQ using 4 samples. The confirmatory factor analysis with a sample of 1,154 respondents yielded a refined 12-item scale as the 4 factor model in the original AQ. The new short form, the AQ-12, has good construct validity and reliability (Bryant & Smith, 2001).

Since its construction, the AQ has been widely used in different cultures and languages and numerous studies have examined its validity and reliability. These studies



found the questionnaire of the AQ -29 to be valid and reliable (Abasiubong, Abiola, & Udofia, 2011; Archer, 2006; Gerevich, Bácskai, & Czobor, 2007; Tremblay & Ewart, 2005). In a sample of 967 Chinese male prisoners, internal consistency was found to range from .56 to .75 and the test-retest reliability values were .76, .60, .71, .74, and .78 for Physical aggression, Verbal aggression, Anger, Hostility, and total score, respectively (Li, Xi, Niu, Wen, & Du, 2010).

The AQ (Buss & Perry, 1992) is a 29-item scale comprising 4 subscales: Physical aggression (9items), Verbal aggression (5items), Anger (7items), and Hostility (8items). The responses to the scale are on a 5-point scale from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). The total score for each scale is the sum of its items and the total score is the sum of the 4 subscales with the reverse scoring of two items. The aggression scale and its 4 subscales with respective items are displayed in Table 2.26.

**Table 2.26.** The Aggression Questionnaire items and its subscales

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**Physical Aggression (PA)**

1. Once in a while I can't control the urge to strike another person.
2. Given enough provocation, I may hit another person.
3. If somebody hits me, I hit back
4. I get into fights a little more than the average person.
5. If I have to resort to violence to protect my rights, I will.
6. There are people who pushed me so far that we came to blows.
7. I can think of no good reason for ever hitting a person.
8. I have threatened people I know.
9. I have become so mad that I have broken things.

**Verbal Aggression (VA)**

1. I tell my friends openly when I disagree with them.
2. I often find myself disagreeing with people.
3. When people annoy me, I may tell them what I think of them.
4. I can't help getting into arguments when people disagree with me.
5. My friends say that I'm somewhat argumentative.

**Anger (A)**

1. I flare up quickly but get over it quickly.
2. When frustrated, I let my irritation show.
3. I sometimes feel like a powder keg ready to explode.

4. I am an even-tempered person.
5. Some of my friends think I'm a hothead.
6. Sometimes I fly off the handle for no good reason.
7. I have trouble controlling my temper.

### **Hostility (HS)**

1. I am sometimes eaten up with jealousy.
2. At times I feel I have gotten a raw deal out of life.
3. Other people always seem to get the breaks.
4. I wonder why sometimes I feel so bitter about things.
5. I know that 'friends' talk about me behind my back.
6. I am suspicious of overly friendly strangers.
7. I sometimes feel that people are laughing at me behind my back.
8. When people are especially nice, I wonder what they want.

## **2.4.14 Translation of the Aggression Questionnaire into Arabic**

The scale of AQ has been translated into different languages but an Arabic version was not available. The researcher and the Iraqi interpreter translated the AQ scale into Arabic (see study two scale translation).

## **2.4.15 Validation of AQ**

### **2.4.15.1 Internal consistency**

Cronbach's alpha was conducted to ensure that the AQ was internally consistent. Cronbach's alphas were .80, .60, .63, .74, and .61, for total score, Physical aggression, Verbal aggression, Anger, and Hostility, respectively.

### **2.4.15.2 Subscale-Total score correlations**

Correlations between the subscales themselves and with total score were conducted. Table 2.27 shows that all the correlations were significant at the level of .01.

**Table 2.27** The correlation between subscales and total score of AQ

	Verbal aggression	Anger	Hostility	TAQ
Physical aggression	.45**	.51**	.39**	.83**
Verbal aggression		.38**	.39**	.68**
Anger			.39**	.73**
Hostility				.73**

\*\*p<.01

### **2.4.15.3 Reliability**

Test-retest reliability was conducted to ensure that the AQ was constant across time. Fifteen participants re-completed the scale after an interval time of between 2 to 3 weeks. The correlations between test and retest were .78, .74, .72, .78 and .70 for Physical aggression, Verbal aggression, Anger, Hostility, and total score, respectively. The significant correlations show that the AQ was reliable over time.

The psychometric properties of the Arabic version of the AQ (Appendix 14) had both internal and external consistency. Therefore, the Arabic version was a valid and reliable instrument to measure aggressive behaviours of individuals in the general Iraqi population.

## **2.5 Methods and Validation Study 3**

This study aimed to screen the experiences of traumatic events using the Bagdad Trauma History Screen BTHS and post-traumatic stress disorder using SPTSS to examine the prevalence of PTSD that were validated in study one. Another instrument was also validated in the current study that has not been used before in Iraq. The scale was the Big Five Inventory (BFI) to test personality traits in addition to examining saliva cortisol levels in order to compare between those who developed PTSD and those who did not.

### **2.5.1 Population**

The sample was chosen from an Iraqi community who lived in the UK and who were students or refugees. The numbers of Iraqi refugees in the UK are not exactly known because the number of Iraqi civilians living in the UK has changed rapidly due to asylum movement. According to the 2001 Census, there were 32,000 Iraqi born people in Britain ([http://news.bbc.co.uk/1/shared/spl/hi/uk/05/born\\_abroad/countries/html/iraq.stm](http://news.bbc.co.uk/1/shared/spl/hi/uk/05/born_abroad/countries/html/iraq.stm)). In addition, there are more than 1,000 scholarship students in the UK according to informal information from the Iraqi Consulate. All available Iraqi people, that researcher could get their contact address, who now live in the UK were contacted by the researcher by telephone, e-mail, and/or in person to ask them about trauma they may have experienced and inform them of the nature of the study. Contact was made with friends and other people whom the researcher knew. The researcher asked them to provide 4 names of their Iraqi friends. Those people contacted their friends to explain the study, invited them to participate, and provide each person who agreed to participate with the researcher's e-

mail address and telephone number. The first 4 people named another 2 Iraqi people for the same purpose. The selection criteria were as follows: (i) individuals who have lived in Iraq during the latest war (2003-2008); (ii) those who have moved to live in the UK for study or as refugees; (iii) those whose age falls within the range of 25-50 years (the same age range of the first study who are presumed to have been exposed to more war-related trauma); and (iv) an equal number of both genders.

The primary researcher provided potential participants with an information sheet about the procedure describing the purpose of the study. The researcher contacted those who desired to participate in person.

### **2.5.2 Sample selection**

The study recruited 150 Iraqi people who had been exposed to traumatic events relating to war experiences and who lived outside their home country. The current residence outside the participant's home country would not affect the experience of exposure to trauma. Priebe et al. (2010) suggested that most types of stressful war experience are more likely to be risk factors of PTSD and MD. This result did not differ even when adjusted for age, gender, education, and current residence whether within or outside their home country (Priebe et al., 2010). Therefore, for individuals whom had been exposed to war experiences, living outside their home country should not change nor diminish their experience. The researcher had contacted those who desired to participate in person and they had agreed a time and place to answer the questionnaires (i.e., their house, the researcher's house, or the psychology department laboratory).

### **2.5.3 Procedures**

A week prior to commencing data collection, the researcher investigated the potential participants' war experiences and determined whether they met the criteria mentioned above. Exposure to war trauma was assessed in this study by using the Baghdad Trauma History Screen (BTHS; (Jaber, 2010) to identify individuals who had been exposed to war trauma. The PTSD symptoms were assessed using the SPTSS scale. Personality traits were assessed using the BFI. From 150 people, only 62 met the criteria. The researcher then proceeded to administer the questionnaires and collect the data.

After administering and analysing the questionnaires and that of the SPTSS questionnaire, the researcher asked 20 eligible people of the 51 who responded to the questionnaires and that were valid for final analysis (12 invalid questionnaires) to participate in providing a saliva sample and be involved in a qualitative study. Of the 20 participants, 17 individuals agreed to take part in an interview and provide saliva samples

(the procedure and selected participants for interview are outlined in detail in Chapter 6); 9 with PTSD symptoms (5 men and 4 women), and 8 without PTSD symptom (4 men and 4 women).

Five saliva samples were collected in one day. The first sample was collected immediately upon waking, the second after 15 minutes, the third in the mid-interview, the fourth at the end of interview, and the fifth, before sleeping. The researcher provided each person with suitable equipment and a plastic tube containing a cotton-wool swab on which the participants were instructed to chew lightly for saliva sampling and to write their name and the time of sampling on it. The researcher provided all potential participants with verbal and written instruction for saliva sampling. The participants were instructed to keep the sample in the fridge until a researcher collected them on the following day.

#### **2.5.4 Ethical Issues**

Studies endorsing human participant responses to self-reports bring to the fore some ethical issues. For this, in the current studies that include responses to self-report scales about traumatic stress and PTSD symptoms, distressful feelings might be evoked. In addition, the studies used many scales, cortisol samples, and interview techniques. Ethical approval was obtained from the Ethics Committee at Heriot-Watt University for studies two and three as these studies recruited human participants. A consent form (Appendix 15) was presented to the participants to sign before they participated in the studies. The form included the purpose of the study (i.e., administering questionnaires, interview, and saliva cortisol samples) and the study procedures including the response to paper-based questionnaires about traumatic events, post-traumatic stress symptoms, and personality traits. In addition, the participants were informed in the form that those who fit the second study's criteria would be asked to take part in the study. They were also told that the second study included interview and saliva cortisol samples. It was explained that due to their responses to the questionnaires, some distress might be experienced. In this case, they were provided with three organisations who offer assistance free of charge. In terms of conditions of participation, they were told that they would be free to withdraw their consent and discontinue participation at any time without negative consequences. Their participation in this study was confidential, anonymous, and voluntary, and data from this study may be published.

### **2.5.5 Data collection**

Self-report scales were used to measure the variables of this study. These scales were Baghdad Trauma History Screen (BTHS;(Jaber, 2010), the SPTSS scale(Carlson, 2001), and the Big Five Inventory (BFI; John & Srivastava, 1999;(John & Srivastava, 1999a); details below). The participants were required to complete the above instruments so as to tap into each of these facets central to answer the research questions. The researcher emphasised that there were no wrong or right answers. The researcher gave all important information to the participants before administrating the questionnaires. When the participants completed the questionnaires, the scales were placed in an envelope by the participant and sealed with the details of the participant so the researcher could approach the participant again at a later date to check the form had been completed correctly or if another testing session would be required. The researcher selected randomly 20 of the participants for auditing and for use in scales validation thereafter in the current study. After the application process had been completed, the process of data analysis and data interpretations commenced using SPSS software alongside debriefing and sent the saliva samples to theUniversitaet Trier FB I Psychologie lab in Germany for analyses.

### **2.5.6 Participants description**

In the current study, 62 people agreed to take part and answer the questionnaires. Of them, 51 questionnaires were valid for final analysis; 34 (66.7%) were male and 17, (33.3%) were female. The average age was 35.49 years (range 27- 44). Forty-one (80%) of them were married, 9 (17.6%) were single or widowed and 1 (2.0%) was divorced. All participants had more than £1200 income per month. With respect to the highest level of education achieved, 7.8% had secondary school, 29.4% had achieved university education level, and 62.7% had a post-graduate education. In terms of the number of family members, the participants' average family size ranged from 3 to 5 members; the average was 4.33. The average family size in Iraq is 6 members.

### **2.5.7 Big Five Inventory (BFI)**

The Big Five Inventory (BFI; John & Srivastava, 1999) was reviewed and translated in the first study (see the scale of Neuroticism) and one subscale, the Neuroticism, was validated and used. In this section, the 5 subscales of the BFI 44-item scale were validated.

## **2.5.8 Validation of BFI**

### **2.5.8.1 Internal consistency**

Cronbach's alpha was conducted to ensure that the BFI had internal consistency. Cronbach's alpha levels were .64, .52, .67, .74, and .60 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness, respectively.

### **2.5.8.2 Test-retest reliability**

Test-retest reliability was conducted to ensure that the BFI subscales were constant across time. Only 17 out of 20 participants agreed to re-complete the scales after an interval time of between 15 to 20 days. The correlation between test and retest was .82, .78, .80, .84, and .81 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness, respectively. The significant correlations show that the BFI scale was reliable over time.

The psychometric properties of the BFI Arabic version (Appendix-16) had both internal and external consistency and therefore, it was a valid and reliable instrument to measure the personality traits in a general Iraqi population sample.

## **2.6 Methods of Study 4**

Study 4 was a qualitative study conducted on 17 Iraqi people who had left Iraq to live in the UK out of 51 Iraqi students and refugees those who participate in study3. The participants were (8 female and 9 male), 9 with PTSD symptoms (5 men and 4 women), and 8 without PTSD symptom (4 men and 4 women). The interviews were conducted in interviewer's houses or university lab after sign the participants consent form (see Appendix 17).

The aim of the study was to achieve a further understanding of traumatic stress and its consequences on people who had been subjected to such experiences. Choosing the sample, the ethical issues, and consent form were presented with study three as the sample were derived from the participants in the third study. Choosing the sample and study procedures are mentioned with full details in Chapter 6.

### **Chapter 3: Exposure to trauma and symptoms of PTSD and risk factors: A population study in Iraq**

This chapter aims to examine the extent to which traumatic events and PTSD symptoms prevail among the Iraqi general population in Baquba city as well as to detect factors that affect the prevalence of PTSD symptoms. The current study examines the prevalence of traumatic events, PTSD symptoms, the personality trait of neuroticism, depression and somatic symptoms, sense of coherence, life satisfaction, and coping strategies. Furthermore, comparisons of these variables between sex and age groups were conducted. Factors that may predict PTSD were also examined

The procedure for collecting data and the validation of the 7 scales used in the current study were conducted. The scales were as follows: Trauma history, post traumatic disorder, coping strategies, sense of coherence, Neuroticism, depression and somatic symptoms, and life satisfaction. Their psychometric properties were previously examined in Chapter 2.

The characteristics of participants were described in Chapter 2. Responses from 408 participants were analysed. To compare between ages, and to find the interaction between specific age and the sex of participants in different variables, the participants were divided into three subgroups: Those under 30 years of age, from 31 to 39 years, and over 40 years. The older people, due to long time of wars and conflicts in Iraq, might exposed to more traumatic events than younger. Therefore, these age groups make it easy to examine the interaction between age and sex with different variable in this study. The three age groups were consisted a nearby number of participants. Many statistical tests were used in the current study such as t-test, Chi-Square, One-way ANOVA to examine the differences between sexes, age groups within subject. In order to assess the predictor factors of PTSD, multiple regression were used too.

The current study was designed to answer the following questions:-

1. What is the proportion of Iraqi people who have been exposed to traumatic events and developed PTSD?
2. Is there a relationship between exposure to trauma and the symptoms of PTSD in the population of Iraq?
3. Do psychological traits, coping strategies and sense of coherence mediate the relationship between exposure to trauma and PTSD?
4. Is the developing of PTSD related to significant differences in individuals' coping strategies and sense of coherence?



5. Is the developing of PTSD associated with significant differences in individuals' neuroticism, depression and health indicators?
6. What is the relationship between personal demographics and the developing of PTSD after exposure to traumatic events?

### **3.1 Traumatic events**

The exposure to traumatic events and whether they meet the DSM-IV criteria was required to examine PTSD. The experiences of traumatic event by participants were assessed using Baghdad Trauma History Screen "BTHS". The scale included 23 events most of them focused on war and violence –related incidents and a few of them focused on accidents (e.g. car accidents, rape, and fire). The participants were asked to indicate to which of these events have experience and whether they feel fear, horror and helplessness and the frequency of exposure to events, by themselves or by family members or friends. According to criterion A2 in DSM-IV the trauma related distressful emotions are intense fear, horror, or helplessness.

#### **3.1.1 Exposure to traumatic events and distressful events**

The exposure to events and the most stressful event were assessed and the results are shown in table 3.1. The table presents the total number of participants exposed to each event, split by sex of participants, the number of participants those who felt distressed after had been exposed, and the frequency of the events.

**Table 3.1** Number of participants exposed and distressed by sex and average of frequencies

Events	Exposed* all	Distressed** all	Exposed* by sex		Average time	Distressed **	
	N (%)		Male	female	repeated	Male	female
Aerial bombing	292(71)	256(88)	194(77)	98(62)	4.83	168(86)	88(89)
Losing family member/ relative	238(58)	193 (81)	164 (65)	74 (47)	2.23	132 (80)	61 (82)
Raid of house by military	202 (49)	157 (77)	135 (53)	67 (42)	3.76	103 (76)	54 (80)
Roadside explosion	201 (49)	155 (77)	147 (58)	54 (34)	4.4	112 (76)	43 (79)
Shooting	117 (43)	141 (80)	118 (47)	59 (37)	6.32	89 (75)	52 (88)
Sudden death of a family member	168 (41)	131 (78)	110 (43)	58 (36)	1.58	78 (70)	53 (91)
Car bomb	161 (39)	127 (79)	117 (46)	44 (28)	3.18	90 (76)	37 (84)
Witnessing a violent death	152 (37)	127 (83)	106 (42)	46 (29)	2.86	88 (83)	39 (84)
Watching of video clip of a real murder	141 (35)	101 (66)	99 (39)	42 (26)	4.13	72 (72)	29 (69)
Arrested	125 (30)	100 (80)	84 (33)	41 (26)	2.9	62 (73)	38 (92)
Attack by military force	68 (16)	54 (79)	45 (17)	23 (14)	3.68	34 (75)	20 (86)
Dangerous car accident	60 (14)	46 (76)	48 (19)	12 (.07)	1.31	35 (72)	11 (91)
Serious fire	47 (11)	35 (74)	30 (11)	17 (10)	1.56	18 (60)	17 (100)
Hanging of a close person	45 (11)	37 (78)	34 (13)	11 (.07)	1.2	25 (73)	11 (100)
Armed robbery	44 (10)	36 (82)	24 (.09)	20 (12)	2.91	17 (70)	19 (95)
Kidnapping or attempt to kidnap	44 (10)	38 (86)	30 (11)	14 (.08)	1.65	24 (80)	14 (100)
Severe illness	40 (10)	33 (82)	24 (.09)	16 (10)	1.31	18 (75)	15 (93)

Events	Exposed* all	Distressed** all	Exposed* by sex		Average time repeated	Distressed **	
	N (%)		Male	female		Male	female
Robbery at gunpoint	33 (8)	24 (72)	22 (.08)	11 (.07)	1.34	14 (68)	10 (90)
Murder attempt	29 (7)	23 (79)	19 (.07)	10 (.06)	1.95	14 (73)	9 (90)
Physical torture	22 (5)	17 (77)	16 (.06)	6 (.03)	1.23	11 (68)	6 (100)
Chemical attack	11 (2)	9 (81)	9 (.03)	2 (.01)	1.5	7 (77)	2 (100)
Rape/ sexual abuse	8 (1.9)	5 (62)	5 (.01)	3 (.01)	4	3 (60)	2 (66)
Others not specific	7 (1.7)	7 (100)	4 (.01)	3 (.01)	1.85	4 (80)	3 (100)
Over all	386 (94)						

Note: Exposed = number of participants who reported to have experienced each event; distressed = number of those who had experienced an event and reported distress. \* = number of exposed/408; \*\* = number distressed/number of exposed.

The results show that 386 (94%) of the participants reported that they had been exposed to at least one traumatic event. The majority of participants reported experiencing events such as aerial bombing (71%) and losing family member/relative (58%). Events such as raid of house by military, roadside explosion and shooting were reported by about 50% of the participants. Four events were reported by around a third of participants, for example, the sudden death of family member, car bomb, witnessing a violent death, and watching a real video clip about killing. Other events were reported by less than 20% of participants. There were a very small number of participants (about 2%) who reported that they had been exposed to rape and sexual abuse. This was less than Western studies who report 20% to 25% of such exposure by college women (Fisher, Cullen, & Turner, 2000) and more than 51% of the male participants over 16 years of age (Turchik, 2012).

Regarding sex differences, males reported experiencing more events than females overall. In terms of distressful events, the majority of participants reported feelings of distress when they had been exposed to events (between 62% and 100%). The most distressful events from the most frequent events were aerial bombing, kidnapping or attempt to kidnap, and witnessing a violent death. These were reported by 88%, 86%, and 83% of participants exposed, respectively. In terms of sex differences, it seems that females reported feeling more distress than males. Of the participants who had been exposed, female reports of experiencing distress ranged from 62% to 100% whereas male reports of experiencing distress ranged from 60% to 86%.

The participants reported that they had experienced all of the events more than once. The mean of repeated exposure to each event ranged from 1.2 to 6.32 times; the most frequent events were shooting and aerial bombing.

To examine whether an event met criterion A on the DSM-IV as traumatic, participants were asked to report whether they experienced fear, horror, or helplessness. Overall, 359 of the 408 participants (88%) reported that they themselves, a family member, or friend, had experienced these feelings, on at least one event that met criterion A on the DSM-IV. Therefore, the responses of 359 participants were included in the next analysis and the 46 participants (11%) who did not report traumatic events distressed them were excluded in order to meet DSM-IV PTSD criteria.

### 3.1.2 Type of exposure

Participants were asked to indicate whether they themselves had experienced the event or whether a close family member or friend had experienced the event. A Chi-square test was used to examine the difference between experience of the event when they had experienced it themselves and when it had been experienced by family member/friend. The results are displayed in Table 3.2.

**Table 3.2** Numbers and percentages of traumatic events experienced by participants and their family members or friends

Type of Exposure	Sex	0 N (%)	1 N (%)	2-4 N (%)	5 or more N (%)	$\chi^2$
Self-exposure	Males	3 (1)	12 (6)	31 (14)	174 (79)	18.57***
	Females	6 (4)	23 (17)	23 (17)	83 (62)	
Other exposure	Males	53 (24)	22 (10)	45 (21)	99 (45)	14.48***
	Females	30 (23)	27 (20)	38 (28.5)	38 (28.5)	

\*\*\*  
p<.001

The results show that only 1% of males reported no personal experience of events versus 4% of females. In contrast, 17% of females reported having experienced an event once which was more than double that of male reports (6%). The majority of males (79%) and about two-thirds of females reported that they had experienced more than five events. The differences were significant.

Regarding the differences between males and females in the number of events experienced by the participants' family members or friends, no differences were found between male and female reports (24% and 23%, respectively). Reports that family members or friends experienced one event were twice that by females than males (20% and 10%, respectively). In contrast, more males (45%) than females (28%) reported that family members or friends experienced more than 5 events; the differences were significant.

### 3.2 PTSD

The 17-item scale of SPTSS was administered to screen for PTSD. The scale included 3 clusters with corresponding items: avoidance (7 items), hyper-arousal (5 items), and re-experience (5 items). Response items range from 0 ("Not at all") to 4 ("More than once every day") and are based on the criteria outlined in the *DSM-IV-TR* (American Psychiatric Association, 2000). The first two score 0 and 1 represent 0 in the final score and score 2, 3, 4 equal 1. The person who scoring 3 or more on avoidance symptoms and 2 or more on re-experience symptoms and 1 or more on excessive arousal symptoms represent full PTSD symptoms. The people who score 0 on the three symptoms represent 0 PTSD symptoms. Otherwise, other responses represent partial PTSD symptoms.

To examine the differences in PTSD between both sexes and age groups, Chi-square tests were conducted. The results of participants who met PTSD criteria for the sample as a whole and by sex and age are presented in Table 3.3.

**Table 3.3** The number of participants who met PTSD criteria on the DSM-IV

PTSD symptoms met DSM-IV		Male N (%)	Female N (%)	Age*; 1 N (%)	2 N (%)	3 N (%)
No	16 (4.5)	10 (4.5)	6 (4.4)	4 (3.3)	6 (5.4)	6 (4.8)
Partial	231 (64.7)	154 (69.7)	77 (56.6)	82 (67.8)	70 (62.5)	79 (63.7)
Full	110 (30.8)	57 (25.8)	53 (39)	35 (28.1)	36 (32.1)	39 (31.5)
$\chi^2$			6.969**		1.099	

\*age; 1= $\geq$ 30, 2=31-39, 3= +40, \*\* p<.05; age group equal size.

Table 3.3 shows that the majority of participants reported at least one symptom of PTSD. One third of the participants met the criteria for full PTSD on the DSM-IV. Regarding sex differences, about 40% of females reported symptoms that met full PTSD criteria. In turn, only one quarter of males reported such symptoms. In addition to Chi-square which was used to examine the differences in score distribution and interaction between group of age and sex, that revealed an association between sex and PTSD, an independent-sample t-test was conducted to compare PTSD symptoms score for males and females. There was a significant difference in PTSD total scores of males (M=21.02,

SD=11.130) and females (M=23.67, SD=10.78),  $t(339) = -2.306, p = .022$ , two-tailed). Females reported significant more PTSD than males. However, the same percentage of males and females reported no symptoms of PTSD.

Differences between age groups with respect to PTSD were examined. Chi-square showed there were no association between PTSD and all three age groups. Bivariate correlations were conducted between the ages of the whole sample as the age of each sex separately and PTSD; the results showed there were no significant correlations found either between whole sample ages or with two sex's age separately and PTSD. This maybe because the presence of PTSD symptoms is related to the length of exposure to traumatic events through the age of an individual who has developed PTSD and not to the specific age of participant in time of exposure, with no systematic treatment or help.

The differences between males and females in PTSD symptom clusters were examined. Table 3.4 shows the number of participants who reported PTSD and met criteria for each cluster split according to sex.

**Table 3.4** Differences in PTSD symptom clusters between males and females

Sex	Met DSM-IV PTSD criteria	Re-experience N (%)	Avoidance N (%)	Arousal N (%)
Males	Yes	137 (62)	147 (68.4)	169 (77.5)
	No	84 (38)	68 (31.6)	49 (22.5)
Females	Yes	86 (64.2)	101 (77.1)	116 (85.3)
	No	48 (35.8)	30 (22.9)	20 (14.7)
$\chi^2$		0.090	2.639	2.747

The statistical test in Table 3.4 shows that there were no significant differences in the distribution of the three clusters between males and females. In general, females reported higher rates than males in all three PTSD symptom clusters. To test the differences between males and females in the three PTSD clusters, independent t-test was conducted; the results showed there was significant difference in avoidance cluster between men (M=6.98, SD=4.46) and women (M=8.17, SD=4.37),  $t(390) = -2.58, p = .01$ . Women reported significant more avoidance symptoms than men. Whereas, there were no significant differences between males and females in arousal and re-experience.

Bivariate correlation was conducted to examine the relationship between age and the three PTSD clusters, the results showed there were no significant correlations

between age of the all sample and the age of the two genders separately with the three PTSD clusters.

The differences between age groups in scores distribution of PTSD symptom clusters were examined by Chi-square for more accuracy. Table 3.5 shows the number of each age group who reported that they met criteria for each cluster.

**Table 3.5** Differences in PTSD symptom clusters between age groups

Age groups	Met DSM-IV PTSD criteria	Re-experience N (%)	Avoidance N (%)	Arousal N (%)
1	Yes	79 (65.3)	85 (72)	99 (82.5)
	No	42 (34.7)	33 (28)	21 (17.5)
2	Yes	66 (60)	80 (73.4)	94 (84.7)
	No	44 (40)	29 (26.6)	17 (15.3)
3	Yes	78 (62.9)	83 (69.7)	92 (74.8)
	No	46 (37.1)	36 (30.3)	31 (25.2)
	$\chi^2$	0.69	0.38	4.09

Note; age groups 1= $\leq$ 30, 2= 31-39, 3= $\geq$ 40

The statistical test in Table 3.5 shows that there were no significant differences in distributions between the three age groups in the three PTSD symptom clusters. However, for participants who met DSM-IV PTSD criteria, highest symptom rates were reported for arousal with re-experience as the least reported symptom across all age groups. To assess the correlations between PTSD and experiences related to trauma, Pearson correlation was conducted. The Pearson correlations are display in Table 3.6.

**Table 3.6** The correlation between PTSD and self and other experience and frequency of trauma

	Frequency of exposure	Experience Distressful	Frequency of own traumatic experience	Frequency of others trauma
PTSD**	.094	.124*	.103*	.058

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

\*\* Listwise N=371



The table shows that PTSD correlated significantly with experience distressful after exposed to traumatic events and with frequency of personal experience of traumatic events. In contrast, there were no significant correlations between PTSD and total frequency of exposure (self and other) to trauma and frequency of experience for other trauma.

### 3.3 Coping strategies

The 20-item scale of Brief Coping was used to measure four coping strategies: active coping, seeking support, non-problem focused coping, and substance use. A two-way ANOVA was used to test differences between sex and age on coping strategies that were used by participants. Means, standard deviations, and corresponding *F* ratios are presented in Table 3.7.

**Table 3.7** Statistics of coping strategies by sex and age groups

Coping strategies	Age group	Males	Females	<i>F</i> ratio		
		M (SD)	M (SD)	Sex	Age	sex X age
Seeking support	1	17.19 (3.82)	17.44 (3.22)	0.005	0.511	4.12*
	2	16.75 (3.56)	18.00 (3.53)			
	3	17.70 (3.78)	16.11 (4.24)			
Active coping	1	19.06 (3.37)	18 (3.62)	1.09	1.04	0.971
	2	19.27 (3.66)	19.54 (3.13)			
	3	19.94 (3.30)	18.89 (4.27)			
Non- problem focused coping	1	12.39 (2.84)	12.43 (2.87)	0.188	0.72	1.69
	2	11.79 (2.69)	12.64 (2.52)			
	3	12.91 (2.74)	12.41 (3.02)			
Substance use	1	2.30 (.932)	2.83 (1.63)	3.14*	0.47	1.32
	2	2.57 (1.44)	2.54 (1.11)			
	3	2.58 (1.34)	2.85 (1.44)			

Note: Age group 1= $\leq 30$ , 2= 31-39, 3= +40; \* $p < .05$

Regarding sex differences, the results showed that females reported significantly more substance use coping strategies than males. Furthermore, females in the 30-39 year age group reported significantly more frequency to use support than other age groups. In general, both sexes in all three age groups reported more active coping strategies than

other coping strategies; nevertheless the differences were not significant. There were no differences between sexes in all age groups in non-problem focused coping strategies.

A one-way ANOVA was used to examine the differences in the use of the 4 coping strategies between the three PTSD groups; those without PTSD, those with full PTSD, and those who partially met PTSD criteria. Means, standard deviations, and corresponding *F* ratios are presented in Table 3.8.

**Table 3.8** Means, standard deviation, and *F* ratio of coping strategies for three groups of PTSD

Coping strategies	Met DSM-IV PTSD criteria	M (SD)	<i>F</i> ratio
Seeking support	No	17.27 (4.44)	0.030
	Partial	17.43 (3.50)	
	Full	17.07 (3.67)	
Active coping	No	19.33 (3.30)	0.041
	Partial	19.52 (3.33)	
	Full	19.60 (3.56)	
Non-problem focused	No	10.93 (1.38)	5.05*
	Partial	12.53 (2.64)	
	Full	12.93 (2.82)	
Substance use	No	2.00 (.00)	1.99
	Partial	2.50 (1.24)	
	Full	2.79 (1.54)	

\**p*<.05

The results show that the group with full PTSD used significantly more non-problem focused coping strategies than those with partial and without PTSD the results proved by using a post hoc Tukey test. In contrast, there were no significant differences in seeking support, active coping, and substance used strategies among the three PTSD groups.

### 3.4 Sense of coherence (SOC)

The 13-item SOC was used to measure 3 categories of sense of coherence: comprehensibility, manageability, and meaning. To assess whether there were differences between the averages senses of coherence ratings between age groups for men and women, a two-way ANOVA was conducted( factors were men, women, and

three age groups). The means and standard deviations for total SOC, the 3 SOC categories, and corresponding *F* ratios are displayed in Table 3.9.

**Table 3.9** The mean, standard deviation, and *F* ratio of SOC and its three categories by sex and age

SOC	Age group	Males	Females	<i>F</i> ratio		
		M (SD)	M (SD)	Sex	Age	sex X age
SOC in general	1	58.00 (11.97)	51.06 (15.72)			
	2	56.66 (11.96)	51.57 (12.72)	14.79***	1.40	0.24
	3	59.24 (13.60)	54.77 (12.37)			
Comprehensibility	1	20.18 (6.36)	18.44 (6.68)			
	2	20.63 (6.50)	18.98 (6.38)	2.47	2.67*	0.70
	3	21.18 (6.24)	21.26 (5.71)			
Manageability	1	15.97 (5.23)	12.75 (6.56)			
	2	15.33 (5.59)	12.29 (5.25)	17.34***	1.20	0.58
	3	15.88 (6.01)	14.21 (5.58)			
Meaning	1	21.85 (5.26)	20.18 (6.97)			
	2	20.89 (6.00)	20.50 (5.70)	6.30*	0.11	1.11
	3	22.11 (5.44)	19.31 (5.60)			

Note: Age group 1= $\leq 30$ , 2= 31-39, 3= $\geq 40$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The results show that there were significant differences between males and females in SOC. Males reported significantly higher rates of SOC in general and they were higher in manageability and meaning than females. In addition, the participants aged 40 years and over reported significantly more comprehensibility than the younger two age groups.

One-way ANOVAs were conducted to assess the differences in SOC ratings between the three groups with respect to PTSD symptoms: those without PTSD, those with full PTSD, and those who met partial criteria. The means, standard deviations, and corresponding *F* ratios are displayed in Table 3.10.

**Table 3.10** Means, standard deviations, and *F* ratio of the total SOC score and its 3 subcategories for the three PTSD groups

SOC	Met DSM-IV PTSD criteria	M (SD)	<i>F</i> ratio
Total SOC	No	60.93 (12.10)	21.70**
	Partial	58.23 (12.38)	
	Full	49.23 (13.43)	
Comprehensibility	No	21.07 (6.21)	7.74*
	Partial	21.10 (6.0)	
	Full	18.24 (6.67)	
Manageability	No	16.73 (5.44)	9.68**
	Partial	15.50 (5.78)	
	Full	12.70 (5.71)	
Meaning	No	23.44 (4.56)	20.62**
	Partial	22.22 (5.30)	
	Full	18.21 (6.23)	

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

The results show that the group with full PTSD had significantly lower total SOC and lower scores on the 3 categories compared to the group without PTSD and the group who met partial criteria for PTSD. In contrast, a post hoc Tukey test revealed that there were no differences between the group without PTSD and the group who met partial criteria in total SOC scores and the 3 SOC subcategories.

### 3.5 Neuroticism

The 8-item scale was used to measure the personality trait of neuroticism. To assess the differences in neuroticism ratings between genders and age groups reports, a two-way ANOVA (sex and age) was used to test the effect of sex and age on neuroticism. The means, standard deviations, and corresponding *F* ratios are presented in Table 3.11.

**Table 3.11** Means and standard deviations of neuroticism by sex and age

Sex	Age	M (SD)	<i>F</i> ratio		
	Groups		Sex	Age	Sex X Age
Males	1	23.62 (6.07)	0.194	1.00	0.24
	2	22.71 (5.94)			
	3	22.23 (5.91)			
Females	1	23.34 (5.52)			
	2	23.51 (5.28)			
	3	22.56 (5.68)			

1≤30, 2=31-39, 3= +40

The results show that there were no significant main effects of sex or age and no significant sex x age interaction on the trait of neuroticism.

To assess the differences between the groups with full PTSD, the group without PTSD, and the group who met partial criteria, a one-way ANOVA was conducted. The means, standard deviations, and corresponding *F* ratio is presented in Table 3.12.

**Table 3.12** Means, standard deviations and *F* ratio of neuroticism by PTSD group

Met DSM-IV PTSD criteria	Mean (SD)	<i>F</i> ratio
No	20.63 (5.53)	
Partial	22.12 (5.62)	12.49**
Full	25.12 (5.57)	

\*\**p*<.01

The result shows that there was a significant difference between PTSD groups in neuroticism. The group with full PTSD reported significantly higher scores on neuroticism compared to the other two groups. A post hoc test revealed that the difference in neuroticism between the groups without PTSD and full PTSD was significant, whereas there was no significant difference in neuroticism between the group without PTSD and the group that met partial criteria for PTSD.

### 3.6 Satisfaction with life (SWL)

A 5-item of the Satisfaction With Life Scale "SWL" (Diener et al., 1985) was used to measure the satisfaction with life. To assess the differences between sex and age

groups on the SWL scale, a two-way ANOVA was conducted. The means, standard deviations, and corresponding *F* ratios are displayed in Table 3.13.

**Table 3.13** Means, standard deviations and *F* ratio of SWL by sex and age

Sex	Age Groups	M (SD)	<i>F</i> ratio		
			Sex	Age	Sex X Age
Males	1	21.77 (5.97)	1.47	0.69	1.12
	2	20.61 (6.91)			
	3	21.70 (7.24)			
Females	1	21.22 (6.31)	1.47	0.69	1.12
	2	20.88 (6.23)			
	3	19.27 (7.66)			

1≤30, 2=31-39, 3= +40

The results show that there were no significant differences between men and women and age with respect to satisfaction with life.

To assess the differences between PTSD groups on SWL, a one-way ANOVA was conducted. The means, standard deviations, and corresponding *F* ratio is presented in Table 3.14.

**Table 3.14** Means, standard deviations, and *F* ratio of SWL by PTSD group

Met DSM-IV PTSD criteria	Mean (SD)	<i>F</i> ratio
No	23.50 (6.88)	6.90*
Partial	21.83 (6.71)	
Full	19.21 (6.44)	

\**p*<.05

Table 3.13 shows that there was a significant difference between groups differing in PTSD symptoms on satisfaction with life. The group with full PTSD reported lower satisfaction with life than the group without PTSD and the group that met partial criteria for PTSD. A post hoc test showed that the difference was between the group with full PTSD and both the group without PTSD and the group that met partial PTSD criteria. In

contrast, there was no difference in satisfaction with life between the group without PTSD and the group that met partial criteria for PTSD.

### 3.7 Depression and Somatic Symptoms Scale (DSSS)

The 22-item DSSS was used to measure depression and somatic symptoms. The scale includes subscales of depression (DS) comprising 12 items and somatic symptoms (SS) comprising 10 items. To examine the differences between sex and age groups on depression and somatic symptoms, a two-way ANOVA (sex and age) was conducted. The means, standard deviations, and corresponding *F* ratios are shown in Table 3.15.

**Table 3.15** Mean, standard deviation, and *F* ratio of the depression by sex and age

Disorder	Sex	Age Groups*	M(SD)	<i>F</i> ratio		
				Sex	Age	Sex X Age
Depression	Males	1	11.43 (6.33)	12.36**	0.02	0.46
		2	12.39 (7.97)			
		3	12.16 (7.11)			
	Females	1	15.34 (7.92)			
		2	14.69 (5.95)			
		3	14.47 (8.01)			
Somatic symptoms	Males	1	7.51 (5.34)	13.10**	2.53	1.66
		2	8.85 (6.02)			
		3	11.11 (7.44)			
	Females	1	11.50 (6.47)			
		2	12.13 (6.87)			
		3	11.95 (7.59)			

\*note, 1= $\leq$ 30, 2=31-39, 3= +40, \*\* $p < .01$ ,

Table 3.15 shows that there were significant differences between males and females in both depression and somatic symptoms. Females reported significantly higher scores on depression and somatic symptoms. In contrast, there were no significant main effects age and no significant sex x age interaction for either depression or somatic symptoms.

One-way ANOVAs with post hoc Tukey test were used to assess whether there were differences between groups that differed on PTSD symptoms on depression and somatic symptoms. The means, standard deviations, and corresponding *F* ratios are displayed in Table 3.16.

**Table 3.16** Means, standard deviations, and *F* ratio of depression and somatic symptoms for PTSD

Disorder	Met DSM-IV PTSD criteria	Mean (SD)	<i>F</i> ratio
Depression	No	7.07 (3.93)	40.48**
	Partial	11.35 (5.98)	
	Full	17.64 (7.58)	
Somatic symptoms	No	5.93 (3.45)	26.21**
	Partial	8.81 (5.94)	
	Full	13.82 (7.20)	

\*\*  
p<.01

Table 3.16 shows that there were significant differences between the three groups that differed on PTSD symptoms on both depression and somatic symptoms. The group with full PTSD reported significantly higher rates of depression and somatic symptoms than the other two groups. The post hoc Tukey test revealed the significant differences were between full PTSD and both the group without PTSD and the group that met partial criteria for PTSD. Likewise, the group that met partial criteria for PTSD reported significantly higher rates of depression and somatic symptom than the group without PTSD.

### 3.8 Self-report of health

Participants were asked to indicate which health problems they had experienced after being exposed to traumatic events. Health problems comprised high blood pressure, diabetes, heart disease, and skin problem (see Table 3.17). To assess the differences between males and females, Chi-square tests were conducted. The test statistics are presented in Table 3.17.



**Table 3.17** Differences between males and females on health problems

Sex		High blood pressure	Diabetes	Heart disease	Skin problem
		N (%)	N (%)	N (%)	N (%)
Males	Yes	38 (17.1)	17 (7.7)	20 (9)	37 (16.7)
	no	184 (82.9)	205 (92.3)	202 (91)	185 (83.3)
Female	Yes	20 (14.9)	4 (3.0)	7 (5.2)	20 (14.9)
	no	114 (85.1)	130 (97)	127 (94.8)	114 (85.1)
	$\chi^2$	0.294	3.28	1.7	0.18

Table 3.17 shows that there were no significant differences between males and females in the four health-related problems.

Chi-square tests were used to assess differences between age groups on health problems. The results are displayed in Table 3.18.

**Table 3.18** Differences between age groups on health problems

Age groups		High blood pressure	Diabetes	Heart disease	Skin problem
		N (%)	N (%)	N (%)	N (%)
1	Yes	10 (8.3)	5 (4.2)	7 (5.8)	22 (18.3)
	No	110 (90.7)	115 (95.8)	113 (94.2)	98 (81.70)
2	Yes	19 (17.1)	3 (2.7)	8 (7.2)	15 (13.5)
	No	92 (82.9)	108 (97.3)	103 (92.8)	96 (86.5)
3	Yes	29 (23.2)	13 (10.4)	12 (9.6)	20 (16)
	No	96 (76.8)	112 (89.6)	113 (90.4)	105 (84)
	$\chi^2$	10.00**	7.25*	1.27	0.99

\* $p < .05$ , \*\* $p < .01$ , note; 1=30, 2=31-39, 3= +40

Table 3.18 shows that there were significant differences between age groups in distribution of diseases. The group aged 40 years and over reported having significantly higher blood pressure and diabetes than the other two groups which was expected as

elderly people might have these diseases more than younger. The group aged 40 years and over also reported increased rates of heart disease and skin problems than the younger groups but the differences were not significant.

To assess the differences between the groups that differed on PTSD symptoms with respect to health problems, Chi-square tests were used. The results are displayed in Table 3.19.

**Table 3.19** Differences between PTSD groups on health problems

Diseases	Presence	Met SDM-IV PTSD criteria			$\chi^2$
		No N (%)	Partial N (%)	Full N (%)	
High blood pressure	Yes	2 (3.4)	28 (48.3)	28 (48.3)	9.95**
	No	14 (4.7)	201 (67.9)	81 (27.4)	
Diabetes	Yes	0 (0.0)	12 (57.1)	9 (42.9)	2.26
	No	16 (4.8)	217 (65.2)	100 (30)	
Heart disease	Yes	0 (0.0)	14 (53.8)	12 (46.2)	3.92
	No	16(4.9)	215 (65.5)	97 (29.6)	
Skin problem	Yes	2 (3.5)	29 (50.9)	26 (45.6)	7.00*
	No	14(4.7)	200 (67.3)	83 (27.9)	

\* p<.05, \*\* p<.01

Table 3.19 shows that there were significant differences in health problems between the groups differing on PTSD symptoms. The group without PTSD reported significantly fewer health problems in blood pressure and skin problems than the group that met partial criteria and the group with full PTSD. In contrast, the group without PTSD reported no diabetes and heart disease. The differences between full and partial PTSD were not significant, the table shows no significant differences in these two diseases between PTSD groups.

### **3.9 Results Discussion of the prevalence rate of traumatic event and related risk factors**

The results show that the majority of participants (94%) experienced at least one traumatic event. Most participants reported having had experience with aerial bombing and losing a close person. In addition, about half of the participants reported having had experience with three events of raid of house by military, roadside explosion, and shooting. In terms of sex differences, more events were experienced by males than females. In terms of the number of participants who had personally experienced events, almost all participants (99% of males and 96% of females) reported having experienced at least one traumatic event. The majority of participants met criterion A for PTSD on DSM-IV criteria.

In addition, a large number of participants reported at least some symptoms that met criteria for PTSD. In terms of sex differences, significant differences were found between males and females; females reported significantly more symptoms of PTSD than males. This may be because females experience more distress related to exposure to events than males as reflected in the results. The results reported in this study are consistent with other Iraqi studies such as that 35, 27% of the study sample reported PTSD symptoms and females were higher than males found by Abdel-Hamid et al. (2004) and by Jaber (2012) found that 35% of student sample reported full PTSD as well as women reported higher PTSD than men. Regarding the age of participants, the results showed that there were no significant differences between age groups and PTSD symptoms. This may be due to the endurance of exposure to traumatic events across all ages.

In terms of coping strategies, the results showed that participants used active coping strategies more frequently than other coping strategies. In terms of sex differences, females reported using more substance use coping strategies than males. Females sought more support for those in the age range from 31-39 years old than the other age groups; differences between males and females were significant. The group with full PTSD used more non-problem focused and substance use coping strategies than the other two coping strategies.

In addition, the results showed that males reported higher rates of sense of coherence in general and in manageability and meaning than females. Furthermore, participants aged 40 years and over reported significantly more comprehensibility than the younger two groups. Significant differences were found among groups that differed in PTSD symptoms on SOC. The group with full PTSD reported significantly lower SOC

and lower rates on its 3 categories than the group without PTSD and the group that met partial criteria for PTSD. In terms of Neuroticism, the results show that there were no differences between males and females within the three age groups on Neuroticism. The group with full PTSD reported significantly higher traits of Neuroticism and significantly lower rates of life satisfaction than the other groups whereas no differences between age and sex on life satisfaction were found.

In terms of depression and somatic symptoms, the results showed significant differences between males and females. Females reported significantly higher rates of depression and somatic symptoms than males but there was no difference between age groups on rates of depression and somatic symptoms. As expected, participants with full PTSD reported significantly higher rates of depression and somatic symptoms than the group without PTSD and the group that met partial criteria for PTSD. The results are associated with many studies that have found comorbid PTSD and depression such as Bresau et al. (1991), O'Donnell et al. (2004), and Richards et al. (2011).

The participants were asked to report on the presence of four health-related problems that they may have experienced after being exposed to traumatic events: High blood pressure, diabetes, heart disease, and skin problems. The results show that there were no differences between males and females on any of the health problems. In contrast, the group who were aged 40 years and over reported significantly higher blood pressure and diabetes than the other two age groups whereas there were no differences among the three age groups on rates of heart disease or skin problem. Furthermore, the group with full PTSD reported significantly higher blood pressure and skin problems than the group without PTSD and the group that met partial criteria for PTSD. In sum, it appears that many factors are associated with PTSD that may be risk factors for PTSD or occur as a consequence for the presence of PTSD.

### **3.10 A model for predicting PTSD**

In order to determine which factors contribute to predicting PTSD and to compare between males and females, regression analyses were used. The current study revealed that there were significant differences between males and females on exposure to traumatic events, PTSD, Neuroticism, sense of coherence, life satisfaction, and coping strategies. Therefore, a model was produced for the sample as a whole as well as for each sex separately. Variables such as exposure to traumatic event, neuroticism, and life satisfaction, sense of coherence, coping strategies, education level, sex, and age were added to produce the best combination of variables for predicting PTSD in multiple

regression with stepwise methods. The stepwise regression methods basically dose multiple regression a number of times for the variables that have been entered. In each time of the process the weakest variable are removing, and at the end only variables that best explain the distribution are left (www.geog.leeds.ac.uk/courses/other/statistics/spss/stepwise/).

### 3.10.1 Variables predicting PTSD in the whole sample

In order to examine the best variables that predict PTSD for the whole sample, the data pertaining to 359 participants were entered in a multiple regression analysis with stepwise method. A five-variables model was produced that included Neuroticism, sense of coherence, active coping strategies, life satisfaction, and education level. The means, standard deviations, and inter-correlations are displayed in Table 3.20.

**Table 3.20** Means, standard deviations, and inter-correlation for PTSD and predictor variables

	M	SD	1	2	3	4	5
PTSD	22.38	11.04	.42**	-.36**	.045	-.32**	-.19**
1-Neuroticism	22.94	5.78		-.43**	-.23**	-.33**	-.20**
2-Sense of coherence	55.93	13.4			.14**	.33**	.08
3-Active coping	19.53	3.39				.19**	.13*
4-Life satisfaction	21.06	6.75					.18**
5-Education level	2.68	0.72					

\*p<.05, \*\*p<.01

The variables that significantly predicted PTSD and beta weights are shown in Table 3.21.

**Table 3.21** Multiple regression analysis summary of variables predicting PTSD in the whole sample

Variables	B	Std. Error	$\beta$
Neuroticism	0.58	0.108	.30***
Sense of coherence	-0.16	0.04	-.19***

Active coping	-0.62	0.16	-.19***
Life satisfaction	-0.27	0.08	-.16**
Education level	-1.74	0.74	-.11*
Constant	16.088	5.84	

Note:  $R^2 = .28$ ;  $R_{ADJ}^2 = .27$ ;  $F(5,311) = 25.072$ ,  $p < .001$ ;

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The beta weights displayed in Table 3.21 suggest that Neuroticism contributed most variance in predicting PTSD (.30) followed by sense of coherence and active coping contributed (.19 each). Overall,  $R_{ADJ}^2$  was .27 indicating that the combination of variables was able to explain 27% of the variance in PTSD.

### 3.10.2 Variables predicting PTSD in males

To predict PTSD in males, a multiple regression analysis was used for data pertaining to 223 participants who reported having experienced traumatic events. The same variables were entered into the analysis as stated above for the whole sample. A four-factors model was produced which included Neuroticism, life satisfaction, active coping, and education level. The means, standard deviations, and inter-correlations are displayed in Table 3.22.

**Table 3.22** Means, standard deviations, and inter-correlations for PTSD and predictor variables in male participants

	M	SD	1	2	3	4
PTSD	21.63	11.16	.42**	-.32**	.063	-.22**
1-Neuroticism	22.81	5.97		-.30**	-.20**	-.22**
2- Life satisfaction	21.37	5.77			.15*	.17*
3- Active coping	19.8	3.21				.15*
4-Education level	2.69	0.77				

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

The beta weight and standard error values for variables that significantly predict PTSD are shown in Table 3.23.

**Table 3.23** Multiple regression analysis summary of variables predicting PTSD in males

Variables	B	Std. Error	B
Neuroticism	0.68	0.12	.36 <sup>***</sup>
Life satisfaction	-0.36	0.109	-.22 <sup>**</sup>
Active coping	-0.67	0.22	-.19 <sup>**</sup>
Education level	-1.9	0.93	-.13 <sup>*</sup>
constant	5.76	6.67	

Note:  $R^2 = .26$ ;  $R_{ADJ}^2 = .25$ ;  $F(4,188) = 17.167$ ,  $p < .001$ ;

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 3.23 shows that neuroticism contributed most to explain variance in PTSD (.36) followed by life satisfaction. The  $R_{ADJ}^2$  was .25 indicating that the combination of variables was able to explain 25% of the variance in PTSD in males.

### 3.10.3 Variables predicting PTSD in females

To examine the factors that predict PTSD in females, the same procedure analysis of regression was used with the same variables. Data pertaining to 136 females who reported having experienced traumatic events was used. Unlike the male models, three factors were used: Sense of coherence, Neuroticism, and active coping. The means, standard deviations, and inter-correlations are shown in Table 3.24.

**Table 3.24** Means, standard deviations, and inter-correlations for PTSD and predictor variables in females

	M	SD	1	2	3
PTSD	23.58	10.77	-.46 <sup>**</sup>	.42 <sup>**</sup>	.04
1- Sense of coherence	52.3	13.94		-.50 <sup>**</sup>	-.18 <sup>*</sup>
2- Neuroticism	23.37	5.74			.26 <sup>**</sup>
3- Active coping	19.08	3.63			

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

The beta weight and standard error are shown in Table 3.25.

**Table 3.25** Multiple regression analysis summary of variables predicting PTSD in females

Variables	B	Std. Error	B
Sense of coherence	-0.26	0.071	-.33 <sup>***</sup>
Neuroticism	0.6	0.18	.30 <sup>**</sup>
Active coping	-0.56	0.24	-.19 <sup>*</sup>
Constant	12.48	8.67	

Note:  $R^2 = .29$ ;  $R_{ADJ}^2 = .27$ ;  $F(3,114) = 16.040$ ,  $p < .001$ ;

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The analysis showed that sense of coherence was the best predictor for PTSD in females with a contribution of .33. The  $R_{ADJ}^2$  was .27 indicating that the combination of these factors was able to explain 27% of variance in PTSD in females.

### 3-11 Discussion of the factors predicting PTSD

The results showed that PTSD, for the sample as a whole, could be predicted by variables such as neuroticism, sense of coherence, active coping, life satisfaction, and education level. Age was not a predictive variable in the current study perhaps because there were no differences between age groups on PTSD symptoms due to extended experience of traumatic events. Although, variables such as the exposure to traumatic events either by oneself or by that of a family members/relative and other coping strategies were entered, also it was not significant predictors for PTSD. This may be because a participant who had reported being exposed to a traumatic event when they developed PTSD may have developed PTSD from previous exposure. Therefore, new experiences may not make any difference to the effect on PTSD symptoms. In addition, health history such as depression, somatic symptoms, and self-report of diseases do not appear in the model as predictors because they were excluded from previous analyses.

In terms of sex differences, the predictor model for males was more similar to the model for the whole sample than the predictor model for females. This may be because



the number of males was larger than the number of females in the current study. Moreover, there were differences in predictor variables between the two sexes. Where sense of coherence was not a predictor for PTSD in males, it was the most strongly contributing factor for predicting PTSD in females. In contrast, life satisfaction was the second contributing factor in predicting PTSD in males; it was not a predictor variable for PTSD in females. Similarly, education level was a predictor variable for PTSD in males but not for females.

In conclusion, the predictive model in the current study with participants who had experienced many traumatic events over an extended period of time may differ from other studies that have been conducted in samples of individuals who have been exposed to a single event that occurred on one occasion. In this case, the event may not make any difference because people are exposed to this event on a daily basis. These events become part of their routine life and always predictable for them. It became strange to find any Iraqi civilians not experienced many of traumatic events by himself or family members or friend. Therefore, what may have made the difference in developing PTSD are other factors such as the personality trait of neuroticism, sense of coherence, life satisfaction, coping strategies, and the level of education. These factors may help traumatised people make appraisals of distressful situations and allow them to cope better with them.

## **Chapter 4: Psychological characteristics of Iraqi people with PTSD**

The aim of this chapter was to examine the relationship between PTSD and personality characteristics, health-related quality of life, and aggressive behaviours of an Iraqi sample of people with low and high PTSD. Furthermore, to examine the differences in cortisol level between high and low PTSD groups.

The procedure for collecting data and the validation of the three scales of health-related quality of life (SF-8), health-relevant 5 personality traits inventory (Hpi5), and the aggression questionnaire (AQ), as well as the procedure of collecting and the analysis of cortisol samples, are described in Chapter 2.

The responses from 52 participants (described in Chapter 2) were analysed. These individuals were selected from the first study sample of 408 participants on the basis of their score on the PTSD measure (the highest 30% and lowest 30%).

The t-test and Chi-square tests were used in the current study to examine the differences between the two groups.

The current study aimed to answer the following questions:

- 1- Do people with high PTSD symptoms differ from those who have low PTSD symptoms in health-relevant personality traits?
- 2- Is the cortisol secretion level in the group with high PTSD symptoms lower than the group with low PTSD symptoms?
- 3- Do people with high PTSD symptoms report lower health-related quality of life than those with low PTSD symptoms?
- 4- Do people with high PTSD symptoms display more physical aggression, verbal aggression, hostility, and anger than people with low PTSD symptoms?

### **4.1 PTSD**

The score of 17-item SPTSS scale that was administered to screen for PTSD in the first study was used to determine the two groups. The scale includes 3 clusters: Avoidance (7 items), hyper-arousal (5 items), and re-experience (5 items). Those who scored in the top and bottom 30% (i.e., highest and lowest) on the PTSD measure from first study sample were selected for the current study. For group comparison, the first group who reported the lowest PTSD score comprised 23 participants (16 (69%) males and 7 (30%) females), and the second group who reported the highest PTSD score comprised 29 participants (23 (79%) males and 6 (20%) females). The proportion of men and women in the two groups were not equal because the participation was voluntary in

the current study to those who score high and low in PTSD scale in study reported in chapter 3. Furthermore, the proportion of participate showed more men than women agreed to take part in all studies. To assess the differences between two groups in PTSD, independent t-test was conducted. The minimum, maximum, means, and standard deviations of PTSD score for the two groups and t value are shown in Table 4.1.

**Table 4.1** Group size, means (SD) of PTSD score by group

PTSD Groups	Minimum	Maximum	M (SD)	t
Low PTSD Group	0	18	9.78 (5.17)	-10.29**
High PTSD Group	20	43	28.00 (7.13)	

\*\*p<.0001

To examine the differences between the two groups that differed in the number of PTSD symptoms, a Chi-square test was conducted. The results are shown in Table 4.2.

**Table 4.2** Number of participants who met PTSD criteria on DSM-IV by group

Groups of participates	PTSD met DSM-IV	N (%)	$\chi^2$
Low PTSD Group	No	9 (39)	24.004***
	Partial	13 (57)	
	Full	1 (0.4)	
High PTSD Group	No	0 (0)	
	Partial	11 (38)	
	Full	18 (62)	

\*\*\*p<.001

Table 4.2 shows that there are significant differences between the two groups in PTSD symptoms. The group with high PTSD symptoms reported significantly more symptoms of PTSD than the group with low PTSD symptoms. In the group with low PTSD symptoms, 39% of participants reported no PTSD and only 1 participant (4.3%) reported full PTSD. In contrast, no participants in the group with high PTSD symptoms reported any PTSD symptoms and 18 participants (62%) reported full PTSD meeting DSM-IV criteria.

## 4.2 Traumatic events

The participants in the current study were selected from those who took part in the study reported in Chapter 3. Most of them reported that they had been exposed to traumatic events and experienced at least one symptom of PTSD. In the current study, two groups were selected based on their extreme scores on the PTSD scales. It was examined whether or not they met DSM-IV criteria of experiencing traumatic events. The experience of traumatic events was assessed using the BTHS that was previously described in Chapter 2. Participants were asked to indicate whether they had experienced these events and whether they felt fear, horror, and helplessness. They were also asked to indicate the frequency to which they themselves or that of family members or friends had been exposed. Participants met criterion A2 of the DSM-IV if the trauma-related distressful event consisted of intense emotions of fear, horror, or helplessness.

### 4.2.1 Exposure to traumatic and distressful events

The exposure to events and the most stressful event were assessed and the results are shown in Table 4.3. Table 4.3 displays the total number of participants who had reported being exposed to each event and the number of those who had felt distressed.

**Table 4.3** Number of participants exposed and distressed and average frequency of exposure

Events	Exposure all* N (%)	Distressed** N (%)	Average number of times repeated
Aerial bombing	42 (80)	32 (76)	7.6
Losing family member/relative	34 (65)	22 (64)	3.1
Raid of house by military	32 (61)	16 (50)	7.6
Sudden death of family member	30 (57)	22 (73)	1.8
Roadside explosion	28 (54)	16 (57)	4.3
Watching of video clip of a real murder	28 (54)	12 (42)	4.5
Witnessing a violent death	25 (48)	16 (64)	7
Shooting	24 (46)	22 (91)	7.3
Arrested	16 (30.7)	16 (100)	7.1
Car bomb	15 (28.8)	10 (66)	3.6
Attack by military force	11 (21)	9 (81)	8.3

Events	Exposure all* N (%)	Distressed** N (%)	Average number of times repeated
Kidnapping or attempt to kidnapping	7 (13.5)	6 (85)	2
Hanging of close person	7 (13)	4 (57)	1.5
Severe illness	5 (0.09)	5 (100)	1.4
Dangerous car accident	4 (0.07)	4 (100)	2.8
Robbery at gunpoint	4 (0.07)	3 (75)	1.4
Attempt to kill	4 (0.07)	4 (26)	1
Armed robbery	3 (0.057)	3 (75)	3.5
Physical torture	2 (0.03)	2 (100)	1.5
Rape/sexual abuse	2 (0.03)	2 (100)	2.5
Chemical attack	1 (0.019)	1 (100)	2.5
Other	1 (0.019)	1 (100)	2

Note: Exposed = number of participants who reported to have experienced each event; distressed = number of those who had experienced event and reported distress. \* = number of exposed/52; \*\* = number distressed/number of exposed.

The results show that 47 (96%) of participants reported that they had been exposed to at least to one traumatic event. The majority of participants reported experiencing events such as aerial bombing (80%) and losing family member/relative (65%). Events such as raid of house by military, sudden death of a family member, roadside explosion, and watching a video clip of real murder, were reported by more than 50% of participants. Two experienced events were reported less than 50% of the time; seeing someone exposed to killing and shooting. Three experienced events were reported more than 20% of the time such as being arrested, exposure to a car bomb, and attack by military force. Three experienced events were reported less than 15% of the time by participants. Nine experienced events were reported less than 5% of the time by participants.

Regarding to distressful events, the majority of participants (between 100% and 26%) reported feelings of distress when they had been exposed to events. The most distressful events from the most frequent events were attack by military, shooting, and being arrested. These were reported by 81%, 91%, and 100% of participants,

respectively. In terms of frequency of exposure to events, most events were reported as having been experienced more than once. The average repeated time of events ranged from 1 to 8 times. The most frequent events were attack by military force, aerial bombing, raid of house by military, shooting, and being arrested which were repeated more than 7 times.

In terms of the two groups with high and low PTSD symptoms, it appears that the group with high PTSD symptoms reported more exposure to events ranging from 3.4% to 86% compared to the group with low PTSD that ranged from 0% to 78%. To assess whether the differences between two groups is statically significant or not, independent t-test was conducted; the results showed there was significant difference in exposure frequency between group with high PTSD (M=10.21, SD=6.16) and group with low PTSD (M=5.57, SD=3.88),  $t(51) = -3.14, p < .001$ . Group with high PTSD reported significant more exposure to traumatic events than group with low PTSD.

In terms of distressful feelings experienced in events experienced most frequently, the group with high PTSD symptoms reported more distressed events in general than the group with fewer PTSD symptoms. To assess whether the differences between two groups is statically significant or not, independent t-test was conducted; the results showed there was significant difference in distressful feelings between group with high PTSD (M=5.59, SD=3.46) and group with low PTSD (M=3.17, SD=2.94),  $t(50) = -2.63, p < .01$ . Group with high PTSD reported significant more distressful feelings than group with low PTSD.

Table 4.4 presents the number of individuals who had been exposed with respect to their PTSD symptoms; low PTSD (group 1) and high PTSD (group 2).

**Table 4.4** Number of participants exposed and distressed to traumatic events by group

Event	Exposed*		Distressed**	
	Group1 N (%)	Group2* N (%)	Group 1 N (%)	Group 2 N (%)
Aerial bombing	18 (78.3)	24 (86.2)	12 (66)	18 (75)
Losing family member/relative	11 (47.8)	23 (79.3)	7 (63)	16 (69)
Raid of house by military	12 (52.2)	20 (69)	11 (91)	12 (60)
Sudden death of family member	9 (39.1)	21 (72.4)	6 (66)	18 (85)
Roadside explosion	8 (34.8)	20 (69)	5 (62)	14 (70)
Watching of video clip of a real murder	7 (30.4)	21 (72.4)	2 (28)	10 (47)

Event	Exposed*		Distressed**	
	Group1 N (%)	Group2* N (%)	Group 1 N (%)	Group 2 N (%)
Shooting	8 (34.8)	16 (55.2)	8 (100)	13 (81)
Arrested	6 (26)	10 (34.5)	5 (83)	8 (80)
Car bomb	6 (26)	11 (38)	4 (66)	7 (63)
Attack by military force	3 (13)	8 (27.6)	3 (100)	5 (62)
Serious fire	2 (8.7)	6 (20.7)	0 (0)	4 (66)
Kidnapping or attempt to kidnapping	2 (8.7)	5 (17.2)	2 (100)	4 (80)
Hanging of close person	1 (4.3)	6 (20.7)	1 (100)	5 (83)
Severe illness	2 (8.7)	3 (10.3)	1 (50)	2 (50)
Dangerous car accident	0 (0)	4 (14)	0 (0)	2 (50)
Robbery at gunpoint	0 (0)	4 (14)	0 (0)	2 (50)
Attempt to kill	1 (4.3)	3 (10.3)	1 (100)	3 (100)
Armed robbery	2 (8.7)	1 (3.4)	2 (100)	1 (100)
Physical torture	0 (0)	2 (6.9)	0 (0)	1 (50)
Rape/sexual abuse	1 (4.3)	1 (3.4)	0 (0)	1 (100)
Chemical attack	0 (0)	1 (3.4)	0 (0)	1 (100)
Other	0 (0)	1 (3.4)	0 (0)	1 (100)

Note: Exposed = number of participants who experienced each event; distressed = number of those who had experienced event and reported distress. \* = number of exposed/23 for group1 and /29 for group 2; \*\* = number distressed/number of exposed.

### 4.3 Health-related quality of life

The 8-item scale of SF was administrated to measure health-related quality of life. The scale measures 8 dimensions of health-related quality of life with each subscale containing 1 item. Subscales include general health, physical function, role-physical, bodily pain, vitality, social functioning, mental health, and role-emotional. To assess whether there were differences between the two groups differing on PTSD symptoms in health-related quality of life, independent-sample t-tests were conducted. Means, standard deviations, and t-values are displayed in Table 4.5.

**Table 4.5** Means, standard deviations, and t-values of 8 health-related quality of life subscales

Health-related quality of life subscale	Low PTSD Group M (SD)	High PTSD Group M (SD)	t
General health	3.35 (0.81)	3.19 (0.69)	0.7
Physical functioning	4.0 (1.17)	3.85 (1.15)	0.44
Role-physical	3.90 (1.02)	3.77 (0.90)	0.45
Bodily pain	3.60 (0.99)	3.38 (0.98)	0.73
Vitality	3.65 (0.67)	3.62 (0.94)	0.13
Social functioning	4.25 (1.0)	4.00 (1.09)	0.77
Mental health	3.40 (1.35)	3.23 (1.17)	0.45
Role-emotional	3.90 (1.25)	4.00 (1.02)	0.29

The results show that there were no significant differences between the two groups on the 8 subscales of health-related quality of life.

The scale was used to measure two components: The physical component summary (PCS; items 1-4) and the mental component summary (MCS; items 5-8). Independent-sample t-tests were used to assess the differences between the two groups on both physical and mental components. The means, standard deviations, and t-values are displayed in Table 4.6.

**Table 4.6** Means, standard deviations, and t-values of PCS and MCS

Health-related quality of life	Low PTSD Group M (SD)	High PTSD Group M (SD)	t
Physical component summary (PCS)	14.8 (3.48)	14.19 (2.8)	0.7
Mental component summary (MCS)	15.2 (3.66)	14.84 (3.58)	0.32

Table 4.6 shows that there were no significant differences between the two groups differing on PTSD symptoms on either physical or mental health. This may be because



the whole sample reported being exposed to trauma for a long time so all of them may have felt that their physical and mental health was affected by these events.

#### 4.4 Health-relevant personality traits

The health-relevant 5-factor personality inventory (HP5i) is a 20-item scale. The scale was used to measure the 5 health-relevant factors of personality traits based on the Big Five personality traits, the Hpi5 inventory (H for health-relevant; P for personality traits; 5 for its correspondence with the five-factor model; I for inventory). The scale consisting of 5 subscales Negative Affectivity (as a facet of Neuroticism), impulsivity (as facet of Conscientiousness), Hedonic Capacity (as a facet of Extraversion), Alexithymia (as a facet of Openness to experiences) and Antagonism (as a facet of Agreeableness): Each subscale comprises 4 items, responses range from 1(Does not apply at all) to 4 (Applies completely).

To assess the differences between the two groups on health-relevant personality traits, independent sample t-tests were conducted. The means, standard deviations, and t-values are displayed in Table 4.7.

**Table 4.7** Means, standard deviations, and t-values for 5 health-relevant personality traits

Health-relevant personality traits subscale	Low PTSD Group M (SD)	High PTSD Group M (SD)	t
Antagonism	10.57 (2.82)	9.69 (2.97)	1.28
Impulsivity	11.33 (3.27)	10.04 (3.00)	1.42
Hedonic capacity	10.95 (2.61)	12.26 (1.83)	-2.03*
Negative affectivity	9.71 (1.87)	11.63 (2.33)	-3.06**
Alexithymia	9.67 (2.96)	8.67 (2.27)	1.32

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

The results show that there were significant differences between the two groups. The group with high PTSD symptoms reported significantly more hedonic capacity and negative affectivity than the group with low PTSD symptoms. The group with low PTSD reported more Antagonism, Impulsivity, and Alexithymia. However, the differences were not significant.

## 4.5 Aggression

The 29-item Aggression Questionnaire (AQ) was used to examine aggressive behaviour. The scale consisted of 4 aggressive traits: Physical aggression (9 items), verbal aggression (5 items), anger (7 items), and hostility (8 items). Details of this scale are described in Chapter 2.

To compare the two groups differing on PTSD symptoms on the 4 aggressive traits, independent-sample t-tests were used. The means, standard deviations, and t-values are displayed in Table 4.8.

**Table 4.8** Means, standard deviations, and t- values of aggressive traits by group

AQ subscale	Low PTSD Group M (SD)	High PTSD Group M (SD)	t
Physical aggression	19.10 (7.71)	22.45 (8.60)	-1.41
Verbal aggression	13.86 (5.14)	14.59 (3.96)	-0.56
Anger	15.29 (5.71)	20.21 (6.58)	-2.75**
Hostility	18.29 (6.31)	22.90 (6.22)	-2.57*

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

Table 4.8 shows that there were differences between the two groups on aggression traits. Overall, the group with high PTSD symptoms had higher scores on all 4 aggressive traits than the group with low PTSD symptoms. The group with high PTSD symptoms reported significantly more anger and hostility than those with low PTSD symptoms.

## 4.6 Cortisol levels

To assess differences between the two groups on cortisol levels measured by nanomole per litre (nmol/l), 5 cortisol samples were collected per day. Samples were collected immediately upon waking, 15-30 minutes after breakfast, at midday, in the evening (after lunch), and before sleeping. The means, standard deviations, and t-values are shown in Table 4.9.

**Table 4.9** Means, standard deviations, and t-values of 5 cortisol samples by group

Cortisol sample timeline	Low PTSD Group	High PTSD Group	t
	M (SD)	M (SD)	
1. Awakening	5.07 (3.67)	5.17 (3.30)	-0.10
2. 15-30 minutes after breakfast	5.42 (6.01)	3.67 (2.91)	1.37
3. Midday	3.38 (6.760)	2.76 (3.04)	0.44
4. Evening	2.34 (3.61)	2.27 (2.96)	0.078
5. Before sleeping	1.34 (1.03)	1.05 (1.13)	0.93

The results show that the group with high PTSD symptoms recorded higher cortisol levels upon awakening than the group with low PTSD symptoms. Also, the former group recorded lowest levels in the evening. However, there were no significant differences between the two groups on all 5 cortisol concentrations.

#### 4.7 Discussion

Two groups of participants were selected based on their score on the PTSD scale from the first study. The analyses showed that there were significant differences on PTSD symptoms between the two groups.

Furthermore, the results showed that most of the participants (95%) had experienced at least one traumatic event. The events experienced that were most often reported by participants were aerial bombing and losing a close person. Most events reported by participants were repeated experiences (i.e., more than once), and events such as attack by military, aerial bombing, and raid of house by military were reported as being experienced more than 7 times. In general, the group with high PTSD symptoms reported more experience with traumatic events than the group with low PTSD symptoms. In addition, more participants with high PTSD symptoms reported that they had felt distressed when they had been exposed to an event than those individuals with low PTSD symptoms.

In terms of health-related quality of life, it seems that because almost all participants in both groups had reported being exposed to traumatic events, the two groups had the same health problems and therefore, there were no significant differences between them in all health categories.

Regarding health-relevant 5 personality traits, the group with high PTSD symptoms reported significantly more Hedonic capacity (a facet of Extroversion) and Negative affectivity (a facet of Neuroticism) than the group with low PTSD symptoms. It seems that people who have more Extroversion traits are more sociable and carefree. It may be that they share the friend and family's problems and experiences of traumatic events so they develop more symptoms of PTSD than others. Moreover, people with more Negative affectivity are more susceptible to negative emotions. In turn this lead to more PTSD, that what most studies have found that there is correlations between Neuroticism and PTSD. These results are associated with many previous studies such as Man et al., (2006) and Engelhard, Van der Hout, and Lommen (2009). In contrast, the group with low PTSD reported more Antagonism (a facet of Agreeableness), Impulsivity (a facet of Conscientiousness), and Alexithymia (a facet of Openness) but the differences were not significant.

In terms of aggression, the results showed that there were differences between the two groups differing on PTSD symptoms on aggressive traits. The group with high PTSD symptoms reported significantly more anger and hostility than the group with low PTSD symptoms. The group with high PTSD symptoms reported more physical aggression and verbal aggression than the group with low PTSD symptoms although these differences did not reach statistical significance. According to the results of the current study, people with high PTSD symptoms were more aggressive than people with low PTSD symptoms in general. It may be that increased symptoms of PTSD lead to aggressive behaviour. This finding is consistent with other previous study results such as that by Orth and Wieland (2006) who conducted a meta-analysis of 39 studies. The results showing that anger and hostility are associated with PTSD among trauma-exposed adults as well as samples with military war experience were more anger and hostility than samples experienced other type of traumatic events.

Although the group with high PTSD symptoms recorded higher levels of cortisol on waking and lowest levels of cortisol in the evening, there were no significant differences between the two groups differing on PTSD symptoms on any of the cortisol levels measured at the 5 time points.

In general, there were significant differences between people who developed high levels of PTSD and those who did not. People with increased levels of PTSD reported more health problems and more aggressive behaviours than those with reduced levels of PTSD.

## **Chapter 5: Personality traits of people with PTSD**

The study reported in this chapter aims to examine the relationship between personality traits and PTSD in an Iraqi sample who have moved to live in a safer place as students or refugees in the UK after having been exposed to traumatic events such as war and conflict in Iraq.

The study screens the experiences of traumatic events, the presence of PTSD, examines personality traits, and cortisol levels as well as assesses the correlation between personality traits and PTSD. The procedure for collecting data and validation of the scales of the Baghdad Trauma History Screen (BTHS), the scale of post-traumatic stress screen (SPTSS), and Big Five Inventory (BFI) for personality, as well as the procedure of collecting and analysing cortisol samples are described in Chapter 2.

Fifty-one participants (34 males and 17 females; described in Chapter 2) were recruited from either Iraqi students or refugees living in the UK. The participants who take part in this study must be left Iraq after 2008, so they have experienced the war and conflict events that occurred in Iraq before that time. Most of the study sample was students (46) and only 5 were refugees. The statistical tests used in the current study were Chi-square tests, t-tests, one-way ANOVA, and Pearson's correlation coefficients to examine the differences between groups differing on PTSD criteria and sex.

The current study aimed to answer the following questions:

1. What is the rate of exposure to traumatic events and prevalence of PTSD among Iraqi people who have moved to live in the UK?
2. What are the personality characteristics of Iraqi individuals those who developed PTSD symptoms, and what is the relationship between personality traits and PTSD?
3. What are the cortisol levels of people who have been exposed to traumatic events and what is the relationship between cortisol level and PTSD?

### **5.1 Traumatic events**

To examine the rate of exposure to traumatic events and to examine PTSD and whether participants met criteria for PTSD on the DSM-IV, the screen of traumatic events was required. The experiences of traumatic events were assessed using the BTHS. The scale includes 22 events that focus on war and violence-related incidents as well as some items about natural incidents. In this scale, participants were asked to indicate to which of these event they had been exposed and whether they felt fear, horror, or

helplessness. They were also asked to indicate the frequency to which they themselves or that of family members or friends had been exposed to these events. Participants met criterion A2 of the DSM-IV if the trauma-related distressful event was accompanied by intense emotions of fear, horror, or helplessness.

### 5.1.1 Exposure to traumatic and distressful events

The exposure to traumatic events and the most stressful event were assessed and the results are shown in Table 5.1. The total number of participants exposed to each event, the number of those who felt distressed during the event, and the frequency of exposure to these events are displayed.

**Table 5.1** Number of participants exposed, distressed, and frequency of exposure

Events	Exposed* N (%)	Distressed** N (%)	Average number of times repeated
Aerial bombing	45 (88.2)	41 (91)	7.8
Road side explosion	33 (64.7)	28 (84)	2.5
Car bomb	27 (52.9)	24 (88)	2.4
Losing close person	27 (52.9)	22 (81)	2.8
Sudden death of close person	26 (51)	20 (76)	1.8
Shooting	24 (47)	21 (87)	5.75
Watching of video clip of a real murder	23 (45)	21 (91)	3.6
Dangerous car accident	16 (31.4)	14 (87)	1.4
Raid of house by military force	14 (27.5)	9 (56)	2.28
Arrested	11 (21.6)	8 (72)	2.27
Hanging of a close person	8 (15.7)	8 (100)	3
Robbery at gun point	8 (15.7)	6 (75)	1.25
Severe illness	8 (15.7)	8 (100)	1.37
Kidnapping or attempt to kidnap	7 (13.7)	6 (85)	1.42
Witnessing a violent death	7 (13.7)	6 (85)	1.85
Physical torture	5 (9.8)	4 (80)	1.8
Attack by military force	4 (7.8)	4 (100)	2.75
Serious fire	4 (7.8)	2 (50)	1.25
Armed robbery	3 (5.9)	3 (100)	2

Events	Exposed* N (%)	Distressed** N (%)	Average number of times repeated
Chemical attack	1 (2.0)	0 (0)	1
Rape / sexual abuse	0 (0)	0 (0)	0
Other	0 (0)	0 (0)	0

Note: Exposed= number of participants who reported to have experienced each event; distressed = number of those who had experienced event and reported distress. \* = number of exposed/51; \*\* = number distressed/number of exposed.

The results show that 96% of participants reported being exposed to at least one traumatic event. The event most frequently experienced by participants was aerial bombing (88%) followed by road side explosion (64%). Events such as car bomb, losing a close person, sudden death of a close person, shooting, and watching a video clip of real murder were reported by more than 50% of participants. About one third of participants reported experiencing a dangerous car accident and raid of house by military. The rest of the events were reported by less than 20% of participants. Rape/sexual abuse were not reported by any participants.

Participants reported experience of all events more than once. The mean of repeated time of each event ranged from 1 to 7.8 times. The most frequent events experienced were aerial bombing and shooting (7.8 and 5.7 times, respectively).

To examine whether the events were traumatic and met criterion A on the DSM-IV, participants were asked to report whether they had experienced fear, horror, or helplessness. In total, 48 of 51 participants (96%) reported they themselves or a family member or friend had experienced these feelings on at least one event that met criterion A on the DSM-IV. Therefore, the responses of these 48 participants were included in the next analysis and the 3 participants (4%) who did not report distressed feelings to traumatic events in order to meet DSM-IV criteria for PTSD were excluded.

### 5.1.2 Type of exposure

To assess the type of exposure, the participants were asked to indicate whether they themselves or whether a close family member or friend had been exposed to the event and how many times exposure had taken place. This was measured on a scale from 0 (not

exposed to any event) to 5 times or more exposed to an event. The differences between men and women in experiences of events were examined by Chi-square tests. The results are showed in Table 5.2.

**Table 5.2** Number and percentages of traumatic events experienced by participant and their family or friends

Type of exposure	Sex	0 events N (%)	1 event N (%)	2-4 events N (%)	5 or more events N (%)	$\chi^2$
Self-exposure	Males	0	0	10 (32)	21 (67)	12.342***
	Females	1 (.05)	4 (23)	7 (41)	5 (29)	
Other exposure	Males	10 (32)	3 (9)	12 (38)	6 (19)	1.187
	Females	3 (17)	2 (11)	8 (47)	4 (23)	

\*\*\*  
p<.001

The results show that males did not report having experienced 0 or 1 event and the majority of them (67%) reported having experienced more than 5 events. The majority of females (41%) reported having experienced 2 to 4 events and less than 1% reported no exposure to any event. The differences between males and females in the number of events that have been exposed personally were statistically significant.

In terms of the number of events experienced by a participant's family member or close friend, males reported exposure to a family member or friend twice as much as females (32% and 17%, respectively). More than a third of males (38%) and about half of females (47%) reported that a family member or friend had experienced 2 to 4 events. The difference was not significant.

## 5.2 PTSD

The 17-item SPTSS that was used in the first study was administered to screen for PTSD symptoms in this study. The scale included three clusters: Avoidance (7-items), hyper-arousal (5 items), and re-experience (5 items). To examine the differences between males and females on PTSD symptoms, a Chi-square test was conducted. The results of participants who met criteria for PTSD for the sample as a whole and by sex is displayed in Table 5.3.



**Table 5.3** Number and percentages of participants who met PTSD criteria on the DSM-IV

Met PTSD DSM-IV criteria	Whole sample N (%)	Males N (%)	Females N (%)
No	13 (27)	12 (39)	1 (6)
Partial	26 (54)	15 (48)	11 (65)
Full	9 (19)	4 (13)	5 (29)
$\chi^2$		6.50*	

\*p<.05

Table 5.3 shows that the majority of participants reported that they experienced at least one symptom of PTSD. Less than one-fifth of participants met the criteria of full PTSD on the DSM-IV. In terms of sex, more males than females reported they did not experience any symptoms of PTSD. Furthermore, twice as many females than males reported that they met criteria for full PTSD on the DSM-IV. There was a significant difference between sexes on symptoms of PTSD. Women reported more PTSD symptoms than men.

The differences between males and females on PTSD clusters were examined using Chi-square tests. Table 5.4 shows the number of participants who reported PTSD and met criteria on the DSM-IV for each cluster and according to sex.

**Table 5.4** Differences on PTSD symptom clusters between males and females

Sex	Met DSM-IV PTSD criteria	Avoidance	Arousal	Re-experience
		N (%)	N (%)	N (%)
Males	Yes	8 (25)	11 (35)	4 (13)
	No	23 (74)	20 (64)	27 (87)
Females	Yes	9 (53)	11 (65)	8 (47)
	No	8 (47)	6 (35)	9 (53)
	$\chi^2$	3.377	3.77*	6.831**

\*p<.05, \*\*p<.01

The results show that females reported significantly more re-experience and arousal than males. Furthermore, females reported more avoidance than males but the difference was not significant. It appears that women were more affected by remembering bad things about aversive memories of the traumatic event than men.

### 5.3 Personality traits

The scale of the Big Five Inventory (BFI) for personality was used to assess personality traits. The 44-item scale included 5 subscales: Extroversion (8-items), Neuroticism (8-items), Agreeableness (9-items), Conscientiousness (9-items), and Openness (10-items). To examine the differences between males and females, independent sample t-tests were used. The results are presented in Table 5.5.

**Table 5.5** Means, standards deviations, and t-values of personality traits for males and females

Personality traits	Males	Females	t
	M (SD)	M (SD)	
Extraversion	26.58 (4.75)	26.65 (5.79)	-0.043
Agreeableness	38.61 (4.34)	36.65 (3.63)	1.58
Conscientiousness	37.0 (4.23)	35.53 (6.23)	0.97
Neuroticism	21.26 (6.54)	23.47 (5.51)	-1.18
Openness	34.87 (4.29)	35.29 (4.19)	-0.32

Table 5.5 shows that there were no significant differences between males and females on any of the 5 personality traits.

The differences between those with no symptoms of PTSD, those who met partial criteria for PTSD, and those who met full criteria for PTSD on personality traits were examined using a one-way ANOVA. The means, standard deviations, and *F* ratios are displayed in Table 5.6.

**Table 5.6** Means, standards deviations, and *F* ratios of personality traits by PTSD symptom group

Personality traits	No PTSD	Partial PTSD	Full PTSD	<i>F</i> ratio
	M (SD)	M (SD)	M (SD)	
Extraversion	26.62 (4.38)	27.00 (5.29)	25.44 (5.79)	0.3
Agreeableness	38.85 (4.77)	37.62 (3.88)	37.44 (4.39)	0.43
Conscientiousness	38.31 (4.73)	36.31 (4.45)	34.33 (6.46)	1.75
Neuroticism	19.23 (6.16)	22.31 (5.90)	25.33 (6.08)	2.8
Openness	34.85 (4.43)	35.73 (4.41)	33.22 (2.99)	1.2

The results showed that the group who met full criteria for PTSD reported lowest scores on Extraversion, Agreeableness, conscientiousness and Openness and highest scores on Neuroticism compared to the other two groups. However, there were no significant differences between the three PTSD groups on scores on personality traits.

To test the relationships between PTSD and the 5 personality traits, correlations were calculated between personality traits and PTSD. The results are presented in Table 5.7.

**Table 5.7** Pearson's correlation coefficients between PTSD and 5 personality traits

Personality traits	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
PTSD	.069	-.021	-.28*	.38**	-.12

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

The results showed a significant positive correlation between PTSD and Neuroticism and a significant negative correlation between PTSD and Conscientiousness. However, there were no significant relationships between PTSD and Extraversion, Agreeableness, and Openness.

To look further into the relationship between PTSD symptom clusters and personality traits, Pearson's correlations were carried out to examine the bivariate relationships between three PTSD symptoms (avoidance, arousal and re-experience) and

the 5 personality traits (Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness; Table 5.8).

**Table 5.8** Pearson correlation between PTSD symptom clusters and 5 personality traits

Personality traits	PTSD symptoms		
	Avoidance	Arousal	Re-experience
Extraversion	-.083	.069	.037
Agreeableness	-.118	-.062	-.148
Conscientiousness	-.301*	-.23	-.22
Neuroticism	.35*	.38**	.36**
Openness	-.22	-.09	-.16

\*p<.05, \*\* p<.01

Table 5.8 shows that there are significant correlations between Neuroticism and the three PTSD symptoms while Conscientiousness correlated significantly with avoidance. People with high neuroticism tend to have higher PTSD symptoms than people with low neuroticism, whereas, high conscientiousness tend to reduce PTSD avoidance symptom. In contrast, there were no significant correlations between Extraversion, Agreeableness and Openness and the three PTSD symptom clusters.

#### 5.4 Cortisol levels

In the current study, 17 participants had agreed to provide saliva cortisol samples and participate in an interview. Of these participants, 9 met criteria for full PTSD and 8 did not have PTSD (details of participants are described in Chapter 2).

The saliva cortisol sample for one participant was invalid. Therefore, saliva cortisol samples for 16 participants were included for the final analysis. Five cortisol samples were collected in one day: Immediately upon waking, 15-30 minutes after breakfast, at midday, in the evening, and before sleeping. Table 5.9 shows the minimum, maximum, and mean cortisol levels at the different sampling times.

**Table 5.9** Means, minimum, maximum, and standard deviations for saliva cortisol level

Cortisol sample	Minimum	Maximum	Mean	St. Deviation
Awaking	4.41	22.7	11.15	5.02
15-30 min after breakfast	1.68	15.71	6.92	3.82
Midday (noon; mid interview)	0.28	7.54	3.16	2.2
Evening	0.66	7.76	3.55	1.75
Before sleeping	0.33	11.94	1.87	2.91

To examine the differences between the group with high PTSD symptoms and the group with low PTSD symptoms with respect to cortisol levels, independent t-tests were conducted. Means, standards deviations, and t-values are shown in Table 5.10.

**Table 5.10** Means, standard deviations, and t-values of cortisol level for two PTSD groups

PTSD	Awaking M (SD)	15-30 min after breakfast M (SD)	Midday M (SD)	Evening M (SD)	Before sleeping M (SD)
Low PTSD (n=8)	12.63 (6.19)	7.41 (4.37)	3.94 (2.23)	3.85 (2.16)	2.15 (3.97)
High PTSD (n= 8)	9.68 (3.28)	6.43 (3.40)	2.39 (1.99)	3.25 (1.29)	1.55 (1.07)
t	1.18	0.49	1.46	0.67	0.38

The group with low PTSD symptoms recorded higher levels of cortisol at all five sampling times than the group with high PTSD symptoms. However, the differences were not significant between the two groups.

## 5.5 Discussion

A group of 51 Iraqi participants, either students or refugees, responded to the questionnaires in the current study. The results showed that most of the participants (96%) had experienced at least one traumatic event. Most participants reported most experience with aerial bombs and road side explosions. Participants reported repeated experience with almost all events such as aerial bombs and shooting that were reported

with an average of more than 7 and 5 times, respectively. All events that were reported by participants were reported as distressful events. Distressful events were reported by participants between the range of 50% and 100%. In terms of the type of exposure, males reported being exposed to at least 2 or more events by themselves compared to females and the difference was significant. There were no significant differences between males and females in the reporting of exposure to events by family members or friends.

With regards to PTSD, the majority of participants reported that they had at least one symptom of PTSD. Only 19% of participants met the criteria for full PTSD on the DSM-IV. In terms of sex, more females than males experienced full PTSD and the differences were significant. With regards to PTSD symptom clusters, females reported more re-experience and arousal than males and the differences were significant. In terms of personality traits, the results show that there were no significant differences between males and females or between PTSD groups on personality traits. However, there were significant correlations between PTSD and personality traits. There was a positive correlation between Neuroticism and PTSD. This finding is consistent with previous studies that have found strong correlations between Neuroticism and PTSD (e.g., Watson, Gamez, & Simms, 2005; Chung et al., 2010). The negative correlation between Conscientiousness and PTSD might be explained because people high in Conscientiousness are better able to control and regulate stressful situations (Moorhead, 2010). A correlation was found between Neuroticism and the three PTSD symptom clusters; avoidance, arousal, and re-experience, while Conscientiousness related negatively only with avoidance. This further confirms the relationship between Neuroticism and PTSD.

In terms of cortisol level, participants with high PTSD symptoms recorded lower cortisol levels over all five sampling times. However, there was no significant difference between two groups on cortisol levels. That might be because of very small sample, only 16 people participated in cortisol measures.

In the current study, one-fifth of participants who had moved to live in a safer place after having been exposed to a large number of war-related traumatic events were found to have developed full PTSD symptoms. Personality traits such as Neuroticism and Conscientiousness were found to correlate with PTSD. However, the results showed no significant differences in cortisol levels between individuals with high and low PTSD symptoms.

The results from study 3 and 4 show some differences, even though, the participants in the two samples were equal in number, and exposed to similar traumatic

events. However, participants in study 3 reported exposure to more traumatic events than participants in the study 4. Also, participants in study 4 seem to suffer more distressful than participants in study 3. However, participants in study 4 reported fewer symptoms that met full DSM-IV criteria of PTSD than participants in study 3, that may be because participants in study 4 were more educated than participants in study 3 which can help people to cope with traumatic event more actively and moderate PTSD symptom as shown in study 1. Moreover, although the literature states that leaving the conflict place to safe place does not affect the experience of exposure to trauma (Priebe et al. 2010), however, those who are able to leave the conflict and war zone may have a better chance to recovery during they are in the safe place.

## **Chapter 6: What are the effects of the traumas on your life?**

### **6.1 Introduction**

In the last two decades, different parts of the world have been affected by war and been witness to an increase in traumatic events (Marshall & Cole, 2009). There have been an increasing number of civilian victims of traumatic events due to war and armed conflicts engulfing public populations over the world (Pedersen et al., 2008). These human-made disasters affected millions of people yearly all around the world with the majority of affected persons living outside the West, especially in resource-poor countries (Batniji et al., 2006). Different disorders have been suggested occurring following war. Post-Traumatic Disorder is one of the traumatic events' consequences (Gilbertson et al., 2010). The prevalence of PTSD is even worse in civilians in a conflict area where an estimated 30% of those who have lived in a war zone experience PTSD (Killebrew, 2010). The civilians in a war zone can experience a higher frequency of intrusive recollections and less emotional numbing. The response to post-traumatic for civilians can destroy their assumptions about safety (Johnson & Thompson, 2008).

Numerous studies have found varying prevalence rates of PTSD among samples following war trauma depending on the methodology employed by these studies. Cardozo et al.(2000) found the rate of PTSD symptoms immediately after a war finished was 17.1%, whereas this rate rose to 25% one year after the war had ended (Cardozo, Kaiser, Gotway, & Agani, 2003). Scholt et al. (2004) studied the prevalence of current PTSD in a civilian sample from Eastern Afghanistan aged from 13 and older and 20.4% were found to have PTSD symptoms following war and oppression. Similarly, De Jong et al.(2001) measured life-time PTSD in four post-conflict settings with a sample of 300 aged 18 and over. They found the prevalence rate of assessed PTSD was 37.4% in Algeria, 28.4% in Cambodia, 15.8% in Ethiopia, and 17.8% in Gaza.

Farhood et al. (2006) measured the prevalence of war-related PTSD symptoms in south Lebanon in a sample of 1700 aged 18 and older. The current PTSD prevalence was 29.3%. In addition, they found almost all participants had experienced, witnessed, or heard of a war-related traumatic event.

However, there may be a different value or meaning for PTSD symptoms in different cultures and because the instruments used in these studies represent a Western value, the results of these studies may not accurately reflect the prevalence of post-traumatic stress symptoms in other cultures (Nicholl & Thompson, 2004). Furthermore, most of the studies' results, which define post-traumatic responses by Western values,



have found quite low rates of PTSD symptoms among survivors of war trauma and torture within other world samples (Johnson & Thompson, 2008). So, it is important to examine how PTSD is established in other cultural meanings and social relationships (Kienzler, 2008). In addition to that, a major issue in the aetiology of PTSD is the explanation of the role of pre-morbid factors such as personality characteristics and previous psychiatric illness in shaping a vulnerability to the disorder (Grzesiak, 1992).

In addition, some issues may not be easy to explore through quantitative methods such as how the traumatized person develops subjective understanding and makes sense of complex events, particularly in war-related trauma (Jones, 2002). Moreover, quantitative studies do not provide a conceptualized view of the experiences of traumatic events and humanitarian responses to disaster. In contrast, qualitative methods are more applicable to situations concerning public health that quantitative methods are unable to examine (Batniji et al., 2006). Bills et al. (2009) argue that qualitative evaluation of experiences of traumatized groups may provide a good understanding of trauma outcomes. Such information will be more helpful to a scientist in understanding the individual and social impact of traumatic events and to the therapist who is trying to help traumatized individuals.

Therefore, in this study, a mixed approach between quantitative and qualitative methods was used to assess the impact of traumatic in civilians who had lived in a war and conflict zone in Iraq. Using different methods to collect data and comparing the results will provide a rich source of information about the phenomenon of experiences of traumatic events and its outcomes and will also allow to compare test quantitative information against qualitative so to provide different sources of evidence for the meaning given to such events (Mehmetoglu & Altinay, 2006). The main aim of this study was to explore the nature of trauma exposed by people in Iraq and to develop an understanding of participants' feelings, the coping strategies they used with these stressors as well as the effect of the trauma on their health, family and social relationships.

## **6.2 Method**

### **6.2.1 Study Design**

The interview and analysis were based on grounded theory as originally proposed by Glaser and Strauss (1967). Grounded theory is a qualitative systematic method for

data collection, synthesizing and inductive analysis to construct a theory based on data (Charmaz, 2003).

The current study used open interviews carried out on a person-to-person basis by the researcher of the current study. The participants were free to choose what they wanted to talk about, such as symptoms, illness, and their experiences. The open ended questions, such as – “You said that you have been exposed to traumatic events, what happened there?” “How is that?” “Tell me about your thoughts and feelings when you were exposed to these events”. “Can you explain your experience in detail?” “What did you do?” “How is that?”. Further questions were utilised by the researcher to encourage the interviewees to provide more details such as “What do you think?” The participant’s words and actions about their experiences may give more understanding than their response to questionnaires (Killebrew, 2010). This will be useful information to obtain in terms of what the participants perceived as experience of exposure to traumatic events, and negative outcomes. The interviewees were asked to explain what they perceived as social support and the coping strategies that they have used. Furthermore, the researcher tried to obtain information about participants’ thoughts on the effect of trauma on their health. The interviews took 30- 60 minutes depending on the amount of information that the participant provided. All interviews were tape-recorded with interviewees’ permission. All interviews were then transcript in a hard paper format and all names changed to pseudonyms before analyses.

### **6.2.2 The data analysis**

Grounded theory was used for data collection and data analysis. Grounded theory is defined as an analytic method from inductive qualitative data for constructing theories (Charmaz & Bryant, 2010). Grounded theory was used basically for a solution and dealing with the murky social problems such as what we tried to investigate. These social problems request flexible research questions where there is disagreement about what the phenomena exactly mean or existing theory is insufficient, to explore and develop hypotheses (Heacock & Hollander, 2011). Furthermore, the available existing theories were not developed with the particular population in mind that was studied here (Holt & Tamminen, 2010).

The data was collected through personal open interviews, transcribed by hand and coded using Strauss and Corbin’s (1998) open coding method. This involves three stages: first is familiarization, this stage is aimed at letting the researcher familiarize themselves with the data by listening to the tape cassette and re-reading the written descriptions. The

second stage involves the coding, conceptualization and ordering. In this stage the researcher is coding data in order to isolate significant incidents, and includes, A. open coding where every line of participants' speeches coded, and the data broken down into discrete parts, B. focused coding included naming concepts, and C. conceptual categories include grouped the concept under more abstract concepts by conceptually similar in nature or related in meaning. The third stage is the enfolding literature (Mehmetoglu & Altinay, 2006; Strauss and Corbin 1998). In this study the data collection and data analysis occurred concurrently, this procedure will allow a process of steady comparison, as in the basic procedure in grounded theory (Strauss & Corbin, 1998) .

However, the interviewer asked about different issues, trauma experiences, PTSD symptoms and the way of dealing with stress. Therefore, the data will break down into discrete parts and be categorized to be examined and compared for differences and similarities in concepts, awareness of the experience, symptoms, and the negative and positive outcome of the experience.

### **6.2.3 The Procedure of analysis**

The researcher transcribed the tape recording in order to engage with the data using grounded theory, each transcript was read many times by the researcher and initial summarising and explanation recorded for each pieces of important dialogue. The process included three stages of coding: initial, line - by-line coding, focused coding and conceptual categories (Charmaz, 2003). In total 2028 relationship- oriented incidents were recorded through analyses. All these incidents were written on person sheets as short statements to make it easy to be understood, and able to be compared in the next stage. The analysis includes open coding to create the initial coding by comparing data with data for similarities and grouping them accordingly. From these 2028 incidents, 503 open coding categories were created by classified the events. The second stage was to bring out a focused coding from the open coding by categorizing the similar themes together (Charmaz, 2003). All similar incidents found are grouped together under a higher-level concept (Corbin & Strauss, 2008), to create 21 categories. The final stage involved further reorganisation of the themes (in the second stage) to explore the similar meaning and to link the categories to form an explanatory whole (Strauss & Corbin, 1998), which lead to develop a supplementary theory based on data, which comprised 6 ultimate categories.

### **6.3 Participants**

One hundred fifty Iraqi students and refugees, who moved to live in the UK, were contacted and asked to take part in the study as volunteers. Of those 150, 51 participants responded to the questionnaires as describe in Chapter 2. The current study recruited 17 (8 female and 9 male) of the 51 participants for interview, 9 with PTSD symptoms (5 men and 4 women), and 8 without PTSD symptom (4 men and 4 women).

The researcher contacted the eligible persons who fitted the study criteria of being an Iraqi citizen, living in the UK (students or refugees), between 25-50 year of age, exposed to traumatic events screened by Baghdad Trauma History Screen (BTHS) and calculated the score on the PTSD symptoms scale (see Table 1.6). All participants were exposed to traumatic events; half of the sample developed PTSD symptoms. 16 (94%) were married and only one was single. The participants came from different cities in Iraq as 10 (58.8%) from Baghdad, 2(11.7 %) from Anbar and Basra and 1(5.8%) from Diyala, Mosel and Kirkuk, 88% of participates in the sample had higher education. The age ranged from 27-44 with average of 35.49 (SD= 4.30). The interviews took place in the interviewee or interviewer's house or university lab and lasted 30-60 minutes. The biographical information and consent was taken prior to the interview. Theoretical sampling was conducted for only two participants to fill gaps found by the data for developing a theory. Therefore, in the current study, due to the nature of and size of the sample some of the methods of grounded theory such as collecting data, coding and comparative methods were used, however data saturation was unlikely to have been achieved.

**Table 6.1** Participant Characteristics

Participants	Age	Gender	Social status	Residential area	Education
1. MH	32	Male	Married	Anbar	Postgraduate
2. T	37	Female	Single	Baghdad	Postgraduate
3. AM	42	Male	Married	Baghdad	University
4. AZ	28	Female	Married	Anbar	University
5. H	34	Female	Married	Basra	university
6. N	40	Male	Married	Basra	Postgraduate
7. B	40	Female	Married	Baghdad	Postgraduate
8. AS	39	Female	Married	Baghdad	High school
9. SS	40	Male	Married	Baghdad	Postgraduate
10. EA	31	Female	Married	Baghdad	University
11. JA	41	Male	Married	Baghdad	Postgraduate
12. WQ	37	Male	Married	Diyala	Postgraduate
13. ASH	36	Male	Married	Baghdad	Postgraduate
14. NO	30	Female	Married	Baghdad	University
15. OM	34	Male	Married	Mosel	Postgraduate
16. SA	37	Male	Married	Kirkuk	Postgraduate
17. EN	30	Female	Married	Baghdad	High school

## 6.4 Results

### 6.4.1 The description of exposure to events and presence of PTSD symptoms

The interviewees had been exposed to different incidents in their lifespan as shown in Table 6.2. The most frequent events were explosion (bombing) (70%), a killing of a close relative (53%), threat of being killed (41%), seeing violence, killing, bodies and the smell of those who had died (47%), aerial bombardment (35%), kidnapping of family members, and exposure of the danger of being killed themselves (23%), exposure to military robbery (17%), arrest (11%), displacement (5%). In terms of feeling fear of exposure to the incidents this was reported by 100% of the sample, feeling that one's life was under threat and expectation of death was reported by 88%.

**Table 6.2** the exposed to traumatic events and PTSD symptoms

	Close relative has been murdered	Close relative has been Kidnapping	Armed Robbery	Displacement	Bombing	Killing threat	Shooting	Expose to kill	Bombardment	Aerial bodes	Watching violence, killing, bodes	Fear of exposed kill or kidnapping	Arrest	Life threat & expect to die	PTSD
1-MH*	Y**				Y			Y		Y	Y		Y	F	
2-AM			Y	Y	Y	Y		Y	Y	Y	Y		Y	F	
3-AZ	Y	Y			Y	Y	Y		Y	Y	Y		Y	F	
4-B	Y				Y	Y					Y		Y	F	
5-AS					Y						Y		Y	F	
6-JA	Y						Y	Y		Y	Y		Y	F	
7-NO		Y			Y						Y			F	
8-SA					Y					Y	Y		Y	F	
9-EN			Y		Y					Y	Y		Y	F	
10-T		Y				Y			Y		Y		Y	NO	
11-H	Y				Y				Y	Y	Y		Y	NO	
12-N	Y						Y		Y		Y			NO	
13-SS	Y		Y					Y			Y		Y	NO	
14-EA	Y					Y	Y			Y	Y		Y	NO	

	Close relative has been murdered	Close relative has been Kidnapping	Armed Robbery	Displacement	Bombing	Killing threat	Shooting	Expose to kill	Aerial Bombardment	Watching violence, killing, bodes	Fear of exposed kill or kidnapping	Arrest	Life threat & expect to die	PTSD
15-WQ	Y				Y	Y	Y		Y		Y	Y	Y	NO
16-ASH		Y			Y						Y		Y	NO
17-OM					Y	Y	Y				Y	Y	Y	NO
Total%	9(53)	4(23)	3(17)	1(5)	12(70)	7(41)	6(35)	4(23)	6(35)	8(47)	17(100)	2(11)	15(88)	

\*First letter of participants' name transferring from Arabic into English for anonymity.

\*\* Y (indicates) the participant had been exposed to events. F= full PTSD, NO= Without PTSD. Note: The incidents in this Table come from BTHS and PTSD score that applying on the sample.

## **6.4.2 The description of the experiences**

### **6.4.2.1 Uniquely**

The participants describe their experiences as unique, rare, and something that had not happened to any society (NO, OM). Therefore, it is hard to understand, accommodate or to describe precisely as it was

“It is something massive has happened everywhere, It is hard to describe or imagine ...actually it is indescribable” (MH, SS), “unless by an Iraqi who lived through the events (ASH)”, Others (JA,OM) describe the situation as “you see the war in front of you, you see the dead bodies, killing and shooting when you go to your work...and you expect that you could be killed or arbitrary arrested at any moment”. In the same direction WQ, T, B and SA said “You could not understand what it was like unless you have experienced a similar situation or you have to provide the other person with full details to understand”, One of participants, AM, describe the situation as “it’s like an explosion has happened in the same moment all over Iraq, like a nuclear bomb (Hiroshima bomb) that destroyed everything in life, and in the country... you must live in the situation to know what it is like. A non -Iraqi cannot understand it”.

All in the study sample had been exposed to more than one incident, witnessed several killings, kidnappings, bloodied bodies on the road, smell of burning flesh or heard about these from family members (Table 1.6).

### **6.4.2.2 Great on-going threat**

Significant numbers of participants talked about an event, as though it was still a constant threat... “people feel there is a constant danger, and felt threatened every time they left their home, but continued going to their work (EN, SA, T, AM, EA), regardless of whether the event did take place or not”. There is a feeling of constant threat existing in different forms. The incidents in Iraq are life- threatening...

“There is a loss (someone being killed) in every Iraqi home... the threat affected all Iraqis” (WQ, AZ, ASH).

“.....I always put in my mind it is possible in any moment an explosion will hit me ...I have this feeling...mean, it is not out of my mind even when I go out with my family....mm,.. I remain worried and think a roadside bomb or car bomb or something will explode.... I have this



feeling...I never go outside without keeping in my mind that an explosion might kill me in the street” (ASH).

They are under continuous threat ...

”You may be killed at any moment (JA). “There are perceptions and fantasies of things can happen... because you may be exposed again to a similar experience” (T). They see the situation in Iraq as very dangerous all the time for every one living there. All people were likely to be victims of these incidents... “People die for no reasons ... the threat is every minute”(EA, OM).

This description supports the idea that the experiences of trauma are not discrete isolated occurrences, but the participants describe their whole life as traumatic in Iraq. That is consistent with the concept of type A trauma that entails sustained or repeated stressors (Bradley & Grinage, 2003).

There was a massive threat of danger to people’s lives during the war. The participants tried to describe the overwhelming and massive events of war to justify the risks and their fears.

“In 1990 the US airplane demolished 12 houses with their occupants ... I still have memories about the place...and the smell of the dead ... the bombed houses and things coming out of them” (H). “In Iraq, it is impossible to reduce the risk” (AS). “Even with the police on the street you do not feel safe”.

There is distrust and people are uncomfortable with the police who are supposed to protect people in Iraq. “You cannot trust the police and security men because fighter military groups penetrated them” (SA, T and WQ). This exacerbated the problem of safety when people are unable to get trusted support from those agencies which are supposed to protect them. That in turn led to loss of trust in the state as a whole.

“The security members became part of the problem; they use guns and shoot all the time... and you are always considered a suspect” (OM). “They did not offer help when I need it” (SS). “There are no longer safe places in the streets even with the existence of police” (EA). All the participants expected that everybody left their homes for work or other reasons would likely face death (be killed) or kidnapping (EN, NO, AZ, JA).

"The dangers can classify as very high ....because when you ride a car, you do not know ...the check point stopped you ...you don't know maybe there is someone who wants to kill you... if there is a knock on your

door, maybe someone will kill you at the door...mean ... there is nothing expected or place related to dangerous...It's everywhere" (B). They feel they are surrounded by danger from every side and expect to die... death was very close to me (AM, AZ). "I think the danger is around you from everywhere... if I wish to draw, it will be like a circle surrounding you from every side" (B). During the event, I felt my life ended ...I expected him to shoot me at any moment (SS).

The participants describe living with a feeling of great fear and continuous horror as a slow death where there is no hope, no ability and no means to respond to what was happening (AM, AZ).

" These events demolished our life...there is no life... It is just death... you do not feel alive ...you are waiting for your turn to die" (MH).

#### **6.4.2.3 Unknown source**

The threats were coming from different dangerous origins, and this gave a sense that one had to be wary of danger from mysterious sources (NO, H) the danger is unknown and unspecified in time or place, as if you were encountering a ghost or fighting a mirage that you do not know or do not expect. This is especially true for those who received threatening letters.

" The disturbing thing in this threat.... you are fighting a ghost....mean... you do not know who he is, ... and when it is safe or not ... mean ... the strange thing in this issue ... that you do not know the person who threatens you, where he is ... who he is ...when is it to happen ... is he serious or not...what is his capability or ability of implementing his threat ...that..means.. fear of unknown in the specific...the person who plans to kill you can see you, but you cannot see him" (SA).

The continuous horror leads to a state of tragedy which people cannot describe precisely. As the participants describe the traumatic events, they had a sense of unpredictability or not having control over events rather than avoidance or resistance to it. The events and violence no longer seems random or meaningless for subjected people but it is still terrifying meaningful (Johnson & Thompson, 2009).

#### **6.4.2.4 Watching and waiting**

Participants felt they were living in war zone so they expected that they would be exposed to one or more incidents. These expectations made them able to accept the events.

" It was not a city ...we were moving to a war zone...it was merely a war zone, and everybody had a house and lived in this zone... it is really a great shock, terrifying, and the people in the state of anticipation " (AM, JA). They have bad ideas during the events related by dying or disability (T). They were waiting for their role to die, " you feel it is not your turn today ... tomorrow maybe is yours" (AZ). They have nothing to do but watch and wait to see what tomorrow might bring to them. "We are permanently living with fear and anticipation" (EA). These waiting moments could be more difficult than the event itself. It is waiting and anticipation... there is a sense ...and expectation that something bad will take place (T).

During the exposure, especially the kidnapping of a family member (NO, T) time passes very slowly and heavily; it is extremely difficult to endure the waiting. The time is truly hard and passes very slowly for those caught up in an explosion (ASH, EA). These were very difficult waiting moments (SS).

#### **6.4.2.5 Farewell**

Because of the constant threat of death and danger, family members would bid each other farewell, and say good-bye to anyone who leave as though that person may not be seen again(may not survive) "you may see the person in the morning, and will not see him again in the evening...either one dies or returns... it is a frequent situation" (AZ) , or the person who goes outside will recite the witnessing (Alshahada; *I witness, there is no God but Allah, and Mohammed is his messenger*) . The Alshahda is what every Muslim must say before he/she dies, especially when there is an awareness that he/she will die soon or there is a danger close to him (NO, SS). This means there is a high risk of death for everybody who goes out. The family almost expect something terrible will happen, and they have to be ready for the next loss.

Because death (being killed) is a daily expectation for any one of their family members in any given moment, especially for those who may be out of the house during the explosions which continued some days, the family has to account for the family member either by phoning him or asking someone about him just try to lessen the stress

"Every single day we have to account for the whole family...it is a tragedy" (AM) (AZ). One participant describe that as: "it is hard to moderate the stress... it is not just when you are out of house, but you are

always preoccupied with these incidents ...such as; one of the family member is out somewhere, and an explosion has happened there... or you heard news of an incident ...you have to call... or something has happened in a residential area where your brother or sister live and you have to contact them immediately '' (OM).

#### **6.4.2.6 Being part of society culture**

The incidents mentioned are not what one experience in a normal society but this has become the norm in Iraq.

"The violent events such as killings and threats have become part of everyday life, and you are part of it" (SA). "We are used to live with pressure; there is no solution" (NO). "I was under pressure all the time" (T). "The subject of violence applies to all people" (ASH). "It became part of one's life and social culture, and the people denied the fear" (N). "I had experience of living under pressure and that helped me to cope with the events" (WQ).

These traumatic events become part of everyday life that makes one expect them and as almost normal recurrence.

The participants experienced a lot of stressful events over time which made them accustomed to seeing killings, blood and experiencing loss...the situation has become routine (AM, NO). These events become normal, as it happens all the time, we had become overrun by every day events ... there was no longer the same fear. It became usual...natural (AZ). The people may be saturated with a lot of massive harmful events (JA). The danger became familiar in spite of it not being usual (EA). Frequent events make it look commonplace and possible to a co-existence with (B). It becomes normal that when a close relative or friend died. People would offer condolences say 'May God bless his soul (SS). It seems that participants begin to accept the events as part of society everyday life and that maybe maintained the sense of normality and coping.

#### **6.4.3 The emotions**

There is a wide range of emotions that accompanied the events. These feelings can be classified as:

##### **6.4.3.1 Feeling of fear and horror**

The interviewees describe the incidents as scary events and said it is terrifying ...it is an indescribable feeling (MH, AZ, AM, SS, EA, OM) everything is horrifying; like

the track sound, shelling of rockets and bombings... there were great fear and anxiety ... life is a terrifying nightmare... fear is not from the death ... it is from what may happen before that ... it is how one meets death (B). There was feeling of constant fear and anxiety (EA). There is fear even at home when there is a knock at the door ... you could be taken from your own home (NO).

"There was a very great fear... this fear was exacerbated ... because every day, there is bombardment...we hear the rocket scary sound... we do not know which of these strong sounds will fall in our house ...and then in the last war our city bombardment again as the other cities in Iraq, this time the sounds were stronger than those from Iraqi- Iranian war" (N).

There is no safety, the danger is everywhere, "the people always feel in danger... there is no safety place ...not at home ...not at the street even with the police" (EA). "The sound of tanks and bullets raises fear and insecurity... when its stop you feel some safe. I feel fear... because I'm sure something bad will happen" (AZ). "What happened to be irritated from the nightmare" (Kimhia et al.). The person subjected to an incident fears it will happen again ...it's great fear (T). "You may be as cautious as you can, but it will not prevent the event or the fear of it" (SS).

At the time of events, there are terrible emotions, which cannot describe it, just a mixture of anxiety and suspicious (SS).

"Feeling of shock is mixed of fear with expectation.... means ...strange status ...feeling that I cannot characterize ...I did not experience anything like that in my life before ... and when I went through this experience, I could not give a name to these emotions ....it was fear...anxiety...I did not know what is going on" (ASH). "I was exposed to a lot of terrifying events" (MH).

The people who are subjected to an atrocity feel paralysed, unable to stand up or think of the next step during the events (AM, ASH). They see themselves moving without aim or will and these moments are a mixture of fear, anticipation and anxiety (SS, B). It was the feeling of fear and inability to behave ... feeling of humiliation and sadness (EA).

Anxiety is the most frequent feeling for people who are exposed to traumatic events. More than 90% of the samples feel anxiety about the situations that they were living with dangers all the time which leads them to feel anxious, there are permanent states of fear and worry from exposure to violent events (JA, WQ, NO, B, EA).

"It was a machine of mass murder, merciless, blind machine, there was fear, worry about my family, brothers, sisters, my children and myself as well" (AM). "There is no chance of escaping anxiety unless the situation is improving; I'm not able to get rid of the worry" (OM, N).

As a result, those conditions impact on their lives and lead to changes in their behaviours with people in general, and with their family.

#### **6.4.3.2 Grief**

The participants who are living with these incidents have a feeling of grief.

"The vision of suffering people is very sad... I feel greatly saddened about the situation and the people ...it is only sadness (EA, AS). They have nothing to face the frightening events with, except grief (T). When you lose someone close you feel sorrowful and your life changes after he has gone (AZ). It was a very sad moment when you lose your property...and I feel that loss (SS). The scene of killing was very unhappy and painful...people were killing for no reason (EA).

During the situation, there was a feeling of pain because of what is happening (T,H), I have seen people killed in front of my house... the scene is present even now...there is pain and shock...it still impacts me...the effects will stay for a very long time" (AM). There was a pain in the time of the loss...and it continued for a long time (SS).

With all these continues traumatic events and its grief and pain, they would cry when they lost someone close. They would cry alone loudly (JA, T, AS). Through crying they were able to cope with the terrible stress. Crying is a normal reaction to the loss of loved one in Middle Eastern communities. An outpouring of grief is acceptable and expected. Those who were unable to show their grief in the acceptable way would be thought to be uncaring and had not loved the deceased, the situation would be understandable by neighbours and strangers. So people cannot express their grief without crying, otherwise there will be some kind of a weak connection with the deceased, especially in the presence of strangers and neighbours.

#### **6.4.3.3 Despair**

Because the events are on-going, they feel they have no hope of stopping them and perhaps the incident will happen again to the same person or to another family member (T). When the participants talked about the hope they described their situation as;

"It means ... in our case it has not stopped... There is killing every day...These events are repeated every day... there is no hope of making it stop and you have to live with it" (AZ).

Their sense is despair for the future. "We were thinking what the future will be ... how this will end ... at what cost ... our life ... lives of millions of people... there was despair" (AM). There are thoughts of melancholy about the future and lack of a solution (EA, B). There is hopelessness that there could be a return of safety and stability to people's life again (NO).

Most of the interviewees became depressed; they felt that life no longer had any meaning. There is only misery, there is no pleasure (darkness) (AM, AS).

"I cannot do anything ... it is only the sadness (EA). One of them, JA, talks about his feeling during the shock and attempted suicide by swallowing more than 30 tablets of Paracetamol. " I felt miserable and hopeless and tried to commit suicide by swallowing more than 30 tablets of Paracetamol because of the sense of displacement and loss" (JA).

The participants talked about their feeling regarding the events, and when asked if there is any improvement in their case, their response showed no optimism but pessimism for the future (EN, AM, MH, AZ, N). They consider the situation is difficult to improve, and cannot return to the calm way of life before. The future is unknown ... who knows what the end will be like'' (AM). They would like to feel optimistic tomorrow, but they think it can only be worse ... there is no doubt that tomorrow will be worse (AZ, AS).

#### **6.4.3.4 Anger**

When the participants were caught in events, they felt helpless, that they could do nothing, they feel angry (Kimhia et al. 2010).

"There is nothing but anger, and talk, talk, and wondering why this has happened to me, and I could do nothing" (MH).

#### **6.4.3.5 Nervous- upset**

The participants feel they are upset all the time..

"You are constantly under pressure ...you feel tense ... you become upset quickly" (JA, NO, OM), I always feel nervous, edgy and uncomfortable (MH)

They think that people exposed to trauma in Iraq hate each other. Therefore there is enmity, now they are more aggressive (AZ). I'm always edgy because of trauma (JA). They think that all people become more nervous and more aggressive even in the street (OM, SS, ON)

#### **6.4.4 The perception of the events**

The participants looked at the events like something out of their ability; they express that feeling into two things:

##### **6.4.4.1 Ability**

The participants feel the incidents are out of their ability to control.

"It is enforced on us...there is no alternative choice in our hand to do" (AZ, EN). We do not have much to change or get rid of these things " yes it is true, there is nothing in our hand we can do... people are not in the identical attitudes or have the same opinion or aspiration and there is no institution or government supporting them to make the change" (H). During the event, I do not know how to behave ...I freeze in my place ... I'm not able to do anything (B).

There is no desire to discover what happened in the heat of the moment (ASH). Some of them were unconscious about what happened around them (NO). They feels that the events are out of their control...and there is no idea of solution ...we were inability to behave ... there was nothing but patience (T), "means... I cannot do anything ...nothing in my hand ...you feel restricted ... imprisoned ... do not have the will...I cope with stressful events silently without do anything" (MH). There is nothing in people hand to do except being caution and try to avoid (SS).

##### **6.4.4.2 Acceptance**

The participants feel like they do not have a choice to think about what has happened because every day there is more to see...as they describe that;

"So you have to accept and hand over ...we were forced to endure and to accept the subject" (T, AZ). We were capable to stay and bearing and hoping the situation would be improve (OM). With the time and a lot of stressful events, you will be accustomed to killing, blood and loss... and able to forget (AM).



## **6.4.5 Re-experiences**

### **6.4.5.1 Memories**

During the stressor events, subjected people had confusing thoughts...

"I was shuddered ... I do not know where to go" (B). These feelings stayed with them ..."A lot of participants have a panic reaction toward high or sudden voices" (H). "The effects of previous events stimulate and provoke me... especially...when I hear or see a killing incident" (AM). "There was distrust and suspicion about everything around me" (ASH).

As a result of living with these stressful moments, most of the participants talked about a lot of moments and things related to the event's place. The sounds and images led to remembering of the incidents or similar feeling of the event's time such as anger and grief ..."the events are repeated in front of me as if it is a recorded tape in my mind" (JA, ASH, and B). They try to forget the scenes of incidents, but they could not "I cannot forget the dead bodies and feel fear" (H, EA)

..."I still live with distress, even now ...some time I feel restlessness...it is repeated tragedy" (AM). The seeing of the events and hearing of them trigger the memories of tragedy .They have memories of the places of the explosions and try not to return to the incident sites. "Remembering the incident made you lives with the same pain...and you feel tired of remembering ... the memories remain bitter" (T, MH, AZ). "When I go back to the same place, I feel the same feeling and the heart will start beating so fast" (SS)." I still feel anxious when I hear any bad news" (NO).

Some of the participants feel like they have forgotten more important things in their life (NO)."My brain is always preoccupied with what happened in Iraq, so I got bad memories, and I keep forgetting many things" (EN).

### **6.4.5.2 Sleeping**

The participants are having problems before and during sleep that represents inability to sleep, fear of sleeping, nightmares and the family would be grouped together during sleep:

The sleeping was very difficult for people who subjected to traumatic events and feel they do not have the ability to sleep, and they cannot sleep... "When you remembered the events you cannot sleep (T)". Some of them did not find any desire to sleep (AS). Others with worry could not sleep (B)

A lot of subjected people describe their sleep as turbulent, and they were prone to dreams described it as disturbing thing; it is a nightmare about event's subject. They have seen themselves in situations as these which he was exposed in the past (AS).

"I have terrible dreams and nightmares ... unpleasant dreams about Baghdad... I wake up uncomfortable about my bad dreams" (B, EN).

The participants are afraid to sleep because they may not wake up again (H, NO, AS) or the USA's military forces may raid their houses and kill them at night (AZ). Those people try to avoid these sleeping problems therefore, the family member group together at a place in the night and sleep together as they will die or survival together (JA, N, and H). That may give them a kind of safety during sleep.

### **6.4.5.3 Physical impact**

There are some physical impacts on their personal health or relatives who have been exposed to these events such as headaches for long time, high blood pressure, arthritis and colon irritation (OM, AS, NO).

"As a result of the events I have colon irritation and migraine" (NO).

"I entered a hospital and still have a problem of accelerated heart rate" (SS).

### **6.4.6 Coping strategies**

The participants in the current study used different strategies to cope with the traumatic events, some of these strategies were very helpful to manage their experiences. The participants used three main coping strategies to deal with their incidents:

#### **6.4.6.1 Support**

In Iraqi culture, the family bonding plays a key role in the personal relationships. Many of the participants have got support and encouragement from the family, and they depend on that to feel better (ASH, JA). They are gaining the strength from their families to overcome horrible times...

"My father talked to me about what happened... that helped me to get over the bad situation" (T, EN).

"In adverse times the family gathered together and supported each other" (EA). That is one of the most essential types of support somebody can get in the crises times when the person perceives that he/she is not alone in facing these events. In addition, talking to the extended family and neighbours contribute in distributed the pressure

caused by traumatic event among the people. That gives a sense of release and sharing the experiences. That was illustrated by the participants responded when asked " how can you advise somebody who is exposed to these incidents?"

" I advised them to talk with close friends... a person who you trust"  
(WQ, AZ).

This support is part of wider support the person can get, the participants feel that social support is a key factor in helping them to normalise their experiences. Because of the importance of social support, the participants emphasized that a lot of neighbours have been visit him when he exposed to an event (SA, NO).

" All people in my sector had come to visit me ... those who I know or not" (SS) "I got great support and encouragement from different people around me" (JA). The moral and financial support makes you feel you are not alone in facing the events, which help the subjected people to recover (H, ASH). The support of my neighbours and friends and talking with trusted people gives me more self-confidence and trust in other people ... that make the relationship with the other people improve ... and make people more cooperative and humane... the solidarity is needed (T, AZ, EA, WQ).

These make people work together as communicating vessels, which it is working to distribute the level of water to be equal in them. As the society work to promote the resilience and keep the stress level as low as possible and equal in all people. This may be the common coping strategies that used by people and depending on society culture. This strategy needs more studies to support it.

As part of this support, other participants felt reassured that they were not alone in these situations. Therefore, they feel better when they know there are many people who have been though the same situation, especially when they improved and recovered. That gave them a sense that they were able to cope with their own experiences.

"The other's experiences may keep hopelessness away...and make you more patient and endure. "Because they lost all their family while I lost one brother" (T, JA). "Seeing what has happened to other people may trivialize our feeling of anxiety and tension about what happened to us" (AZ, ASH, and SA).

Some of them were looking forward for the future and trying to see the hope for coping;

"I try to forget, forgive, and have optimism for the future" (AM). "I always try to be optimistic about the future ... the future may be better" (H). "The facing of fear may be the solution" (N). "We have our faith in God" (OM).

#### **6.4.6.2 Recourse to religion (faith)**

As the sample is originally from a Muslim society, religion is very important to them, these beliefs helped to accept the trauma as they believe in God, and they see the events, as the God willing for some purpose, so they turn to God and hope to stop it (AZ, JA, ASH). As part of the faith the subjected people in Muslim society believe in fatalism, so they live with fear and pain (AZ). The recourse to religion may not mitigate the effect of traumatic events but it makes the subjected person accept these events as it is their destiny.

"It is your destiny, and you have to adapt to it" (ASH)... "It is the faith of destiny... you cannot do anything" (EA).

People depend on God and hope the situation will be improved (EN, H, AS, OM). I handed over my affairs to God...My faith in God was what helped me to recovery (SS, EA, JA).

The Muslims in their relation with God rely on prayer. They try to perform the prayer and recourse to God and the religion (T, AM, JA, ASH). They are reading the Quran and pray during the scary time (H, NO). We believe in God (B).

#### **6.4.6.3 Avoiding**

The participants introduce three ways of avoiding the stressful events; - staying at home, leaving the place and limited social relationships. Most of the subjected people stay at home for a period of time after has experience of event. It is not safe to go out of the house;

"Every step out of the house you might not be back safe to your house" (B). We have to stay at home for a long time ...not allowed for children to go out, until we were forced to go out for our needs (EA, WQ, NO, ASH).

"My sibling and I were prevented from going out, and we were forced to stay at home for six months ... prison in the house... we just go out for necessary needs ...and we depend on our father" (T). Life and the streets became tired and worrying... and became hard to move inside the city (OM).

The second step of avoiding, people try to leave the place when they feel staying at home is not sufficient to protect them. During the conflict, people tend to leave their home and city looking for other safe places as a solution, so they leave their city, or change their place...and move to another area or country (AM, WQ, B, EA, ASH, NO, SA).

"I was thinking of leaving the country which may help me ... the thinking about what has happened made me think to stay away"(AH). Some of them do not wish to leave their country, and they think that living outside the country far away from their family does not makes any sense and they think it is not the solution for their problems (AZ, OM, H).

There is another form of avoiding represented avoids to talk about what happened in details or go back to where the events took place and go along the place of event quickly (SS, AM, ASH).

People not only avoid the dangerous places or stay at home but also try to avoid other people. However, the events have bad effects on people's relationships and their activities...and unable to afford other...treat others with doubt and uncertainty (OM, SA, and ASH).

"People started to treat each other badly" (EA). "We do not like each other... we hate each other... there is jealousy, hatred and aversion" (AZ). Therefore, people cannot trust each other ..." and you have to be very cautious in forming relationships with others" (MH)."The person with anxiety cannot behave well with his family and children, there is terrible anxiety and no trust in other people" (B).

It constricts the relationships ...cancellations of a lot of social functions such as visiting relatives and friends, the relationships became worse (MH, OM). They feel that the situation forced them to return inward from work to home only (JA).

## **6.4.7 Growth**

### **6.4.7.1 Stronger**

The participants learn from their experience, sometimes they feel the most powerful and bravest of all others...their experience leads them to know how to behave in the same situation;

"We learn because there are a lot of experiences from many incidents (H, SA)... the experience transfers to another situations, after a while you feel better or are a stronger person (T, B). The exposed person became stronger and more cruel, the men got used to the pain and traumas (AM), or maybe because they will not be exposed to anything worse than what they have seen... the experiences made them ready for what is coming...the person becomes like an undertaker who does not fear death (H).

"Perhaps we have adapted well to death... we are more carrying now... the individual becomes stronger following the experience" (AZ, SA).

#### **6.4.7.2 Weakness**

In contrast, the participant who was exposed to many events always has psychological fatigue, especially during the experience... and they are feeling that they do not have any strength to cope with any other crisis any more ... "the life changes for the worse" (T, AZ, EA, ASH).

"The person becomes weaker... but he knows how to behave in the same situations next time" (B, OM). "I am weaker than before and if something happened again I will lose my mind" (EN).

They suffer from a lack of focus at work, distracted, preoccupied all the time with laziness and lethargy (AS). Those people seem to have poorer psychological well-being than others who describe themselves as stronger, have resilience, and adapted to the incidents. That appears clearly from participant's feeling of being more sensitive to the events.

The participants became more sensitive to the stressor and were feeling they could not live with the same events any more (AZ)

"I feel I am weaker than before. They felt anxious and expected to be exposed again preventing people to plan their life, so they are always working in a rush and without much thinking or focusing (B, OM).

### **6.5 Comparing between full and non-PTSD groups**

In spite of the fact that the study was based on qualitative method in collecting and analysis data the researcher conducted some kind of comparison between the groups with and without PTSD. Almost the whole sample, with or without PTSD, had been exposed to similar events and described the events as unique and an on-going threat. However, more interviewees with full PTSD than in the group without PTSD

reported that the threat' sources were unknown. Group with full PTSD showed more emotional responses (grief, pain crying, helplessness and depression) to these events than the group without PTSD. In the case of appraisal that such events are controllable or not, and if the behavioural response to stress would be more specific and refined to encounter the next event. Thus, in the sample with full PTSD seems to have appraised these events' source as not controllable, so their response is a trying to reorganise themselves and use a different strategies to deal with this stress (Huether, 1996). This is due to cognitive differences between individual in appraisal of threatening events(Ehlers & Clark, 2000). The variety of psychological response patterns to traumatic stress found to be predictors of PTSD (Yehuda et al., 1998) . This response patterns depend on the severity of trauma, However, there is considerable number of those who exposed to severity of trauma do not develop PTSD.

People with PTSD used more inactive coping strategies including adopting avoidance coping strategies " such as limited social relationships, leaving the city and avoiding events places", which is a part of their PTSD symptoms, than people without PTSD. With regard to general health, the interviewees with PTSD reported more health problems such as poor sleeping, presence of events memory and, amnesia or weak-memory about important self-affairs than without PTSD. This is associated with previous studies which found that patients with PTSD reported more physical condition and limitations in daily life than both normal people or those exposed to trauma but without PTSD (Frayne et al., 2011; Gillock, Zayfert, Hegel, & Ferguson, 2005).

The interviewees without PTSD reported they feel stronger than those with PTSD in terms of endure new events. It seems that people use their experience from previous traumatic events to treat the new situations as these situations become more predictable for them. The predictability of events may play important role in prevention or development PTSD, which is need pay more attentions in future studies of PTSD symptoms in Iraqi society.

## **6.6 Discussion**

Quantitative methods are not the only way to get the information on the effect of exposed to trauma. Furthermore, the instruments used by many previous studies to assess the presence of PTSD were derived on the basis of Western culture and therefore may not accurately reflect traumatic stress in a non-Western culture. The classification systems of PTSD reflect the Western culture beliefs about human nature in DSM 3<sup>rd</sup> and DSM 4<sup>th</sup> are used throughout the world (Krippner et al., 2012). In addition the

PTSD symptoms may have different meaning or value in different cultures (Johnson & Thompson, 2008; Nicholl & Thompson, 2004).

The first aim of this study was to explore the nature of experiences and consequences of war-related trauma in an Iraqi civilian sample. The study was conducted using grounded theory as a model in gathering and analysing data. The current study finds out that the civilian sample had been exposed to a wide range of incidents and severe trauma related to war and armed conflict in Iraq. These incidents were expected to have changed the people's lives due to the on-going nature of conflict and war in Iraq, not only in terms of death and disability, but also in social relationships and psychological well-being as the strategies that individuals use to cope with distress.

The study found that the experiences could be classed into six themes as participants describe their experiences. The participants understand the nature of events as uniquely and unexpected, therefore they felt that their responses and emotions were different from any other people who did not experience such events. This finding is consistent with the cognitive model of Ehlers and Clark's (2000) which proposes that two key processes lead to a sense of current threat. A- How people differ in the appraisal of the trauma or its outcomes, B- the differences in nature of the memory between individual for the incidents and its connection to other autobiographical memories. The current study highlights that participants understand and deal with events as unknown source and they have no choice but to accept the event.

On the other hand the current study found that participants, due to on-going events, they have expectations of physical and mental hassle, and expected a death in any time. Several previous studies have shown that people with PTSD are more likely to develop disorders such as panic disorder, social phobia and personality disorder (Rosen & Lilienfeld, 2008). In addition, people with negative coping styles like fatalism, crying and wishful thinking (as they used in this study) can contribute to persistent PTSD symptoms (Khamis, 2008). As these emotion-focused coping styles predict greater levels of PTSD symptoms (Baschnagel et al., 2009).

The evidence gathered in this study consolidated the assumption that our sample deals with stress in a special cognitive response in terms of sharing grief and sadness emotions and expected to bear the costs of the events with family. These responses reflect the culture and structure of the society which proved that each culture and social segment constructs its own symptoms (Pedersen et al., 2008). That allowed saying that not all of those exposed to these stressful events developed PTSD. Thus, traumatic events are a necessary presence of PTSD but not a sufficient reason to explain it.



However, the exposure to similar traumatic events and sharing the same experience with society (family, friends, neighbours, and everybody may meet with in the region) lead to think that was society targeted not only the individual may help traumatised to cope with events successfully. In addition, family and social support for subjected people were a key factor in helping to normalise their experience (Johnson & Thompson, 2008). At the same time, some argue that the interpersonal networks that help family survive may have negative impact by means of spread stressors throughout the family (Waters, 2006). What called this process in the current study as "communicating vessels", in which may help subjected family member recovery, however, spread stressors throughout the whole family.

The study results highlight that the Iraqi culture may play as protective factors against traumatic negative outcomes. Thus the traumatised person gets the support from their family and culture. The extended family plays a vital role in mitigating stress by distributing the stress among the family members. Family support and social sympathy in addition to others people's experiences play important role to cope with stress. This proposal is consistent with the existent thought that cultural factors, such as the religious beliefs, social support and use of the experience to help others play a key role in protecting someone against developing PTSD (Johnson & Thompson, 2009). The religions and believe in Muslims society is crucial in crisis times, so almost all interviewees reported that they recourse to their religion (faith) in dealing with their trauma.

The current study highlighted that exposure to trauma may promote positive growth in people without PTSD in terms of being strong for example some of the interviewees report "we are more carrying now... the individual becomes stronger following the experience" (AZ,SA). The recognize experiences my lead to differences between people with and without PTSD in means of positive posttraumatic growth. That is consistent with Taku et al. (2012) who found that greater posttraumatic growth may be due to these experiences better recognized in context of culture manner. In addition, the severity of trauma experience as these reported in current study may enhance posttraumatic growth. Taku et al. (2012) point out that greater posttraumatic growth related with severity of trauma in youth experience trauma that met the DSM-IV criterion than youth experience trauma did not meet DSM-IV criterion. That may help traumatized people to deal better with future expecting trauma.

## **Chapter 7: General discussion and conclusions**

Four studies were conducted to address the study questions. There are interesting results from the four studies. Variables such as the Big five personality traits, sense of coherence, and cortisol level in a sample of individuals with PTSD have been examined for the first time in Iraq. It is also the first time that an interview study has been conducted in Iraqi civilians who had developed PTSD symptoms.

Study 1 was designed to screen traumatic events that Iraqi people had experienced as well as to examine the prevalence of PTSD and its risk factors. The results of Study 1 showed that the vast majority of the participants who took part had been exposed to at least one war-related traumatic event. Most of these events were reported to have occurred repeatedly (i.e. more than once) for the majority of participants. More than 94% of participants reported that they experienced at least one PTSD symptom and a third of them reported symptoms of PTSD that met full DSM-IV criteria. Participants who reported PTSD symptoms that met full DSM-IV criteria also reported higher rates of depression, neuroticism, somatic symptoms, less sense of coherence, and less life satisfaction than those participants without PTSD symptoms. The study found that a number of factors can predict PTSD after having been exposed to traumatic events. An increase in PTSD symptoms was found to be associated with higher neuroticism scores. In contrast, sense of coherence, life satisfaction, active coping strategies, and education level correlated negatively with PTSD symptoms.

In the second study, the differences between low and high PTSD groups in personality traits related to health as well as the differences in cortisol levels between the two groups (i.e. those with and those without PTSD) were examined. Study 2 found there was a significant differences between the two groups, the high PTSD group reported higher hedonic capacity and more negative affectivity than the low PTSD group. In contrast, there were no differences in cortisol levels between the two groups.

In the third study, the relationship between the Big Five traits of personality and PTSD as well as the differences between groups with high and low PTSD in aggressive behaviour, were examined. The results showed that participants with high levels of PTSD reported higher rates of neuroticism than participants with low PTSD. In addition, group with low PTSD score reported lower anger and hostility than group with high PTSD. Possibly due to the nature of exposure to traumatic events, (e.g., continuously and repeatedly), the study did not find significant differences in cortisol levels between groups with and without PTSD. Given the sample size in the studies 2

and 3, replication of the validity and reliability for the Arabic version of the questionnaires from study 1 sample was used.

The fourth study was a qualitative study that used an interview method to examine the experiences of traumatic events and their consequences. The results provide more information about the nature of exposure and surrounding feelings as well as the experience of PTSD symptoms. The results of the four studies are discussed in detail below.

## **7.1 Study 1. Discussion of findings**

The results of the first study and each variable as well as the predictive model and the risk factors of PTSD are discussed.

### **7.1.1 Traumatic events, prevalence of PTSD and its risk factors**

In the first study that comprised a sample of 408 Iraqi people, the results showed that the majority of participants (94%) reported that they experienced at least one war and conflict –related traumatic event. The exposure to events occurred either to them personally or to family members or friends. These events were experienced by participants more than once and the majority of traumatised people reported feelings of distress as a result of exposure. This may be due to exposure to war atrocities that occurred in every civilian residential area in Iraq on an on-going basis. The trauma literature reveals that an event that has affected one member of a family will influence the family as a whole and repeated exposure to trauma by one of the family members may create a complex set of cognitive, physiological, emotional and spiritual reactions (Kiser & Black, 2005). In the current study, the results showed that men reported more exposure to traumatic events than women. This may be due to culture differences where in Iraq, women go outside less often and thus, are less likely to be exposed directly to trauma. They have to wait at home and are affected by anxiety about relatives who are outside of the house. These feelings of anxiety, fear, and sadness are repeated every time when one or more family members are outside the house. In addition, women in general are expected, more than men, to deliberately and carefully avoid any risk of violence (Fox, 2012).

In terms of PTSD, the majority of participants who reported having been exposed to traumatic events also reported experiencing different levels of PTSD. Very few of the participants reported no PTSD symptoms. Moreover, there were differences between males and females in PTSD symptoms. Females reported significantly more PTSD

symptoms than males. This finding that women are more likely to develop PTSD symptoms than men has been obtained previously in Iraq (Abdel-Hamid et al., 2004) and (Al-Kubaisy & Alasdi, 2004). Studies in other countries also showed that the prevalence of PTSD in the general population is twice as high in women as in men (Frans, 2005) (Rivière et al., 2008). In their reviews Johnson and Thompson (2008) found that females are more likely than males to develop PTSD in most of studies examined the gender differences in civilian responses to war-trauma. These results are consistent with the generally greater psychological vulnerability to harm for women than men (Stam, 2007). In addition, the women vulnerability to harm may be due to one of causes, (i) women are more limited socioeconomic resources than men in general and in third-world in specific (ii) the biological sex differences in ability to cope with trauma (Yasan, Saka, Ozkan, & Ertem, 2009). In the current study, it seems that women not only are more vulnerable to the harmful experience themselves but maybe they think more emotionally and are more anxious about other family members than men that in line with a study that found that women were more emotion focused coping than men to deal with stress (Grossi, 1999). That may be because women are more dependent on men such as, husbands and sons as providers in these traditional cultures that make them more anxious about the loss of a relative (Basogulu, Salcioglu, & Livanou, 2002). A high education level was found to protect individuals from developing PTSD, the women in this study were less educated than men and that may be preventing them from adapting to stressful events successfully. In turn, this may lead to an increase in vulnerability and developing PTSD symptoms.

These results are supported by numerous of previous studies that have examined the associations between PTSD and sex, type of traumatic events, and pre-exposure factors (Brewin, Andrews, & Valentine, 2000; Johnson & Thompson, 2008; Koenen et al., 2003; Voges & Romney, 2003). These studies suggest that women are more vulnerable to traumatic events and develop PTSD. As suggested in the literature, the influence of the social construction of gender on both the experience of trauma and its consequences may lead women to experience a greater severity of trauma and a greater impact of feelings of shame and guilt (Fox, 2012).

In addition, there was negative association between sense of coherence (SOC) and PTSD, the current study found that women have a less sense of coherence after being exposed to trauma than men and that may be one of the reasons why they develop PTSD more frequently than men. Furthermore, the coping strategies that were used by women associated negatively with PTSD that may lead to the development of more

PTSD symptoms. The current study found women rely on substance-use and support-seeking strategies to cope with stressful events more than men.

In this study the distressful experience after exposed to trauma was the strongest association with PTSD. That is in line with the definition of DSM-IV for PTSD that the response to exposure involved intense fear, helplessness, or horror. However, there were no associations between the frequency of exposure to trauma by family member/friend and PTSD. In contrast, the frequency of exposure to trauma by the subjected themselves found association with PTSD. The majority of participants in the current study reported they had been exposed to different traumas repeatedly. There is a large number of studies that argue that the exposure to multiple traumas, rather than a single trauma, leads to the development of more PTSD symptoms (Davidson et al., 2004; Dyregrov et al., 2002; Follette et al., 1996; Huang et al., 2012). The result was in line with studies mentioned that exposure to multiple events in conflict and war zone is represent a strong risk factor for PTSD (Herman, 1992).

Overall, the current study found that the rate of prevalence of war-related PTSD in civilians that fully met DSM-IV criteria was 30.8% which is higher than that in Yugoslavia (11%), Kosovo Albania (17%), Eastern Afghanistan (20%), and lower than that in Algeria (37%; (Johnson & Thompson, 2008). However, this was less than that obtained from prevalence rate of PTSD in adults 35.27% in Baghdad city after 2003 war (Abdel-Hamid, Salim, AlQaisi & Ahmad, 2004) and less than that of 62% in women in Baghdad 2004 (Al-Kubisy and Alasdi, (2004). The prevalence rate of PTSD in the current study was found to be similar to the average rate of 30% among civilians in conflict regions (Steel et al., 2009) (see chapter 1). It is also higher than the lifetime rate in the USA (7.4%) and Germany (1.6%; (Perkonigg et al., 2000). This suggest that stressful events and its implications in Iraqi society are not similar to those civilians who exposed to lifetime trauma in other countries, that may be due to the dose-effect of war trauma (Johnson & Thompson, 2008) or to methodology that used self-report to screen PTSD (Yasan, Saka, Ozkan, & Ertem, 2009). However, perhaps as a result of on-going exposure to traumatic war-related events helped people in Iraq to recovery by themselves, therefore the rate of developing PTSD symptoms were lower than that in the civilians in other conflict zone.

In terms of coping strategies, the scale of Brief Cope (20 items; Jabber, 2012) that consists of four strategies deriving from the original Brief Cope with 14 subscales, was used. The results showed that females used more substance-use coping strategies than males. In addition, females in the age group of 31-39 years reported using more

support-seeking coping strategies than males. It seems that women tend to use coping strategies such as seeking support, non-active coping strategies and use sedatives more frequently than men that may make women develop more PTSD symptoms than men. Furthermore, participants who developed PTSD reported using significantly more non-problem focused and substance-use strategies than participants without PTSD. The use of these coping strategies may contribute to the development of more PTSD symptoms. These results are consistent with previous studies that have stated that using coping strategies such as avoidance coping strategies, seeking support (i.e., emotional response), and alcohol use were associated with the development of PTSD (Bryant & Harvey, 1995; Hruska et al., 2011; Ozer et al., 2008; Scarpa et al., 2006). Women who have experienced threat in their life were found to be associated significantly with illicit drug use (Reed et al., 2009).

With regards to sense of coherence and its three subcomponents (manageability, comprehensibility, and meaning) the study suggests that women showed less sense of coherence (SOC) in general and less ability to manage the stressful situations and less ability to give meaning to what has happened than men. In comprehensibility, there were no differences between males and females. In contrast, participants in age group over 40 years showed more comprehensibility than other age groups. It seems that one reason for the difference between males and females in PTSD is due to the differences in SOC. In particular, the results found that women developed more avoidance symptoms than men which may be enhanced by a lower ability for women to give meaning to the events and manage the situations. In the SOC concept, traumatised people who can give meaning to traumatic events can comprehend what has happened and this enables them to manage its consequences and cope better (Frommberger et al., 1999). Furthermore, in the current study, participants with full PTSD compared to those without PTSD reported less SOC in general and in all three categories of SOC. The relationship between SOC with exposure to trauma and PTSD has not been studied in Iraq until now. These results are supported by a number of previous studies in other countries that have confirmed that less SOC is associated with high levels of PTSD as well as with other disorders such as depression and health problems in general (Frommberger et al., 1999; Kimhia et al., 2010; Pham et al., 2010a).

Sense of coherence describes the individual's orientation to life through maturation and life experiences which provides a basis for successful coping with stressors (Feldt et al., 2007). Essentially, sense of coherence is a tendency towards seeing life as 'under control'. Therefore, it may be that people with a strong SOC

believe that traumatic life events happen for a reason and are under control; not personally but in some abstract way (Amirkhan & Greaves, 2003). However, this is not the case with the people in this study who may have felt that they are under threat all the time as shown by the number of times they reported being exposed to traumatic events. Furthermore, from interviews with Iraqi participants who had experienced war and conflict trauma in Study 4, these participants disclosed that they felt under threat all the time and they felt they had no control over these events. It seems that people with full PTSD symptoms are more likely to be depressed and harbour feelings of helplessness and tend to adopt inactive coping strategies with their problems. Therefore, they feel less sense of coherence. In addition, in study 1, people with full PTSD symptoms had a high depression score so individuals with depression do not believe that they are able to solve their problems (Holmes., 1991). Thus, they may see there is no reason to work on their problems or seek help. Furthermore, the association between inactive coping strategies that participants used and a lower ability to understand 'meaning' and manage the stressful situations may lead to an increase in the development of PTSD. This is consistent with other studies that have found negative associations between sense of coherence and exposure to trauma and PTSD symptoms (Engelhard, van den Hout, & Kindt, 2003; Pham, Vinck, Kinkodi, & Weinstein, 2010b)

With respect to the trait of neuroticism, the results showed that there were no significant differences between males and females or between age groups. However, participants with full PTSD reported higher levels of neuroticism than those without and those who met partial criteria for PTSD. These results are consistent with a number of studies that have confirmed that neuroticism is associated positively with PTSD (Chung et al., 2010; Hyer et al., 1993). This may be because people with high levels of neuroticism respond sensitively to stressful events (Matthews et al., 2003). Neuroticism is a tendency to experience negative emotions comparatively easily. Therefore, people who record a high level of neuroticism are more likely to experience anxiety, hostility, depression, self-consciousness, and impulsiveness (Kalat, 1999). Moreover, people with a high level of neuroticism are more likely to be less effective than others in dealing with stressors (Davis & Palladino, 2000). Some scholars argue that neuroticism is the only personality traits that is predictive of all PTSD symptoms and health problems in general (Man Cheung et al., 2006). In contrast, low levels of neuroticism may be a protecting factor from developing PTSD symptoms (Lauterbach & Vrana, 2001).

In terms of depression and somatic symptoms, the current study results showed that females reported higher rates of depression and somatic symptoms than males. Previous studies have stated that women are affected by both depression and anxiety significantly more frequently than men (Halbreich & Kahn, 2007). Furthermore, somatic disorder and health problems are associated with concurrent depressive disorder (Bromberger et al., 2005). However, depression and somatic symptoms were not affected by age. The current study found that people with full PTSD symptoms have higher levels of depression than people without PTSD, and they differ from people without PTSD and those who met partial PTSD criteria. Exposure to war events may lead to problems in psychological adjustment (Bramsen et al., 2002).

The result is consistent with findings of other studies that have identified an association between PTSD symptoms and depression (Perkonigg et al., 2000). Numerous studies have shown that people do not usually develop a single disorder such as PTSD after being exposed to a traumatic event but that depression is the most common disorder that co-occurs with PTSD. This result is supported by a number of studies that have revealed that PTSD is comorbid with depression (Richards et al., 2011; Shalev et al., 1998).

According to the theory of 'learned-helplessness', people become depressed if they learned from their experience that they have no control over the major events in their lives (Kalat, 1999). The participants in the current study have met with defeat and loss, not in control of their situation, and have feelings of fear and helplessness, and therefore, fall into depression. This may be applicable more in Iraqi women when they feel less sense of coherence and they could not manage the situation so they may feel they have less control over the events.

People who have been exposed to traumatic events and develop PTSD and other disorders such as depression have less life satisfaction than others (Besser & Neria, 2009; Keim, Malesky, & Strauser, 2003). In the current study, the results showed that there were no differences between males and females or between age groups in life satisfaction. However, as expected, participants with full PTSD reported less life satisfaction than those without PTSD. Many studies point out that exposure to trauma such as war-related events increase health problems and psychological maladjustment (Batniji et al., 2006; Bryant, 2003). The participants with general health problems and PTSD symptoms in the current study may have felt less life satisfaction. This result did not differ between males and female or between age groups this may due to the exposure to widespread traumatic events for a long time in Iraq. People with full PTSD



symptoms, especially associated with depression, anxiety and high levels of neuroticism which all correlated positively together, tend to be more dissatisfied with life and have a reduced sense of well-being (Endermann & Zimmermann, 2009; Stein & Heimberg, 2004). Satisfaction with life has been found to be an indicator of the quality of people's lives. People who have been exposed to traumatic events who lack personal and social relationships may be more likely to adopt uncreative and even dangerous coping strategies and behaviours (Besser & Neria, 2009). This might be because of continuous exposure to life-threatening situations and general life dissatisfaction in Iraq after the war in 2003 that intensifies these associations that were found in study 1.

In terms of health problems, the results of study 1 showed that people with PTSD symptoms reported more psycho-somatic symptoms than those without PTSD symptoms or those with partial PTSD symptoms. These results support the assumption that people with PTSD symptoms report more health problems and somatic symptoms (Cheung et al., 2006). These outcomes are consistent with significant evidence that supports the terrible psychological consequences after an individual has been subjected to traumatic events that are related to the experience of military and political conflict (Baker & Shalhoub-Kevorkian, 1999); (Batniji et al., 2006). Previous studies have revealed that somatic complaints can be physiologically harmful and that poor health is an additional consequence of exposure to traumatic events (Del Gaizo, Elhai, & Weaver, 2011) or exposure to torture (Mark Van Ommeren et al., 2005). As the frequency of exposure to violence found to be significantly associated with mental health problems (Ribeiro, Andreoli, Ferri, Prince, & de Jesus Mari, 2009). This is because the body's response to stress may suppress the immune system which increases vulnerability to diseases particularly when the body reaches the limits of its ability to adapt to stress (Davis & Palladino, 2000).

### **7.1.2 The predictor model of PTSD**

In study 1, the variables that could predict PTSD in people who had experienced traumatic events were examined. The results revealed that neuroticism, SOC, life satisfaction, coping strategies, and education levels could predict PTSD. The change in sense of coherence, active coping strategies (i.e. taking action to try to make the situation better), life satisfaction, and education level could change the PTSD symptoms level. However, high levels of neuroticism were more likely to be associated with increase PTSD symptoms in people who had been exposed to traumatic events.

In terms of sex differences, the predictor model for males was approximately the same as the model of all participants except that sense of coherence was no predictor variable for PTSD in males. This may be because there were more males than females involved in the study. For females, only three variables were found to could predict PTSD after being exposed to traumatic events. These variables were sense of coherence, neuroticism, and active coping. The results showed that females had less sense of coherence than men and they tended to use inactive coping strategies to cope with stress. In general, these results are consistent with previous studies that have stated that there were more than 13 predictor variables for PTSD including the variables that appear in this study (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). The role of each predictor variable is discussed in below.

### **7.1.2.1 Coping strategies**

Coping strategies are a response to stressful situations with the intention to manage and mitigate its effects (Lazarus, 1981; Folkman, 1984). The results of the current study showed that active coping strategies predict PTSD that is in line with previous studies that have found negative relationships between positive coping strategies such as support from family and society, religious beliefs, and PTSD (Gerber, Boals & Schuettler, 2011; Johnson & Thompson, 2008). This result is consistent with Ozer et al., (2008) where active coping strategies such as social support and emotional responses predict PTSD after exposure to traumatic events.

In addition, in the current study, people with full PTSD symptoms reported symptoms of depression so such individuals may not believe that they are able to solve their problems (Holmes., 1991). Therefore, they may see that there is no reason to work on their problems or seek help. People react differently to different types of stress. Non-active kinds of coping are normally used in on-going traumatic events particularly when people feel helpless and pessimistic and become more likely to distract themselves or to resort to denial when faced with difficult problems (Burger, 2008). Using inactive coping strategies such as self-blame, venting, and denial have been found to be associated with increases in the level of PTSD symptoms that in turn may increase the incidence of PTSD (Olf et al., 2005). Furthermore, avoidance coping strategies are associated with high levels of PTSD. Individuals who are reliant on avoidance coping strategies have been found to be at greater risk of an increase in PTSD symptoms after exposure to traumatic events (Pineles et al., 2011). Problem-focused coping strategies were used less often by people with full PTSD in this study. This result is associated

with a previous study that found that people with full PTSD used less problem-focused coping styles in addition to high levels of avoidance coping strategies that are associated with an increase of PTSD (Khamis, 2008). Another study established that problem-focused coping and positive-oriented appraisal protected individuals from the effects of exposure to on-going traumatic events (Braun-Lewensohn et al., 2009).

### **7.1.2.2 Neuroticism**

With regards to personality traits, previous studies found that not only did trauma lead to disorders such as PTSD but also, pre-traumatic personality is now apparent as a significant risk factor for developing PTSD symptoms (Gil, 2005b). A number of previous studies have revealed that the personality trait of neuroticism is the trait most related to PTSD. Numerous studies have demonstrated that neuroticism is a biological vulnerability to psychological disorder in general, including PTSD (Chung, Berger, & Rudd, 2007). It seems that in this study, the trait of neuroticism predicted PTSD symptoms after exposure to severe traumatic events. This result corresponds with that of Bramsen et al., (2002) who argued that high levels on the neuroticism trait score is predictive of PTSD symptoms. Chung et al., (2007) also who found that neuroticism scores were higher in individuals with full PTSD than those without PTSD. Others argue that neuroticism is the only personality trait that predicts PTSD symptoms (Cheung et al., 2006). Findings show that people who score high in neuroticism and low in conscientiousness use more maladaptive coping strategies and are most vulnerable in stressful situations (Roesch et al., 2006). In the literature, neuroticism is a tendency to experience negative emotions comparatively easily. Therefore, people who record high levels of neuroticism are more likely to experience anxiety, hostility, depression, self-consciousness, and impulsiveness (Kalat, 1999). Moreover, people with high levels of neuroticism are more likely to be less effective than others in dealing with stressors (Davis & Palladino, 2000).

These findings in general uphold the research perspective which indicates the positive relationship between PTSD symptoms and neuroticism among people exposed to traumatic events. In addition, studies have found that individuals with high levels of neuroticism experience negative emotions and distress regardless of the level of stress (Bolger & Schilling, 1991). As a consequence, a higher score on neuroticism significantly predicted of PTSD symptoms (Bramsen et al., 2002). Alternatively, exposure to tension or trauma may lead to an increase in the trait of neuroticism and negative emotion (Roberts et al., 2005). This study revealed the overlap between

personality traits and the situation and may lead one to the other with the availability of other factors. In contrast, people with low levels of neuroticism may be protected from developing PTSD (Lauterbach & Vrana, 2001). However, the overlap between neuroticism and PTSD symptoms may lead to an increase in both of them after exposure to trauma (Engelhard, van den Hout, & Kindt, 2003).

### **7.1.2.3 Sense of coherence**

The results in the current study found that sense of coherence is one of the factors that can predict PTSD. SOC is defined as the tendency towards seeing life as ‘under control’. Therefore, people with a strong SOC may believe that stressful life events happen for a reason and are under control (Amirkhan & Greaves, 2003). Moreover, a strong SOC may make people more resilient to developing PTSD symptoms and depression after exposure to stress events (Engelhard, van den Hout, & Vlaeyen, 2003). In the current study, people with full PTSD scored lower on SOC than those with partial or no PTSD. In addition, SOC was one predictor for PTSD. This result is consistent with previous studies that have found SOC to be a predictive factor of PTSD and a strong SOC is associated with fewer PTSD symptoms (Schnyder, Moergeli, Klaghofer, & Buddeberg, 2001; Schnyder, Wittmann, Friedrich-Perez, Hepp, & Moergeli, 2008; Sommer & Ehler, 2004; Tagay, Herpertz, Langkafel, & Senf, 2005). People with high SOC had fewer PTSD symptoms than those with low SOC. This is in line with other studies that have found negative associations between SOC, exposure to trauma, and PTSD symptoms (Engelhard, van den Hout, & Kindt, 2003; Pham et al., 2010b). One reason for this is that SOC plays a vital role in enabling traumatised people to cope with stressful situations effectively. However, people with full PTSD symptoms are more likely to be depressed, have feelings of helplessness, and may tend to adopt inactive coping strategies with their problems, and therefore, they may have a weaker SOC. These results are supported by a number of previous studies that have found that a weak SOC is associated with high levels of PTSD symptoms (Frommberger et al., 1999; Kimhia et al., 2010; Pham et al., 2010a).

### **7.1.2.4 Satisfaction with life**

The results in the current study showed that people with high levels of PTSD symptoms were less satisfied with life. The life satisfaction variable correlated negatively with PTSD symptoms and this is in accordance with previous studies (Besser & Neria, 2009; Keim et al., 2003; Schnurr et al., 2009). Previous studies found

that full PTSD symptoms were associated with many disorders such as depression, anxiety, and high levels of neuroticism which all correlated positively with each other. Such individuals tended to be dissatisfied with life and had a reduced sense of well-being (Endermann & Zimmermann, 2009; Stein & Heimberg, 2004). Satisfaction with life has been found to be an indicator of the quality of people's lives. People exposed to traumatic events and appeared to lack personal and social relationships as a result of the significant losses experienced that may make them more likely to adopt uncreative and even dangerous coping strategies and behaviours (Besser & Neria, 2009). In the situation in Iraq, this might be because of continuous exposure to life-threatening situations and general life dissatisfaction in Iraq after the war in 2003 that intensifies these associations as found in the current study. However, people who have been exposed to war-trauma were more likely to report less satisfaction with life even with their feelings of having protective power. Therefore, the American soldiers with their military protection power may have felt dissatisfied with life after deployment in Iraq and Afghanistan and that correlates with PTSD symptoms (Schnurr et al., 2009).

#### **7.1.2.5 Education level**

The level of education in this study was found to correlate negatively with PTSD and is one of the factors that can predict it. It seems that the ability to understand and manage the stress events and its consequences are affected by education level. The people who had good education were probably more able to cope with traumatic events or chose more suitable strategies to cope with their stress. In this sense, level of education plays a protective role for victims (Ford, 2012). Furthermore, educated people may be more able to find treatment or have a better chance to leave the conflict area as was noticed from Iraqi refugees. This is in line with previous studies that have found education level to be one predictor of PTSD (Brewin, Andrews, & Valentine, 2000; Ozer et al., 2003). Furthermore, North (2012) found one of the factors that predict PTSD was education; lower education level was positively associated with PTSD. Another study found that higher education level, lack of social support, and stressful life events were associated with late-onset PTSD four years following a disaster (Smid, van der Velden, Gersons, & Kleber, 2012).

Thus, this model was different from other previous PTSD models in terms of the traumatic events were not appears in the current predictor model, that may be because all study sample with and without PTSD have been exposed to traumatic event for long time. In particular, the definition of exposure to trauma has been changed after the

terrorist attack on 11<sup>th</sup> September 2001 to include watching events on television (Schuster et al., 2001). Therefore, almost all the study sample has been exposed to trauma directly or indirectly so there is no huge difference in the exposure to trauma (exposed and not exposed but between more and fewer) between the participants to make the differences in developing PTSD. In contrast, this model found that the personality trait of neuroticism and active coping strategies are predictor factors for PTSD which they predicts factors for PTSD in huge number of studies (see 7.1.2.1 and 7.1.2.2 above). Furthermore, SOC is one of predictors in the current model, this is in line with many studies suggesting that SOC play a vital role in managing the stressors and determine the ways of how to deal with events and one of PTSD predictors factors. Although, SOC helps subjected people to manage and give meaning to the event which is need a good education to understand and cope with trauma. Therefore, education level is one of predictors for PTSD in the current model and that is in line with other studies. Although, satisfaction with life is one of the factors that associated negatively with PTSD in turbulent situations, to the best of the researcher's knowledge, there is no previous model for PTSD included satisfaction with life as predictor for PTSD. It seems that long time instability due to war and armed conflicts in Iraq lead to feel unsafe and that was one of risk factor for developing PTSD.

## **7.2 Study 2. Discussion of findings**

In Study 2, two groups of participants with PTSD were recruited from the sample in study 1; group 1 with low PTSD and group 2 with high PTSD. The results showed that the two groups had reported being exposed to multiple traumas for a long time. However, the group with high PTSD reported being exposed to more traumatic events than the group with low PTSD. There were no differences between the two groups in health-related quality of life and both groups reported suffering from the same physical and mental symptoms. That may be because health-related quality of life is affected by PTSD or exposure to acute stress disorder (Schnurr et al., 2009).

In terms of health-relevant personality traits, the results revealed that people with high levels of PTSD reported more negative affectivity (i.e., a facet of neuroticism) than the group with low levels of PTSD. This is in accordance with the results of study 1 that found that neuroticism correlated with PTSD. Moreover, the group with high PTSD reported more hedonic capacity (i.e., a facet of extroversion) than the group with low PTSD. This result is in line with some previous studies that found that individuals with high levels of neuroticism and extroversion were more likely to develop PTSD

(Breslau, Davis, & Andreski, 1995; Hyer et al., 1993). However, this result differs from some previous studies that state that traits of extroversion protect individuals from developing PTSD (Meehl, 1975) because they experience more positive affect (Watson, Clark, & Carey, 1988). However, the previous research found an association between stress and personality traits; individuals who score high in extroversion experience both more stressful and more pleasurable events whereas individuals high in neuroticism experience more stress events (Bolger & Schilling, 1991).

With regards to health-related quality of life, the result showed that there were no differences between people with and without PTSD on this measure. The Iraqi people in this sample had been exposed to severe trauma for a long time that meant a lot of problems and stress experienced by all the family members and society. Thus, the participants may have felt that life is not safe and a lot of them had physical and health problems regardless whether they developed PTSD or not. This is in line with the World Health Organization posted that 10% of people who experience traumatic events will have serious mental health problems in the armed conflict throughout the world (WHO 2001). In contrast, this is different from another study which stated that combat exposure and pre-traumatic factors were weakly associated with a limited number of physical health outcomes (O'Toole & Catts, 2008). Furthermore, quality of life may be related more strongly with the life events that people experienced such as acute stress disorder and severe illnesses than with the consequences of these events (Golden-Kreutz et al., 2005).

In terms of aggressive behaviour, people with high PTSD were found to be more angry and hostile than people with low PTSD. This result is consistent with the findings of Orth and Wieland (2006) in their meta-analysis of 39 studies that showed that anger and hostility were substantially associated with PTSD among trauma-exposed adults. This may be because the subjected people in Iraq felt that these events were spread all over society for a long time and they could not do anything about it. Perhaps the feeling of anger and hostility was a normal reaction in these situations. Anger is understood as an emotion and is defined by its characteristic cognitive, physiological, motivational, and behavioral components. Hostility is understood as an attitudinal construct and is defined as a predisposition to dislike and mistrust others and to interpret their behaviour as egoistic and hurtful (Miller, Smith, Turner, Guijarro, & Hallet, 1996). However, the group with high PTSD did not differ from the group with low PTSD in physical or verbal aggression. Some study found that aggressive behaviour related to stress, and women under high stress tend to be less aggression than women under low stress and

men are vice versa (Verona & Kilmer, 2007). In addition, the community culture and agreed meanings mediate the experiences of exposure. Therefore, people use the community tools to shape their response toward the world around them. (Cole, John-Steiner, Scribner, & Souberman, 1978). This cultural tool and value of the big family and tribe in Iraq may prevent aggressive behaviour. One of these role is the self-sacrifice in which a person involves giving a lot to others, especially close friends and family members without asking for something in return (Young, Klosko, & Weishaar, 2003). Therefore, the angry and hostile are a normal reaction to unknown source of threat, such as the situations in Iraq that victims did not find the actual sources of traumatic events to direct him aggression.

In terms of cortisol concentration, the study found that people with high PTSD secreted less cortisol than people with low PTSD at the end of the day. Yehuda et.al., (2009) suggested that cortisol levels may continue to a decline as PTSD becomes more chronic or treatment-resistant. Despite the finding that cortisol levels were higher in the morning than in the evening, there was no significant difference in the 5 cortisol sample levels between the groups with high and low PTSD. Kellner et al., (2002) suggest that morning salivary cortisol levels may not show a significant decline until the third month following trauma. In the case in Iraqi, people encountered everyday trauma up to the time that the current study was conducted so maybe continuous trauma and attempts to cope with it prevented changes in cortisol levels for the whole study sample. It seems that cortisol levels are affected by different factors such as trauma, age, and gender alongside chronic or acute PTSD.

### **7.3 Study 3. Discussion of findings**

In Study 3, a sample of 51 Iraqi students or refugees who had been living in the UK was recruited. The results of study 3 showed that 96% of participants had been exposed, or their family members had been exposed, to at least one traumatic event and the majority of participants reported the events as being repeated more than once. In terms of sex, males reported more exposure to trauma to themselves than females. This result was expected because in Iraq, men go out of the house more often than women so they are exposed to more trauma than women. This result is consistent with the finding in study 1 that found that men were more exposed to trauma in person than women despite different samples.

The majority of participants reported experiencing at least one PTSD symptom. Only 19% of participants met criteria of full PTSD on the DSM-IV. This may be



because most of the participants in study 3 had a high level of education or because the second sample is much smaller. From study 1, the level of education was found to correlate negatively with PTSD that is consistent with previous study results that have found that education may work against the development of PTSD (Ozer et al., 2003). Although females were less exposed to trauma, the study found females reported more PTSD symptoms than males. This finding is consistent with previous studies that have found that female gender is one risk factor for developing PTSD (Brewin, Andrews, & Valentine, 2000).

In terms of personality traits, the results showed that the group with full PTSD reported lowest scores on extraversion, agreeableness, conscientiousness, and openness and highest scores on neuroticism compared to the other two groups. However, there were no significant differences among the three PTSD groups (full, partial, and no PTSD) on all 5 personality traits or between males and females. That may be because of the consistency in the study sample where almost all of them had a high level of education as PhD students.

In contrast, the personality trait of neuroticism correlated significantly and positively with PTSD while conscientiousness correlated negatively with PTSD. This finding is supported by a number of previous studies that have found correlations between PTSD and Neuroticism (Chung et al., 2010; Matthews et al., 2003; Paris, 2000). The correlation between PTSD and conscientiousness might be because of the tendency for people, who score high on this trait to control and regulate the stressful situation (Burger., 2008; Moorhead, 2010).

In terms of cortisol concentration levels, the results showed that the group with low PTSD recorded highest levels of cortisol on all 5 time points than the group with high PTSD. The results showed that there were no significant differences between the two groups in all 5 saliva cortisol points. However, the cortisol level was affected by the length of exposure to trauma and type of PTSD (i.e., acute or chronic). Although the sample had been living in a safer place in the UK after they had been exposed to severe war-related trauma in Iraq, the morning saliva cortisol levels should have shown a significant decline after three months following trauma (Kellner et al., 2002). The results did not show any differences between the two groups. This may be because the participants still received information about threat and stress events that has been happening to their family members in Iraq even though they were physically away from these threats. This is in line with previous study found that refugees still influenced by

danger experienced by family left behind in home country even they achieve secure in exile (Nickerson, Bryant, Steel, Silove, & Brooks, 2010).

#### **7. 4 Study 4 Discussion of findings - the interview**

The participant's discourses in a qualitative study are also discussed. In study 4, 17 people, both males and females, agreed to take part in this study and were interviewed. Of these individuals, 9 had high levels of PTSD and 8 had low levels of PTSD according to the results of study 3.

The results showed that the interviewees described their trauma and PTSD experiences in six themes as discussed below:

- (i) The nature of events was described as unique and unexpected. They expected great on-going threat from an unknown source and that they could not do anything about this event except to watch and wait. The event was seen as being part of society culture and that they had to say farewell to each other whenever family members went out of the house
- (ii) The emotions used by participants to describe the experience of events were scary and terrifying and they felt no safety anytime or anywhere; there was a lot of anxiety and suspiciousness. These continuous emotions of fear and anxiety lasted for a long time and left the subjected people with feelings of grief and pessimism for the future. Because they were unable to do anything about these events, the participants had been living with anger and upset.
- (iii) The perception of events: For the length of exposure to the traumatic event, the participants felt that they did not have the desire to encounter or get rid of these events. Therefore, most of them accepted their current position.
- (iv) The symptoms: Most of the participants developed at least one PTSD symptom and they described these symptoms as re-experience of events that are represented by remembering things about events such as the places, smells, and have panic reactions toward sudden voices. Some participants suffered from amnesia, had sleep problems, and health problems.
- (v) Coping strategies: The interviewees tried to cope with trauma by using different strategies. The most common coping strategies used, according to participant reports, were seeking and receiving support from family or friends and neighbours. Sharing bad experiences with others and seeing what has happened to other people made them feel better. Religion plays a vital role in Eastern Muslim life. Therefore, people rely on God by prayer and supplication to help and resolve their problems. Avoiding

the stressful situation was one of the coping strategies that were adopted by participants. Three types of avoidance were used: Avoiding going out or going out as little as they could, leaving the residential area, and limiting their social relationships.

- (vi) Growth: After exposure to severe trauma, there has been positive and negative growing. Those participants who learnt from their experiences described themselves as becoming stronger than before exposure. In contrast, people who developed PTSD and suffered from its symptoms, described themselves as becoming weaker than before exposure and they did not have the energy or power to cope with new trauma.

In terms of comparing between groups with and without PTSD, there were differences in experiences and symptoms. The results found that the group with PTSD showed more disorders such as depression, pain, hopelessness, and grief as they re-experienced things about events such as the smell, sounds, and scenes of events than the group without PTSD. With regards to coping strategies, the group with PTSD used more inactive strategies such as avoidance behaviour and emotional coping such as crying, anger, and wishful thinking. In contrast, participants without PTSD were more trusting in family and friends so they sought support and shared experiences with others. All participants with and without PTSD relied on their religion, as part of society culture, to cope with trauma and PTSD. Moreover, the group with PTSD reported more health and sleep problems than those without PTSD. Interviewees who had PTSD reported they became weaker and had no desire to encounter more stress in the future whereas those without PTSD reported they felt better and stronger than before exposure.

## **7.5 Limitations and difficulties**

Although there is interesting results from the four studies, however, there are some limitations and difficulties with the current studies. First, due to the high risk of harm in Iraq, the primary researcher was prevented by Heriot-Watt University from travelling to Iraq to collect the data for the studies (see page 47). Thus, the plan and design for the first study were changed where a third party was recruited to collect the data. This led to the reduction of the study's sample size due to the procedure of administration of the measurement by the third party. Furthermore, procedures of administering the study scales took longer than anticipated. In addition, due to the poor security situations in Iraq at that time, a psychologist was not available in Baquba to conduct diagnoses of participants in order to meet the PTSD criterion. The results of the

first and second studies relied on self-report scales and collecting saliva cortisol. The reliance on self-report scales to assess PTSD symptoms may overestimate PTSD prevalence. Although the procedure of administration was constructed by the primary researcher and accurately applied by the research assistants, it would be difficult to follow-up the same procedure in the future to validate it or to generalise the results. It is worth selecting the study sample from cities such as Baquba as it includes the main ethnic groups in the country and it is exposed to various wars and armed conflict-related events. However, the selection of more than one sample from various areas in Iraq to assess the prevalence of PTSD and to generalise the results over an Iraqi population will be more useful.

Due to these difficulties and changes in procedure and because the PTSD concept has been criticised from a cross-cultural perspective (see chapter 6), the researcher decided to adhere to the original plan to conduct the interview before applying the self-report questionnaires in Iraq. The information from the qualitative results would help further understanding of how self-report measures relate to cultural differences to regulate and review the measurements and to help in the translation of scales from English into Arabic. This did not happen and the information obtained from the qualitative study may be used in future studies conducted in Iraq.

In Study 2, very few participants (52) agreed to take part for various reasons: (i) It seems that extended exposure to war and conflict led Iraqi people not to trust others who may be seen as strangers. (ii) As part of their PTSD symptoms, avoidance may have prevented people from taking part in the study. In particular, the refusal to provide saliva cortisol as it includes a tube of saliva cortisol and they would be asked to chew cotton, may have prevented potential participants to take part because they viewed it with a suspicion and doubt. (iii) The unavailability of the primary researcher to administer the study in person may have contributed to the limited number of participants. Furthermore, the shipment of saliva cortisol from Iraq to the lab in Germany was faced with difficulties because of the refusal by German customs authorities to introduce any humanitarian products into the country unless from inside the European Union. This meant that the time sending the samples to the lab took longer than expected in turn delay the analysis of the study results. The results of Study 2 were based on data collected from a small sample which may limit the scales' validations and the generalisation of these results to the general population.

In Study 3, although there were interesting results, almost the whole sample had a higher level of education and as confirmed in Study 1, this indicates that education may

reduce the presence of PTSD. However, not all Iraqi people have the same education level so the results do not apply to the general population. The sample was very small due to the spread of the Iraqi students and refugees over the UK and most of the potential participants refused to participate in the study. Furthermore, sex differences were not studied due to this small sample size. The small sample size may be problematic for scales' validations in studies 2 and 3.

With regards to cortisol level results, as the previous study indicates, the change in cortisol might be impacted by a variety of variables such as past-trauma, either acute or chronic PTSD, depression, or other disorders. This is why a prior diagnosis of PTSD for participants is needed before providing saliva cortisol. This was not possible for several reasons including lack of time, unavailability of a psychologist for diagnoses, and the wide spread of the sample over the UK.

Although the qualitative study was the first to be conducted in a sample with PTSD in Iraq and provides very useful information about trauma experiences, coping strategies, PTSD symptoms, and their relationships in a social context, the participants had good education and this may mean that they are more able to cope with trauma and PTSD actively. Although the strength of this study was to recruit participants who had good education in order to describe their experiences and PTSD symptoms precisely, this may not be applicable to all Iraqi people. Also, the sample comprised individuals who had moved to live in a safer place that may differ from other people in Iraq who are still being exposed to traumatic events.

## **7.6 Future work**

The results of the current studies ascertained that a high proportion of Iraqi people have been exposed to war and conflict-related trauma. This indicates that more studies are needed in this field in different cities in Iraq and in different samples of people (e.g., females, elderly people, and criminals) to assess the effect of trauma on their health, personality, and behaviours. Moreover, it proved that PTSD is widespread in over two-thirds of Iraqi people represented in current study sample so developing new scales of PTSD based on the DSM-IV criteria for an Iraqi social culture is crucial. This will be necessary to provide all workers in health sectors with PTSD symptom scales for efficient use with patients due to an increase in the number of complaints of different health and social problems.

The results revealed that sense of coherence correlated strongly with PTSD and those people who have a lower SOC were more likely to develop PTSD. The current

study assessed SOC in an Iraqi sample for the first time. More studies are needed to examine and identify the factors that may lead to the strengthening of the SOC in people who have been exposed to trauma. Moreover, coping strategies are one of the most effective factors that may protect people from developing PTSD as revealed by a large number of studies. The measure of coping strategies that were used by participants in the current study as well as in most studies conducted in Iraq, derived from Western culture and descriptions have been translated into Arabic. Some of the coping strategy categories do not apply in its concepts with the culture in Iraqi. For example; although people look for support from family members and friends in times of disaster, it is humiliating and unacceptable in Iraq to ask somebody to help in these situations. In contrast, family and friends gather to support each other and endure loss. Furthermore, the description of substance use coping strategies is problematic in the Iraqi and Muslim culture. It is forbidden in Islamic religion to drink alcohol or even to declare or disclose such use and it is even more embarrassing for women. Of the interviewees, no one disclosed that he/she used alcohol when they described their worst time with traumatic events. That not means there is no body use alcohol but they cannot disclose that face to face in interview. Therefore, there needs to be more studies in future to regulate and reconstruct suitable coping strategies scales to be used with Iraqi people to take into consideration cultural differences.

The current study found that people with PTSD reported less life satisfaction and more health problems than people without PTSD. With consideration, the fact that more than one-third of sample of Iraqi people had PTSD suggests that it is a general health problem. Therefore, programs to enhance the satisfaction with life are required as part of systematic programs to help people recover from PTSD symptoms.

In the results of the study, PTSD was comorbid with depression, anxiety, hopelessness, and grief. Further research is needed to examine the association between PTSD and the symptoms of these disorders. Furthermore, it is worthwhile to examine which of these disorders are evoked after exposure to traumatic events or whether they occur as a result of developing PTSD neither in Iraq or other countries that have been exposure to severe traumatic events related to war and armed conflicts.

In the PTSD predictive factors model, some of the important factors that have been found to contribute to the emergence of PTSD, such as exposure to trauma, coping strategies (religion, and social supports), that have been identified in previous studies did not appear to be predictors in the current study. Therefore, comparing between

traumatized and non-traumatized people across a wide range of factors may produce a better fit model for PTSD in war-related trauma.

The results revealed that people with PTSD were more aggressive than those without PTSD. However, the rate of death-related violence between 2003 and 2006 in Iraq ranged from 47,668 to 601,027 in a body count from a national survey (Alkhuzai et al., 2008). Compared to the mortality rate in Iraq before 2003, the estimated rate of mortality was lower than rates in neighbouring countries (Luquero & Grais, 2008). This suggests that the crimes in Iraq rose since the invasion in 2003. Therefore, more studies are required to examine the relationships between PTSD and crime and whether the exposure to trauma or developing PTSD contribute more to committing crimes in Iraq.

The results showed that personality traits such as neuroticism correlated with, and are predictive of, PTSD. This is the first time that the Big five personality traits inventory has been conducted in Iraq. More studies are required to examine the relationship between personality traits and various disorders. Some previous studies argue that personality traits change across stages of life as a result of specific life experiences (Roberts & Mroczek, 2008). Therefore, it is crucial to examine whether personality traits change after trauma and PTSD or whether people develop PTSD as a result of having high rates of some of these traits.

The result of the study on students and those on refugees found a lower prevalence rate of PTSD than that in the Iraqi population. However, the previous study suggests that people in exile continue to be effected by incidents that occur to their family inside their home country, (Al Sayah, 2013). Therefore, more studies need to assess the factors that may moderate the consequences of trauma in safe places after exposure to war-related trauma.

The results of the qualitative study as well as the self-report scales that were validated in these studies can be used in the future studies in this field.

## **7.7 Conclusions**

The current studies found that almost all the participants had been exposed to at least one war-related traumatic event. Events that related directly to war and conflict such as aerial bombing, losing a close relative person or friend, car bombs, road-side bombing and raid of houses by military, were the events most frequently reported by participants. The events described by participants were reported as repeated events (i.e., events experienced more than once) which revealed that Iraqi civilians had been exposed to these events for a long time. Most of the events were reported as distressful

that met the DSM-IV A criteria of traumatic events. As a result, more than two-thirds of participants reported that they had experienced at least one PTSD symptom whereas only one-third of participants reported that they met full PTSD symptom criteria. Although males reported that they had been exposed to traumatic events more than females, these studies revealed, in accordance with previous studies, that females developed more PTSD symptoms compared to males. Several reasons may be behind this finding. Women are more vulnerable to stress than men as they have a lower sense of coherence, use more emotional-coping strategies, and rely more on men for their needs, especially in the Eastern culture. Moreover, the results showed that there were differences in the use of coping strategies between people with and without PTSD. People with PTSD were found to use more inactive coping strategies than those without PTSD.

The results found that personality traits play a vital role in developing PTSD. The trait of neuroticism was found to be the personality trait most associated with PTSD and there were associations between negative affectivity (i.e., a facet of neuroticism) and hedonic capacity (i.e., a facet of extroversion) as health-relevant personality traits associated with PTSD. In contrast, the personality trait of conscientiousness may protect people from developing PTSD. These results answered the study questions about the differences between people who develop PTSD and those who did not develop PTSD in personality traits. Some of these variables had the ability to predict PTSD in people who have been exposed to severe traumatic events. A change in these predictor variables such as neuroticism, sense of coherence, active coping strategies, life satisfaction, and education level may change the rate of PTSD development. However, from the interview study it seems that close and warm relationships with family and friends may moderate the impact of trauma effect. In addition, sharing experiences of trauma and losses with other close people may make difference in developing PTSD, when it present in appropriate time for the traumatised person. The family may work as "communicating vessels" to moderate the stress and that leads all family members to be equal in stress level. All this needs more studies to address and consider in measurements used to screen trauma and PTSD in future in Iraq.

Differences between people with and without PTSD with comorbid disorders were also found. The studies revealed that people with PTSD presented more symptoms of depression, anger, hostility, had more health problems, and less life satisfaction than people without PTSD. Furthermore, the interview revealed there were other PTSD symptoms that may relate with cultural differences in Eastern society such as amnesia,



grief, and having sleep problems. These symptoms have not been put in the properties of DSM-IV for PTSD symptoms which are derived from research in Western societies. Although some strategies were used to cope with events and to moderate fear such as sharing the trauma experiences with family and friends and they were grouping with family at night, they more often used religion as a coping strategy and got more sympathy from family, this emerged from interviewed participants. These symptoms emerged from this study and coping strategies need to be considered when studying PTSD symptoms in Arab societies in the future. However, due to instability in the situation in Iraq, it may be that the expectation of encountering more traumatic events in the future encourages people to look forward to the future and feel better and stronger at dealing with incoming events. In contrast, those who developed fully PTSD felt exhausted and did not have the desire to endure more traumas.

The relationships between cortisol levels with PTSD were tested in two studies. Although there are some differences between people with and without PTSD in cortisol level, the differences were not significant. This may be because almost all the studies' samples with and without PTSD had been exposed to traumatic events and consequently, cortisol level is affected by long-lasting exposure to multiple traumatic events. Thus, not only did PTSD contribute to lower basal cortisol levels but also, experiencing a negative event in the past (Witteveen et al., 2010). Thus, Iraqi people experienced long periods of negative events (see the introduction) that may be affecting the cortisol level. In addition, there is presence of other disorders such as depression. Previous studies found that depression works to increase and opposed to PTSD in cortisol levels (Yehuda et al., 2004).

The results of the current studies may be used in the treatment of people with PTSD by selecting the appropriate factors that relate to PTSD and focusing upon them, such as personality traits, SOC and coping strategies (e.g. society culture, religion and social support). From the qualitative study results, sharing the trauma experiences with others was found to be very useful in recovery from PTSD symptoms, which makes the treatment process easier to use group therapy effectively. Moreover, enhancing the individual's general health and providing a safe environment, during treatment may help them to heal faster.

## **7.8 Postscript**

While writing of the current thesis was almost completed, the new version of diagnosis and statistical manual 5<sup>th</sup> edition was released. The DSM 5 has significantly

changed the PTSD criteria and its symptom clusters. Furthermore, PTSD was moved from Anxiety disorder chapter to a new chapter titled (Trauma- and Stressor-Related Disorders) but PTSD was still as pathological anxiety. In addition, the criteria of trauma A2 (feeling of fear, horror, and helplessness) during exposure to trauma has been removed because it is not utility predictor factor for onset-PTSD. Moreover, PTSD symptom clusters became four instead of three in DSM-IV. Where, the negative thoughts and mood or feelings, such as blame of self or others that may lead to disaffection from others or considerably reduced interest in activities has been added to the clusters of PTSD symptoms. Furthermore, DSM 5 included two new PTSD subtypes which are preschool PTSD subtype and PTSD dissociative subtype (Grohol, 2013) and ([www.dsm5.org/](http://www.dsm5.org/)). Therefore, there was no time to discuss the study results based on new symptoms for PTSD diagnosis or use its criteria. Therefore, this thesis relies on definition and diagnosis of DSM-IV.

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## Appendixes

### Appendix 1: contract for study 1 between HW and the Department of Psychology Counselling and Education Guidance DPCEG



#### General research agreement

This is an agreement in principle between Heriot-Watt University represented by the Head of School of Life Science and Diyala University represented by the head of the Department of Psychology Counselling and Education Guidance (DPCEG). The agreement is that DPCEG administrates the study *'EXPOSURE TO TRAUMA AND SYMPTOMS OF PTSD: A POPULATION STUDY IN IRAQ.'* of Khalil A. Hussen who is a PhD student at the Heriot-Watt University.

- 1- The project will be under lead supervision of the head of department Prof. Liath AL-Samarrayi.
- 2- The application of the project will be under direct supervision of Prof. Muhaned AL-Naymi.
- 3- Four Msc. Students in the department will collect the data.
- 4- The research assistants have to follow the procedure of study (attached), which are prepared and determined step by step by primary researcher, as well as adhere to the ethical guidelines approved by school of life science ethics committee.
- 5- The department will be rewarded £1500 upon satisfactory collection and delivery data.

Handwritten signature of Professor Alan Prior in black ink.

Professor Alan Prior

Head of SLS

9.2.2011

Handwritten signature of Prof. Liath AL-Samarrayi in blue ink.

Prof. Liath AL-Samarrayi

Head of Department

Diyala University

2011 / 2 / 17

#### School of Life Sciences

John Muir Building Gait 1 Heriot-Watt University Edinburgh EH14 4AS United Kingdom  
Telephone +44 (0)131 451 3455/4575 Fax +44 (0)131 451 3009  
Email enquiries@sls.hw.ac.uk www.sls.hw.ac.uk

Edinburgh Campus • Scottish Borders Campus • Orkney Campus • Dubai Campus

## **Appendix 2: Participant consent form and information sheet for study 1**

Name of participant:

Number of participant: 0000

Title of the project: Exposure to trauma and symptoms of PTSD: A population study in Iraq.

Researcher's contact details: Khalil A. Hussen E-mail: Kah10@hw.ac.uk

Members of the research team:

- I agree to take part in the above research. I have read the Participant information Sheet, which is attached to this form.
- I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
- I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
- I have been informed that confidentiality means that nobody can access to my personal information except the researcher for scientific purpose only.
- I have been informed that the confidentiality of the information I provide will be safeguarded.
- I have been informed to stop answering the survey when I need to and I have to stop answering if I feel upset or nervous.
- I am free to ask any questions at any time before and during the study.
- I have been provided with name and address of the primary researcher and Prof. Muhaned Al-Nyami and the Department of Counselling Psychology at Diyala University address and e-mail to contact with them if I need any help or treatment.
- I have been informed that I can get general information about the study result if I need to. Therefore, I will provide the research team with my e-mail address for this purpose.
- I have been provided with a copy of this form and the Participant Information Sheet.
- Data Protection: I agree to the University processing personal data that I have supplied.
- I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

- I agree to participate in future research if I asked to do so. Therefore I will provide my details below.

Name of participant print:

Signed:

Date:

Address:

E-mail:

Phone No:

Name of witness print:

signed:

Date:

### **Participant Information Sheet**

#### 1. What is the purpose of the study?

I am a PhD student at Heriot –Watt University, Scotland, UK supervised by Dr. Maarten Milders and Dr. Green Patrick. This research is exploring experiences in trauma amongst Iraqi people.

The main aims of the research are:

- To examine differences in the level and frequency of individual experiences of traumatic events.
- To examine the prevalence of PTSD symptoms in a representative sample of Iraqi families.
- To examine the roles of sense of coherence and differences in coping strategies.

The definition of terms;

- 1- trauma is defined as: “a stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or another threat to one’s physical integrity; or witnessing an event that involving death, injury or a threat to the physical integrity of another person; or learning about an expected or violent death; serious harm, or threat of death or injury experienced by the family member or other close associate.”
- 2- PTSD. Where PTSD may be diagnosed when people have experienced an event involving threat of death or serious injury to themselves, and their response to the event is characterized by fear, helplessness or horror; and when they

experience incessant re-experiencing, avoidance and hyperarousal symptoms for more than one month.

3- Sense of Coherence: Antonovsky (1987), defined the sense of coherence as “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence.

4- Coping: Coping is defined as the nature of cognitions and behaviours that a person uses to assess stressors, to decrease their stressfulness, and to adapt the emotional stimulation that stressors cause.

## 2. Why have I been chosen?

I would like to speak with people, who live, with trauma or exposed to traumatic events in Iraq. I aim to meet approximately 500 persons to answer the themes identified above.

In this study, you will participate to answer questions about trauma if you have experienced and what you did about it.

## 3. What will happen to me if I take part?

Your involvement in the study would be to take part in the study where we ask to answer the scales which determine your response to trauma: your understandings of traumatic events; what influences these understandings; what your specific understandings of social empathy are; and how these understandings and experiences impact on your behaviour and how you cope with. The measurements will probably take about 1 hour depending on how much time you have available, it is up to you to decide whether or not to take part. You do not have to give your real name. If you do decide to take part you will be given this information sheet to keep. You will also be asked to sign a consent form and provided with a copy of this. If you decide to take part, you are still free to withdraw from the study at any time and without a given reason.

## 4-Will my taking part in this study be kept confidential?

All information that is collected about you during the course of the research will be kept strictly confidential. The primary researcher and supervisor of data collecting will be only able to access the personal information. All your responses will be destroyed at the end of the research. Your name or any contact details will not be shared with any other institutions. In addition, any details which potentially could identify you will also be removed or changed. My academic supervisors will have access to the anonymous transcripts of your responses, but I will be the only person to have access to the original scales of the study, your consent form and any of your contact details. Your participation in this study will not be discussed with others. Your name will be changed in the research

and I will ensure that your involvement remains entirely confidential and anonymous. I am not under an obligation to report anything you say that could be defined as illegal. However, disclosure may be required if you were to say something that potentially indicated that you or someone else was at risk of harm. If you said something of this type I would indicate this and you could then choose whether or not to continue the discussion. We would also discuss what the next steps would be.

5-What will happen to the results of the research study?

The results of the study will be used in my PhD thesis and in reports to my university. The material will be presented at academic and professional conferences and in academic journals. The findings will also be shared with groups who work in posttraumatic stress disorder. In addition, a summary report of the findings will be available from the Heriot-Watt University and research websites once the study has finished. Anonymity and confidentiality will still be in place in all cases. Findings from this study will contribute to developing a better understanding of how social empathy and coping strategy can support individuals to improve behavioural method to deal with trauma.

You can leave the study, or request a break, at any time.

This study is conducted in accordance with British Psychological Society, and Departmental ethics guidelines. Your rights as a participant, including the right to withdraw at any point without penalty, are ensured.

It is anticipated that the findings of the study will be written up for publication in a peer reviewed journal and presented at international conferences. All results will be anonymous and it will not be possible to identify individual participant's data.

Please contact for further information or help; **Khalil A. hussen** (Tel: 07901517899), [\*\*kah10@hw.ac.uk\*\*](mailto:kah10@hw.ac.uk)

Or Prof: Muhaned Al-Nyami E-mail: [muhand\\_kh@yahoo.com](mailto:muhand_kh@yahoo.com)

The Department of Counselling Psychology/ Diyala University

If you have any questions at all, please ask them now.

If you would like to participate, please ask the researcher for a consent form.

Researcher name: Khalil A. Hussen

Department of Psychology

School of Life Sciences

Heriot- Watt University

Edinburgh

Scotland, UK



### Appendix 3: Final version of Baghdad History of Trauma Screen (BHTS)

This questionnaire is to screen traumatic events in Iraq. You, your family members, or close friends may have experienced one or more of these events. Please answer whether you or your close people have been exposed to these events by putting (√) under YOU; if you personally exposed to the event, under CLOSE PERSON; if your close people (family member/friends) exposed to the events or under both of them if you and your close people exposed to the event. In case experiencing the event, please put a number of the times of exposure and your age at the first time of exposure.

Events	You	Frequency	close people	Frequency	The age at the event	Did you feel fear, horror, helplessness, anger or sadness?
Roadside explosion						
Aerial bombing						
Car bomb						
Shooting						
Witnessing a violent death						
Attack by military force						
Watching of video clip of a real murder						
Sudden death of a family member						
Kidnapping						
Arrest for political reasons						
Robbery at gunpoint						
Severe car accident						
Losing close person						
Hanging of a close person						
Armed robbery						
attempt to kill						
Physical torture						
Serious fire						
Chemical attack						
Rape/ sexual abuse						

Divorce or leaving family						
Severe illness						
Displace						
others						

#### Appendix 4: Screen for Posttraumatic Stress Symptoms (SPTSS)

Please answer the following items by Tick the box under the alternative which reflect the number of occurring time of these things for you during last month.

Please note, there are no true or false answers, and your answer only expresses about your feelings.

Items	not at all	1 or 2 times	almost every day	about once every day	more than once every day
1. I don't feel like doing things that I used to like doing.					
2. I can't remember much about bad things that have happened to me.					
3. I feel cut off and isolated from other people.					
4. I try not to think about things that remind me of something bad that happened to me.					
5. I feel numb: I don't feel emotions as strongly as I used to.					
6. I have trouble concentrating on things or paying attention to something for a long time.					
7. I have a hard time thinking about the future and believing that I'm going to live to old age.					
8. I feel very irritable and lose my temper.					
9. I avoid doing things or being in situations that might remind me of something terrible that happened to me in the past.					
10. I am very aware of my surroundings and nervous about what's going on around me.					

11. I find myself remembering bad things that happened to me over and over, even when I don't want to think about them.					
12. I get startled or surprised very easily and "jump" when I hear a sudden sound.					
13. I have bad dreams about terrible things that happened to me.					
14. I get very upset when something reminds me of something bad that happened to me.					
15. I have trouble getting to sleep or staying asleep.					
16. When something reminds me of something bad that happened to me, I feel shaky, sweaty, nervous and my heart beats really fast.					
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.					

## Appendix 5: 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	Score
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 I do.	
3-I've been trying to see it in a different light, to make it seem more positive.	
4-I've been looking for something good in what is happening.	
5-I've been criticizing myself.	
6-I've been blaming myself for things that happened.	
7-I've been giving up the attempt to cope.	
8-I've been using alcohol or other drugs to help me get through it.	
9-I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	
10-I've been getting help and advice from other people.	
11-I've been getting comfort and understanding from someone.	
12-I've been praying or meditating.	
13-I've been taking action to try to make the situation better.	
14-I've been thinking hard about what steps to take.	

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.	
19-I've been using alcohol or other drugs to make myself feel better.	
20-I've been giving up trying to deal with it.	

## Appendix 6: Biographical information and Sense of Coherence (SOC)

Please give a detail of the following information

Sex: Male: Female:  
Age:  
Marital status: Single: Married: Separated/divorced: Widowed:  
Education: Primary school: Secondary school:  
University: Higher education:

Economical statues for the family: Less than \$500 per month:

Between \$750 and \$ 1500 per month: more than \$1500 per month:

The number of family members:

Sense of Coherence – Orientation to Life Questionnaire -Short form 13 items

Please answer the following items by Tick the number from 1 to 7 that applicable to you.

The number reflects the degree of your agreement or not on the statement. Please note, there are no true of false answers, and your answer only expresses about your feelings.

C = comprehensibility Ma = manageability Me = meaning

1. Do you have the feeling that you don't really care about what goes on around you?

(Me)

1 2 3 4 5 6 7

Very seldom

Very often

or never

2. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well? (C)

1 2 3 4 5 6 7

Never happened

Always happened

3. Has it happened that people whom you counted on disappointed you? (Ma)

1 2 3 4 5 6 7

Never happened

Always happened

4. Until now your life has had: (Me)

1 2 3 4 5 6 7

No clear goals or purpose at all

Very clear goals and purpose

5. Do you have the feeling that you're being treated unfairly? (Ma)

1 2 3 4 5 6 7

Very often

Very seldom or never





### Appendix 7: Neuroticism scale

Please answer the following item by tick (√) under the alternative applicable for you, which describe your personality traits. Please note, there are no true or false answers, and your answer only expresses about your feelings.

I see Myself as Someone Who...	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1- Is depressed, blue					
2- Is relaxed, handles stress well					
3- Can be tense					
4- Worries a lot					
5- Is emotionally stable, not easily upset					
6- Can be moody					
7- Remains calm in tense situations					
8- Gets nervous easily					

### Appendix 8: The satisfaction with life scale "SWLS"

Please answer the following item by tick (√) under the alternative applicable for you, which describe your satisfaction with life. Please note, there are no true or false answers, and your answer only expresses about your feelings.

Items	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1- In most ways my life is close to my ideal.							
2- The conditions of my life are excellent.							
3- I am satisfied with my life.							
4- So far I have gotten the important things I want in life.							
5- If I could live my life over, I would change almost nothing.							

**Appendix 9: Depression and Somatic Symptoms Scale "DSSS" and Self-report of Health**

Please evaluate the severity of these symptoms you have experienced in the past 6 months:

**Absent:** no symptoms.

**Mild:** symptoms caused **slight** discomfort or disturbance.

**Moderate:** symptoms caused **significant** discomfort or disturbance.

**Severe:** symptoms caused **very significant** discomfort or disturbance.

Please check one of absent, mild, moderate, or severe to indicate the severity of the following symptoms.

Symptoms	Absent	Mild	Moderate	Severe
1. Headache				
2. Loss of interest in daily or leisure activities				
3. Tightness in the chest				
4. Insomnia				
5. Muscle tension				
6. Irritable mood				
7. Back pain				
8. Unable to feel happy or decreased ability to feel happy				
9. Dizziness				
10. Depressed mood or tearful				
11. Chest pain				
12. Feelings of self-reproach or guilt				
13. Neck or shoulder pain (or soreness)				
14. Loss of interest in sex				
15. Shortness of breath or difficulty breathing				
16. Anxious or nervous				
17. Soreness in more than half of the body's muscles				
18. Unable to concentrate				
19. Palpitations or increased heart rate				
20. Thoughts of death or suicidal ideas				
21. Fatigue or loss of energy				

22. Decreased appetite or loss of appetite				
--	--	--	--	--

Self-report of Health

Are you suffering from these diseases after exposing to trauma?

The diseases	Yes	No	If yes sense when
1- Diabetes			
2- High blood pressure			
3- Heart disease			
4- Skin problem			
5- Other diseases			
a-			
b-			
c-			

**Appendix 10: Contract for study 2 between HW and the Department of Psychology  
Counselling and Education Guidance (DPCEG)**



**General research agreement**

This is an agreement in principle between Heriot-Watt University represented by the Head of School of Life Science and Diyala University represented by the head of the Department of Psychology Counselling and Education Guidance (DPCEG). The agreement is that DPCEG administers the study **'The personality's health characteristics related to PTSD symptoms in Iraqi's sample'** of Khalil A. Hussen who is a PhD student at the Heriot-Watt University.

- 1- The project will be under lead supervision of the head of department Prof. Liath AL-Samarrayi.
- 2- The application of the project will be under direct supervision of Prof. Muhaned AL-Naymi.
- 3- Four Msc. Students in the department will collect the data.
- 4- The research assistants have to follow the procedure of study (attached), which are prepared and determined step by step by primary researcher, as well as adhere to the ethical guidelines approved by school of life science ethics committee.
- 5- The department will be rewarded £750 upon satisfactory collection and delivery data.

Handwritten signature of Professor Alan Prior in black ink.

Professor Alan Prior

Head of SLS

9.2.11

Handwritten signature of Prof. Liath AL-Samarrayi in black ink.

Prof. Liath AL- Samarrayi

Head of Department

Diyala University

20/12/17

**School of Life Sciences**

John Muir Building Gair 1 Heriot-Watt University Edinburgh EH14 4AS United Kingdom  
Telephone +44 (0)131 451 3455/4675 Fax +44 (0)131 451 3009  
Email enquiries@sls.hw.ac.uk www.sls.hw.ac.uk

*Edinburgh Campus • Scottish Borders Campus • Orkney Campus • Dubai Campus*

## **Appendix 11: Participant consent form and information sheet for study 2**

Name of participant:

Number of participant: 0000

Title of the project: The personality's health characteristics related to PTSD symptoms in Iraqi's sample.

Researcher's contact details: Khalil A. Hussen E-mail: Kah10@hw.ac.uk

Members of the research team:

- I agree to take part in the above research. I have read the Participant information Sheet, which is attached to this form.
- I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
- I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
- I have been informed that confidentiality means that nobody can access to my personal information except the researcher for scientific purpose only.
- I have been informed that the confidentiality of the information I provide will be safeguarded.
- I have been informed that the study includes samples of saliva for Cortisol level testing and I agree to do so.
- I have been informed that all saliva samples and all personal information will be destroyed when the study finished.
- I have been informed to stop answering the survey when I need to and I have to stop answering if I feel upset or nervous.
- I am free to ask any questions at any time before and during the study.
- I have been provided with name and address of the primary researcher and Prof. Muhaned Al- Nyami and the Department of Counselling Psychology at Diyala University address and e-mail to contact with them if I need any help or treatment.
- I have been informed that I can get general information about the study result if I need to. Therefore, I will provide the research team with my e-mail address for this purpose.
- I have been provided with a copy of this form and the Participant Information Sheet.

- Data Protection: I agree to the University processing personal data that I have supplied.
- I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.
- I agree to be contacted about possible participation in future research if I asked to do so. Therefore I will provide my details below.

Name of participant print ..... Signed.....Date.....

Address:

Phone No:

Name of witness print .....signed .....Date .....

### **Participant Information Sheet**

#### 1. What is the purpose of the study?

I am a PhD student at Heriot –Watt University, Scotland, UK .supervised by Dr. Maarten Milders and Dr. Green Patrick. This research is exploring experiences in trauma amongst Iraqi people. The main aims of the research are:

- To examine differences between individual who have PTSD and those who do not have in personality traits.
- To examine the differences on cortisol secretion level between the two groups.
- To examine the differences between the two groups in life satisfaction and physical health.
- To examines the relationship between the two groups in hostility, also, to investigate the relationship between PTSD symptoms and hostility.

In the first study the researcher provide the definition of trauma and PTSD.

In this study will define all the terms as:

- 1- trauma is defined as: “a stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or another threat to one’s physical integrity; or witnessing an event that involving death, injury or a threat to the physical integrity of another person; or learning about an expected or violent

death; serious harm, or threat of death or injury experienced by the family member or other close associate.”

- 2- PTSD-Where (PTSD) may be diagnosed when people have experienced an event involving threat of death or serious injury to themselves, and their response to the event is characterized by fear, helplessness or horror; and when they experience incessant re-experiencing, avoidance and hyperarousal symptoms for more than one month.
- 3- Personality traits:- Personality can defined as permanent disposition that interaction with one’s environment to cause characteristic patterns(Parks & Guay, 2009).
- 4- “Cortisol is a steroid hormone that is produced in the body in response to stress, Upon activation by an emotional or physical stressor” (Gow, Thomson , Rieder , Van Uum, & Koren, 2010)

## 2. Why have I been chosen?

I would like to speak with people, who live, with trauma or exposed to traumatic events in Iraq. I aim to interview approximately 60 men to discuss the themes identified above.

In this study, you will participate to answer the study scales and give a sample of saliva to examine the differences, between individuals, who have PTSD and those who not have, in Cortisol level and that will be by taking five samples for one day. A researcher will provide all necessary kits for saliva sample. The Cortisol level will provide the research with good indicator about participant’s health. This study is continues part of the first part which you involved earlier.

## 3. What will happen to me if I take part?

Your involvement in the study would be to take part in a personal report where we discuss: your understandings of traumatic events; what influences these understandings; what your specific understandings of social empathy are; and how these understandings and experiences impact on your behaviour and personality. The questions will probably last from 15 to 20 minute depending on how much time you have available, and how much information you want to share. It is up to you to decide whether or not to take part. You do not have to give your real name. If you do decide to take part you will be given this information sheet to keep. You will also be asked to sign a consent form and provided with a copy of this. If you decide to take part, you are still free to withdraw from the study at any time and without a given reason.

## 4- Will my taking part in this study be kept confidential?



All information that is collected about you during the course of the research will be kept strictly confidential. Your name or any contact details will not be recorded on the result transcripts. In addition, any details which potentially could identify you will also be removed or changed. My academic supervisors will have access to the anonymous transcripts of your interview, but I will be the only person to have access to the original response sheet, your consent form and any of your contact details. Your participation in this study will not be discussed with other participants. Your name will be changed in the research and I will ensure that your involvement remains entirely confidential and anonymous. I am not under an obligation to report anything you say that could be defined as illegal. However, the primary researcher will be obliged to disclose this information if you were to say something that potentially indicated that you or someone else was at risk of harm. If you said something of this type I would indicate this and you could then choose whether or not to continue the discussion. We would also discuss what the next steps would be.

5-What will happen to the results of the research study?

The results of the study will be used in my PhD thesis and in reports to my university. The material will be presented at academic and professional conferences and in academic journals. The findings will also be shared with groups who work in posttraumatic stress disorder. In addition, a summary report of the findings will be available from the Heriot-Watt University and research websites once the study has finished. Anonymity and confidentiality will still be in place in all cases. Findings from this study will contribute to developing a better understanding of how PTSD symptoms may effect on individual behaviour and health. It can support individuals to improve behavioural method to deal with trauma.

You can leave the study, or request a break, at any time.

This study is conducted in accordance with British Psychological Society, and Departmental ethics guidelines. Your rights as a participant, including the right to withdraw at any point without penalty, are ensured.

It is anticipated that the findings of the study will be written up for publication in a peer reviewed journal and presented at international conferences. All results will be anonymous and it will not be possible to identify individual participant's data.

Please contact for further information; **Khalil A. hussen** (Tel: 07901517899), **[kah10@hw.ac.uk](mailto:kah10@hw.ac.uk)**

Or Prof: Muhaned Al-Nyami E-mail : [muhand\\_kh@yahoo.com](mailto:muhand_kh@yahoo.com)

The Department of Counselling Psychology/ Diyala University

If you have any questions at all, please ask them now.

If you would like to participate, please ask the researcher for a consent form.

Researcher name: Khalil A. Hussien

Department of Psychology

School of Life Sciences

Heriot- Watt University

Edinburgh

Scotland

UK

## Appendix 12: Health-related Quality-of-Life Questionnaire SF-8

Please answer the following item by tick (✓) under the alternative applicable for you, which describe your health last week. Please note, there are no true or false answers, and your answer only expresses about your feelings about your feeling of health.

1. Overall, how would you rate your health during the past week?

Excellent      Very good      Good      Fair Poor      Very poor

-----

2. During the past week, how much did physical health problems limit your usual physical activities (such as walking or climbing stairs)?

Not at all    Very little    Somewhat    Quite a lot    Could not do physical activities

-----

3. During the past week, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?

None at all    A little    bit Some    Quite a lot    could not do daily work

-----

4. How much bodily pain have you had during the past week?

None    Very mild    Mild Moderate    Severe    Very Severe

-----

5. During the past week, how much energy did you have?

Very much    Quite a lot    Some    A little    None

-----

6. During the past week, how much did your physical health or emotional problems limit your usual social activities with family or friends?

Not at all    Very little    Somewhat    Quite a lot    Could not do social activities

-----

7. During the past week, how much have you been bothered by emotional problems (such as feeling anxious, depressed or irritable)?

Not at all    Slightly    Moderately    Quite a lot    Extremely

-----

8. During the past week, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities?

Not at all    Very little    Somewhat    Quite a lot    Could not do daily activities

1-General health

2- Physical functioning

3- Role – physical

- 4- Bodily pain
- 5- Vitality
5. Social functioning
7. Mental health
8. Role – emotional

### Appendix 13: Health-relevant personality five traits inventory HP5i

Below you will find 20 statements dealing with your habits, your opinions, your way of reacting and how you **usually** feel. There are four possible response alternatives to each statement: “Does not apply at all”, “Does not apply very well”, “Applies pretty much”, and “Applies completely”. Your task is to choose the alternative that corresponds to your general way of acting or feeling, i.e. not how you are feeling right now, but rather how you usually feel.

Items	Does not apply at all	Does not apply very well	Applies pretty much	Applies completely
1. I often feel uplifted when I listen to good music. 2. I often feel uneasy and uncomfortable for no apparent reason. 3. I'm good at making sarcastic comments. 4. I have a tendency to act on the spur of the moment without really thinking ahead. 5. I find it easy to enjoy life. 6. I don't usually analyse my feelings. 7. I'm easily pressured when told to speed up my work. 8. If someone treats you badly, I basically feel you should treat them the same way back. 9. I often take on things too hastily. 10. I think people often tend to exaggerate the importance of				

<p>their emotions.</p> <p>11. I often feel happy and sort of elated when I'm about to meet a close friend.</p> <p>12. I often get so tense it wears me out.</p> <p>13. If someone criticises me, I'm not afraid of giving sharp and sarcastic answers.</p> <p>14. I usually talk before I think.</p> <p>15. I often find it hard to understand what people mean when they talk about their feelings.</p> <p>16. I'm always keen to try out new things.</p> <p>17. An unexpected noise makes me jump.</p> <p>18. Anyone who offends me or my family or friends can expect trouble.</p> <p>19. I consider myself an impulsive person.</p> <p>20. I prefer not to get involved in other people's problems.</p>				
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#### Appendix 14: Aggression Questionnaire (Buss & Perry, 1992)

Instructions:

Using the 5 point scale shown below, indicate how uncharacteristic or characteristic each of the following statements is in describing you. Place your rating in the box to the right of the statement.

1 = extremely uncharacteristic of me

2 = somewhat uncharacteristic of me

3 = neither uncharacteristic nor characteristic of me

4 = somewhat characteristic of me

5 = extremely characteristic of me

- |  |    |   |   |   |   |   |
|--|----|---|---|---|---|---|
| 1. Some of my friends think I am a hothead                             | A  | 1 | 2 | 3 | 4 | 5 |
| 2. If I have to resort to violence to protect my rights, I will.       | PA |   |   |   |   |   |
| 3. When people are especially nice to me, I wonder what they want.     | H  |   |   |   |   |   |
| 4. I tell my friends openly when I disagree with them.                 | VA |   |   |   |   |   |
| 5. I have become so mad that I have broken things.                     | PA |   |   |   |   |   |
| 6. I can't help getting into arguments when people disagree with me.   | VA |   |   |   |   |   |
| 7. I wonder why sometimes I feel so bitter about things.               | H  |   |   |   |   |   |
| 8. Once in a while, I can't control the urge to strike another person. | PA |   |   |   |   |   |
| 9.* I am an even-tempered person.                                      | A  |   |   |   |   |   |
| 10. I am suspicious of overly friendly strangers.                      | H  |   |   |   |   |   |
| 11. I have threatened people I know.                                   | PA |   |   |   |   |   |
| 12. I flare up quickly but get over it quickly.                        | A  |   |   |   |   |   |
| 13. Given enough provocation, I may hit another person.                | PA |   |   |   |   |   |
| 14. When people annoy me, I may tell them what I think of them.        | VA |   |   |   |   |   |
| 15. I am sometimes eaten up with jealousy.                             | H  |   |   |   |   |   |
| 16.* I can think of no good reason for ever hitting a person.          | PA |   |   |   |   |   |
| 17. At times I feel I have gotten a raw deal out of life.              | H  |   |   |   |   |   |
| 18. I have trouble controlling my temper.                              | A  |   |   |   |   |   |
| 19. When frustrated, I let my irritation show.                         | A  |   |   |   |   |   |
| 20. I sometimes feel that people are laughing at me behind my back.    | H  |   |   |   |   |   |
| 21. I often find myself disagreeing with people.                       | VA |   |   |   |   |   |
| 22. If somebody hits me, I hit back.                                   | PA |   |   |   |   |   |
| 23. I sometimes feel like a powder keg ready to explode.               | A  |   |   |   |   |   |

24. Other people always seem to get the breaks. H
25. There are people who pushed me so far that we came to blows. PA
26. I know that “friends” talk about me behind my back. H
27. My friends say that I’m somewhat argumentative. VA
28. Sometimes I fly off the handle for no good reason. A
29. I get into fights a little more than the average person. PA

#### Scoring

\* The two questions with the asterisk are reverse scored.

The Aggression scale consists of 4 factors, Physical Aggression (PA), Verbal Aggression (VA), Anger (A) and Hostility (H). The total score for Aggression is the sum of the factor scores.



## **Appendix 15: Study 3 Participants consent form and Information Sheet**

Name of participant:

Number of participant: 0000

Title of the project: What is the effect of war and conflicts on your life? A qualitative study of traumatized Iraqi people

Researcher's contact details: Khalil A. Hussen E-mail ; Kah10@hw.ac.uk

Members of the research team:

- I agree to take part in the above research. I have read the Participant information Sheet, which is attached to this form.
- I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
- I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
- I have been informed that confidentiality means that nobody can access to my personal information except the researcher for scientific purpose only.
- I have been informed that the confidentiality of the information I provide will be safeguarded.
- I have been informed that all saliva samples and all personal information will be destroyed when the study finished.
- I have been informed to stop answering the survey when I need to and I have to stop answering if I feel upset or nervous.
- I am free to ask any questions at any time before and during the study.
- I have been provided with name and address of the primary researcher and three organisations in Edinburgh and name and address of Iraqi interpreter address and e-mail to contact with them if I need any help or treatment.
- I have been informed that I can get general information about the study result if I need to. Therefore, I will provide the research team with my e-mail address for this purpose.
- I have been provided with a copy of this form and the Participant Information Sheet.
- Data Protection: I agree to the University processing personal data that I have supplied.
- I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

- I agree to be contacted about possible participation in future research if I asked to do so. Therefore I will provide my details below.

Name of participant print ..... Signed.....Date.....

Address: ..... E-mail: .....

Phone No: .....

Name of witness print .....signed .....Date .....

### **Participant Information Sheet**

1. What is the purpose of the study?

I am a PhD student at Heriot –Watt University, Scotland, UK supervised by Dr. Maarten Milders. This research is exploring experiences in trauma amongst Iraqi people.

The main aims of the research are:

- To examine differences in the level and frequency of individual experiences of traumatic events.
- To examine the prevalence of PTSD symptoms in a representative sample of Iraqi families.
- To examine the differences of personality traits between exposed and not exposed people.

The definition of terms;

1-trauma is defined as:

... “a stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or another threat to one’s physical integrity; or witnessing an event that involving death, injury or a threat to the physical integrity of another person; or learning about an expected or violent death; serious harm, or threat of death or injury experienced by the family member or other close associate.”

2. PTSD; Where (PTSD) may be diagnosed when people have experienced an event involving threat of death or serious injury to themselves, and their response to the event is characterized by fear, helplessness or horror; and when they experience incessant re-experiencing, avoidance and hyperarousal symptoms for more than one month.

3. Personality traits:- Personality can defined as permanent disposition that interaction with one’s environment to cause characteristic patterns(Parks & Guay, 2009)

2. Why have I been chosen?

I would like to speak with people, who live, with trauma or exposed to traumatic events in Iraq. I aim to meet approximately 50 persons to answer the themes identified above.

In this study, you will participation to answer question about trauma if you have exposed and what did you do about it.

### 3. What will happen to me if I take part?

Your involvement would be to take part in the study where we ask to answer the scales which determine the kind of trauma you are exposed to and your response to trauma: your understanding of traumatic events; what influences these understanding? What is your specific understanding of social empathy are; and how these understandings and experiences impact on your behaviour and how you coping with. The measurements will probably take about 10 to 15 min depending on how much time you have available, it is up to you to decide whether or not to take part. You do not have to give your real name. If you do decide to take part you will be given this information sheet to keep. You will also be asked to sign a consent form and provided with a copy of this. If you decide to take part, you are still free to withdraw from the study at any time and without a given reason.

### 4. Will my taking part in this study be kept confidential?

All information that is collected about you during the course of the research will be kept strictly confidential. The primary researcher will be only able to access to the personal information. All your responses will be destroyed at the end of the research. Your name or any contact details will not be sharing with any other institutions. In addition, any details which potentially could identify you will also be removed or changed. My academic supervisors will have access to the anonymous transcripts of your responses, but I will be the only person to have access to the original scales of the study, your consent form and any of your contact details. Your participation in this study will not be discussed with others. Your name will be changed in the research and I will ensure that your involvement remains entirely confidential and anonymous. I am not under an obligation to report anything you say that could be defined as illegal. However, the primary researcher will be obliged to disclose this information if you were to say something that potentially indicated that you or someone else was at risk of harm. If you said something of this type I would indicate this and you could then choose whether or not to continue the discussion. We would also discuss what the next steps would be.

### 5. What will happen to the results of the research study?

The results of the study will be used in my PhD thesis and in reports to my university. The material will be presented at academic and professional conferences and in academic journals. The findings will also be shared with groups who work in posttraumatic stress disorder. In addition, a summary report of the findings will be available from the Heriot-Watt University and research websites once the study has finished. Anonymity and confidentiality will still be in place in all cases. Findings from this study will contribute to developing a better understanding of which traumatic events can develop PTSD and the role of personality traits can support individuals to improve behavioural method to deal with trauma.

You can leave the study, or request a break, at any time.

This study is conducted in accordance with British Psychological Society, and Departmental ethics guidelines. Your rights as a participant, including the right to withdraw at any point without penalty, are ensured.

It is anticipated that the findings of the study will be written up for publication in a peer reviewed journal and presented at international conferences. All results will be anonymous and it will not be possible to identify individual participant's data.

Please contact for further information or help; **Khalil A. Hussen** (Tel: 07901517899), **[kah10@hw.ac.uk](mailto:kah10@hw.ac.uk)**

Or you can contact with these organisations in Edinburgh for helping:

Saheliya,

125-127 McDonald Road

Edinburgh EH7 4NW

Tel: 0131-556 9302

**Email: [info@saheliya.co.uk](mailto:info@saheliya.co.uk)**

**Website: [www.saheliya.org.uk](http://www.saheliya.org.uk)**

Or

Shakti Women Aid

57 Albion Road

Edinburgh EH7 5QY

Tel: 0131-475 2399

**[info@shaktiedinburgh.co.uk](mailto:info@shaktiedinburgh.co.uk)**

Or

MECOPP Carers Centre

127 Leith Walk

Edinburgh EH6 5EA

Tel: 0131-467 2994

Fax: 0131-464 2995

For Arabic-English interpreter you can contact with:

Selma Mitchell

**E-mail: [sjalrobaiee@yahoo.com](mailto:sjalrobaiee@yahoo.com)**

Tel: + O776963311

If you have any questions at all, please ask them now.

If you would like to participate, please ask the researcher for a consent form.

Researcher name: Khalil A. Hussen

Department of Psychology

School of Life Sciences

Heriot- Watt University

Edinburgh

Scotland

UK

## Appendix 16: Big Five Inventory BFI

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

Disagree strongly    Disagree a little    Neither agree nor disagree    Agree a little  
Agree strongly

1                            2                            3                            4                            5

I see myself as someone who...

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

Please check: Did you write a number in front of each statement?

BFI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

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**Appendix 17: Participant consent form and participant information sheet (for interviewing)**

Name of participant:

Number of participant: 0000

Title of the project: What is the effect of war and conflicts on your life?  
qualitative study of traumatized Iraqi people.

A

Researcher's contact details: **Khalil A. Hussien**

E-mail ; Kah10@hw.ac.uk

Members of the research team:

- I agree to take part in the above interview research. I have read the Participant information Sheet, which is attached to this form.
- I agree to give a sample of saliva for cortisol test, which will use for research purposes only.
- I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
- I understand that I am free to withdraw from the interview at any time, for any reason and without prejudice.
- I have been informed that the interview will tape recorded, and I agree.
- I have been informed that confidentiality means that nobody can access to my personal information except the researcher for scientific purpose only.
- I have been informed that the confidentiality of the information I provide will be safeguarded.
- I have been informed to stop talking when I need to and I have to stop answering if I feel upset or nervous.
- I have been informed that all tape record and all personal information will be destroyed when the study finished
- I am free to ask any questions at any time before and during the study.
- I have been informed that I can get general information about the study result if I need to. Therefore, I will provide the research team with my e-mail address for this purpose.
- I have been provided with a copy of this form and the Participant Information Sheet.
- Data Protection: I agree to the University processing personal data that I have supplied.



- I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.
- I agree to participate in future research if I asked to do so. Therefore I will provide my details below.

Name of participant print ..... Signed.....Date.....

Address:

Phone No:

Name of witness print .....signed .....Date .....

### **Participant Information Sheet**

1. What is the purpose of the study?

I am a PhD student at Heriot –Watt University, Scotland, UK. Supervised by Dr. Maarten Milders and Dr. Patrick Green. This research is exploring experiences in trauma amongst Iraqi people. The main aims of the research are:

- To examine the individuals who exposed to traumatic events.
- To investigate the individual experiences such as the physical effects of trauma, the psychological effects, and the social effects, effects of trauma on the family and the effects of trauma on general health.
- To investigate the personal efforts to cope with experience of traumatic events and his emotions during and post-trauma.
- To examine the roles of personality traits and differences between people in coping strategies and traumatic experiences.
  - To identify on the real feeling about trauma and its consequences.

#### **The definition of terms;**

1-trauma is defined as:

... “a stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or another threat to one’s physical integrity; or witnessing an event that involving death, injury or a threat to the physical integrity of another person; or learning about an expected or violent death; serious harm, or threat of death or injury experienced by the family member or other close associate.”

2-PTSD

Where (PTSD) may be diagnosed when people have experienced an event involving threat of death or serious injury to themselves, and their response to the event is

characterized by fear, helplessness or horror; and when they experience incessant re-experiencing, avoidance and hyperarousal symptoms for more than one month.

### 3- Coping:

Coping is defined as the nature of cognitions and behaviours that a person uses to assess stressors, to decrease their stressfulness, and to adapt the emotional stimulation that stressors cause

#### 2. Why have I been chosen?

I would like to speak with persons, who live, with trauma or exposed to traumatic events in Iraq. I aim to interview approximately 10-15 individual (both gender) to discuss the themes identified above

In this study, you will participate on interviewing to answer question about trauma if you have experienced and what did you do about it.

#### 3. What will happen to me if I take part?

Your involvement in the study would be to take part in an interview and to give four samples of saliva to test the cortisol levels in different times during the day of interview, this will be to determine the effect of chronic PTSD symptoms in exposed body and the differences between people who display PTSD symptoms and those without. In interview where we discuss: your experiences with given events you may consider it as stressful. How you are understanding of traumatic events; what the effect of these events on your life, what your specific understandings of social empathy are; and how these understandings and experiences impact on your behaviour and personality.. The interview will probably last between 1 hour to 1 ½ hours depending on how much time you have available, and how much information you want to share. I will record the interviews with your permission. The recordings will be written up and you will be offered a copy of the transcript, it is up to you to decide whether or not to take part. You do not have to give your real name. If you do decide to take part you will be given this information sheet to keep. You will also be asked to sign a consent form and provided with a copy of this. If you decide to take part, you are still free to withdraw from the study at any time and without a given reason.

#### 4-Will my taking part in this study be kept confidential?

All information that is collected about you during the course of the research will be kept strictly confidential. All interview recordings will be destroyed at the end of the research. Your name or any contact details will not

be recorded on the interview transcripts. In addition, any details which potentially could identify you will also be removed or changed. My academic supervisors will have access to the anonymous transcripts of your interview, but I will be the only person to have access to the original recordings of the interview, your consent form and any of your contact details. Your participation in this study will not be discussed with other interviewees, or any other persons. Your name will be changed in the research and I will ensure that your involvement remains entirely confidential and anonymous. I am not under an obligation to report anything you say that could be defined as illegal. However, the primary researcher will be obliged to disclose this information if you were to say something that potentially indicated that you or someone else was at risk of harm. If you said something of this type I would indicate this and you could then choose whether or not to continue the discussion. We would also discuss what the next steps would be.

5-What will happen to the results of the research study?

The results of the study will be used in my PhD thesis and in reports to my university. The material will be presented at academic and professional conferences and in academic journals. The findings will also be shared with groups who work in posttraumatic stress disorder. In addition, a summary report of the findings will be available from the Heriot-Watt University and research websites once the study has finished. Anonymity and confidentiality will still be in place in all cases. Findings from this study will contribute to developing a better understanding of how social empathy and coping strategy can support individuals to improve behavioural method to deal with trauma.

You can leave the study, or request a break, at any time.

This study is conducted in accordance with British Psychological Society, and Departmental ethics guidelines. Your rights as a participant, including the right to withdraw at any point without penalty, are ensured.

It is anticipated that the findings of the study will be written up for publication in a peer reviewed journal and presented at international conferences. All results will be anonymous and it will not be possible to identify individual participant's data.

Please contact for further information; **Khalil A. Hussen** Tel: ( ), [\*\*kah10@hw.ac.uk\*\*](mailto:kah10@hw.ac.uk)

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**Website: [www.saheliya.org.uk](http://www.saheliya.org.uk)**

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**[info@shaktiedinburgh.co.uk](mailto:info@shaktiedinburgh.co.uk)**

Or

MECOPP Carers Centre

127 Leith Walk

Edinburgh EH6 5EA

Tel: 0131-467 2994

Fax: 0131-464 2995

For Arabic- English interpreter you can contact with:

Selma Mitchell

**E-mail: [sjgalrobaiee@yahoo.com](mailto:sjgalrobaiee@yahoo.com)**

Tel: + O776963311

If you have any questions at all, please ask them now.

If you would like to participate, please ask the researcher for a consent form.

Researcher name: Khalil A. Hussien

Department of Psychology

School of Life Sciences

Heriot- Watt University

## Appendix 18: Arabic versions of study scales

### مقياس الاحداث الصدمية

يبين يديك استبيان يهتم بالبحث في الاحداث التي تعرض لها المجتمع العراقي خلال الفترات السابقة وانت احد افراد هذا المجتمع، يرجى تحديد فيما اذا كنت انت او احد افراد عائلتك او اقربائك او اصدقائك الحميمين قد تعرض لاي من هذه الاحداث، وذلك بوضع علامة (√) تحت الاجابة (نعم) ، واذا اجبت ب(نعم) يرجى الاجابة على الاسئلة الاخرى، لا داعي لذكر الاسم وان الاجابة لاغراض البحث العلمي فقط.

مثال:

فلو كنت قد تعرضت انت او احد افراد عائلتك او اقربائك او اصدقائك الحميمين لحادث ما وكنت قد تعرضت انت للحادث فضع علامة (√) تحت الخيار (انا) ، ولا بد ان تحدد عدد مرات حدوثه (افترض مرتين) وكم عمرك حينما وقع الحادث (افترض 20 سنة)، واذا كنت قد شعرت بخوف شديد عند الحادث، شعرت بالعجز، وقد شكل تهديد لك او لشخص عزيز عليك، وما زلت تشعر بالادى بسبب ذلك، فان اجابتك ستكون كما يلي:

ت	الحادث	انا	عدد مرات حدوثه	احد افراد عائلتي او اقاربي او اصدقائي الحميمين	عدد مرات حدوثه	كم عمرك عند الحدث؟	هل شعرت بخوف شديد او تهديد او عجز
	حدثا ما	√	2		2	20	√

ت	الحادث	انا	عدد مرات حدوثه	شخص عزيز عاي	عدد مرات حدوثه	كم عمرك عند الحدث؟	هل شعرت بخوف شديد او تهديد او عجز
1	قصف جوي بالقرب منك						
2	مشاهدة افلام الذبح والاختطاف						
3	فقدان شخص يهكم كنتيجة للحرب او اعمال العنف						
4	رؤية شخص ما يتعرض للقتل او الاختطاف						
5	اعدام شخص عزيز عليك						
6	موت مفاجئ لاحد افراد العائلة						
7	انفجار عبوة ناسفة						
8	انفجار سيارة مفخخة						
9	سطو مسلح						
10	اطلاق نار						
11	الاعتقال						
12	حادث سيارة خطير						
13	الاغتصاب الجنسي						
14	مداومة						
15	حريق كبير						
16	تسليب (محاولة تسليب)						
17	اختطاف او محاولة اختطاف						
18	محاولة اغتيال						

						هجوم من اليات عسكرية	19
						هجوم باسلحة كيمياوية	20
						التعذيب الجسدي	21
						مرض خطير	22
احداث اخرى لم ترد في اعلاه، اذكرها وأجب عن باقي الاسئلة الخاصة بالحدث							
							23
							24
							25
							26
							27

من الاحداث اعلاه والتي اجبت عليها ب(نعم) انت او شخص عزيز عليك قد تعرض لها، اشر الاحداث التي كنت قد شعرت بسببها بخوف شديد او شعور بالعجز، او الهلع أو شكلت تهديد لك أو لشخص عزيز عليك. تكون الاجابة بملأ الدائرة تحت رقم كل حدث يناسب اجابتك.

10	9	8	7	6	5	4	3	2	1	الاحداث
O	O	O	O	O	O	O	O	O	O	
20	19	18	17	16	15	14	13	12	11	
O	O	O	O	O	O	O	O	O	O	
								22	21	
								O	O	

## مقياس اعراض اضطرابات ما بعد الصدمة

يرجى الاستجابة للفقرات التالية وذلك بملأ الدائرة تحت البديل الذي يمثل اجابتك والتي تعكس كم هذا الشيء حصل لك. تذكر ان ليس هناك اجابات صحيحة واخرى خاطئة وانما الاجابة تعبر فقط عما تشعر به انت.

الفقرات	لم يحدث أبداً	مرة أو مرتين	تقريباً كل يوم	مرة كل يوم	أكثر من مرة كل يوم
1. لا أشعر بالرغبة في عمل الأشياء التي كنت أحب أن اعملها.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. لا أستطيع كثيراً تذكر الأشياء السيئة التي حدثت لي.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. اشعر بأنني منعزل عن بقية الناس	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. أحاول أن أفكر بالأشياء التي تذكرني بالأشياء السيئة التي حدثت لي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. اشعر بعدم المبالاة، لا أشعر بالأحاسيس كما كنت سابقاً.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. عندي مشكلة بتذكر الأشياء أو متابعتها لفترة طويلة من الوقت.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. عندي صعوبة بالتفكير بالمستقبل وانني سوف أعيش طويلاً .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. اشعر بأنني عصبي وافقد هدوئي بسهولة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. أتجنب عمل الأشياء والمواقف التي قد تذكرني بشيء مزعج حدث لي في الماضي.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. إنا متقيظ جداً للأشياء التي حولي ، وغير مرتاح للأشياء التي تحدث من حولي .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. أجد نفسي أتذكر الأشياء السيئة التي حدثت لي حتى عندما لا أريد أن أتذكرها.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. أتفاجأ وأجفل بسهولة عندما اسمع صوت مفاجئ .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. عندي أحلام مزعجة عن الأشياء السيئة التي حدثت لي.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. اغضب وانزعج عندما يحدث شيء يذكرني بشيء سيء حدث لي .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. عندي مشكلة بالنوم والبقاء نائماً.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. عندما يذكرني أي شيء بحدث سيء حصل لي اشعر بالرجفة والعرق والعصبية ودقات قلبي تصبح سريعة .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. فجأة أحس وكأنني أعيش في الماضي في موقف سيء كنت فيه ، وكأنه يحصل لي مرة أخرى .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## مقياس المواجهة

نحن مهتمين في كيفية استجابة الناس عندما يواجهون مواقف صعبة أو ضاغطة في حياتهم. هناك الكثير من الطرق لمحاولة التعامل مع الضغوط. هذا الاستبيان يسألك ان توضح ما تعمله او تشعر به عندما تواجه احداث ضاغطة.

رجاء اجب عن الفقرات التالية بوضع دائرة حول الرقم الذي يناسب اجابتك باستخدام خيارات الاجابة الميينة ادناه. رجاء حاول ان تجيب عن كل فقرة بشكل منفصل عن الاخرى. اختر اجابتك بحيث تكون اجابتك صحيحة بالنسبة لك قدر الامكان. رجاء اجب عن كل الفقرات. ليس هناك اجابة صحيحة واخرى خاطئة لذلك اختر الاجابة اكثر صحة بالنسبة لك وليس ما تعتقد ان اغلب الناس يقولونه او يفعلونه. اشر ما انت عادة تفعله عندما تواجه موقفا ضاغطا.

4	3	2	1
افعل ذلك كثيرا	افعل ذلك بدرجة متوسطة	افعل ذلك قليلا	لا افعل ذلك ابدا

\*\*\*\*\*

4	3	2	1	1. اركز جهودي على عمل شئ بخصوص الموقف الذي واجهته
4	3	2	1	2. احاول التفكير بخصوص ما يجب عمله
4	3	2	1	3. احاول ان اراه من زاوية اخرى تجعله يبدو اكثر ايجابية
4	3	2	1	4. اتقبل حقيقة ان الحادث قد حدث
4	3	2	1	5. اعمل نكات حول الحادث
4	3	2	1	6. احاول البحث عن الراحة في معتقداتي الدينية والروحية
4	3	2	1	7. احصل على الدعم العاطفي من الاخرين
4	3	2	1	8. احاول ان احصل على النصيحة والمساعدة من الاخرين لما يجب ان افعله.
4	3	2	1	9. اشغل نفسي بالعمل او نشاطات اخرى
4	3	2	1	10. اقول لنفسي "هذا ليس حقيقي"
4	3	2	1	11. اقول اشياء لطرد المشاعر المزعجة
4	3	2	1	12. استخدم الكحول والادوية الاخرى لكي اشعر افضل
4	3	2	1	13. اوقت محاولة التعامل مع الحدث
4	3	2	1	14. انتقد نفسي
4	3	2	1	15. اتعلم التعايش مع الحدث
4	3	2	1	16. اسعى لجعل الموقف افضل
4	3	2	1	17. افكر جديا بالخطوات التي يجب اتخاذها
4	3	2	1	18. ابحث عن الشئ الجيد في ما حدث
4	3	2	1	19. احاول الحصول على بعض المتعة
4	3	2	1	20. اصلي او اتأمل
4	3	2	1	21. حصلت على الراحة والفهم من شخص ما
4	3	2	1	22. حصلت على النصيحة والمساعدة من الاخرين
4	3	2	1	23. اعمل شئ لتقليل تاثير الحدث كالذهاب الى السينما، مشاهدة التلفزيون، القراءة، احلام اليقظة، النوم، او التسوق
4	3	2	1	24. لا اصدق انه حدث
4	3	2	1	25. اعبر عن مشاعري المزعجة.
4	3	2	1	26. استخدم الكحول او الادوية الاخرى لمساعدتي للتخلص منه
4	3	2	1	27. اتوقف عن التعامل مع الحدث
4	3	2	1	28. الوم نفسي للاشياء التي حدثت



عزيزي... فيما يلي بعض الفقرات التي تصف شخصيتك ارجو الاجابة عن مقدار وجود الصفة بوضع اشارة (٧)  
امام البديل الذي يناسبك علما ان هذا المقياس لاغراض البحث العلمي ولن يطلع عليه احد سوى الباحث وليس هناك  
اجابات صحيحة او خاطئة.

لا أوافق بشدة	غير موافق قليلا	لا اعلم	موافق قليلا	موافق بشدة	أرى نفسي كشخص:
					1- مكتئب، سوداوي
					2- هادئ، يستطيع أن يتعامل جيدا مع الضغوط 3- ممكن أن يكون متوترا
					4- كثير الفلق 5- مستقر عاطفيا، لا يزعج بسهولة
					6- متقلب المزاج
					7- يبقى هادئا في المواقف المتوترة
					8- يتوتر بسهولة

The satisfaction with life scale

مقياس الرضا عن الحياة

عزيزي... فيما يلي بعض الفقرات التي تصف مدى رضاك عن حياتك ارجو الاجابة عن مقدار الرضا عنها بوضع اشارة (√) امام البديل الذي يناسبك علما ان هذا المقياس لاغراض البحث العلمي ولن يطلع عليه احد سوى الباحث وليس هناك اجابات صحيحة او خاطئة.

موافق بشدة	موافق	موافق قليلا	لا موافق ولا غير موافق	غير موافق قليلا	غير موافق	غير موافق بشدة	الفقرات
							1- في اغلب الاحيان حياتي تقترب من مثالياتي  2- ظروف حياتي ممتازة
							3- انا راض عن حياتي  4- احصل على الاشياء المهمة في الحياة  5- لو اعيش حياتي مره اخرى لما رغبت في تغير شيء

عزيزي... ارجو التفضل بالاجابة عن الاسئلة التالية لأهميتها ولن تستخدم الا لأغراض البحث العلمي راجيا منك الاجابة عن جميع الاسئلة مع خالص شكري وتقديري لجهودكم.

العمر:

الحالة الاجتماعية: متزوج ( ) اعزب / ارمل ( ) مطلق ( )

التعليم : ابتدائية ( ) ثانوية ( ) جامعية ( ) تعليم عالي ( )

دخل الاسرة الشهري: اقل من \$500 بالشهر ( ) من 750 الى \$1500 شهريا ( )

عدد افراد الاسرة: ( )

sense of coherence SOC

الإحساس بالتماسك

كيف يستطيع الناس إدارة الضغوط وبيقون بحالة جيدة.

عزيزي ... بين يديك مجموعة من الأسئلة التي تحدد طريقة تعاملك مع الإحداث, وهذه الأسئلة لإغراض البحث العلمي فقط وليس هناك إجابات صحيحة أو خاطئة. أقرأها بدقة واجب عن جميع الأسئلة، علما بان الاسم غير مطلوب.

-----

1/ هل لديك شعور بأنك غير مهتم فعلا بما يدور حولك؟

1 2 3 4 5 6 7  
نادرا ما أو أبدا لا غالبا

2/ هل حدث في الماضي انك تفاجأت بسلوك أشخاص ممن كنت تعتقد بأنك تعرفهم جيدا؟

1 2 3 4 5 6 7  
لم يحدث أبدا يحدث غالبا

3/ هل حدث أن الأشخاص الذين كنت تعول عليهم قد خيبروا املك؟

1 2 3 4 5 6 7  
لم يحدث أبدا يحدث غالبا

4/ حتى الآن حياتك كانت:

1 2 3 4 5 6 7  
ليس لها معنى أو هدف أهدافي وإغراضي واضحة

5/ هل لديك مشاعر بأنك تُعامل بطريقة غير عادلة؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

6/ هل شعرت بأنك في وضع غير مألوف ولم تعرف ماذا تفعل؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

---

7/ إن ما تفعله يوميا هو:

1 2 3 4 5 6 7  
مصدر للبهجة والرضا مصدر للألم والملل

---

8/ هل لديك مشاعر وأفكار مختلطة؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

---

9/ هل حدث ان لديك مشاعر بداخلك تتمنى ان لا تشعر بها ؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

---

10/ كثير من الناس حتى أولئك الذين يمتلكون صفات قوية, بعض الأحيان يشعرون بالحزن وبالخسارة في

مواقف صعبة. كم مرة شعرت بهذه الطريقة في الماضي؟

1 2 3 4 5 6 7  
أبدا لم اشعر غالبا

---

11/ عندما يحدث شيء ما, هل تجد نفسك على العموم:

1 2 3 4 5 6 7  
تبالغ أو تستهين بأهميته ترى الأشياء على حقيقتها

---

12/ كم مرة شعرت إن هناك معنى لما تقوم به في حياتك اليومية؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

---

13/ كم مرة شعرت بأنك غير واثق من انك المسيطر على حياتك؟

1 2 3 4 5 6 7  
غالبا نادرا ما أو أبدا لا

مقياس سمات الشخصية الخمس الكبرى THE BIG FIVE INVENTORY IN ARABIC

أرى نفسي كشخص:	لا أوافق بشدة	غير موافق قليلا	لا اعلم	موافق قليلا	موافق بشدة
1. كثير الكلام					
2. يميل لاكتشاف عيوب وأخطاء الآخرين					
3. يؤدي عمله بدقة					
4. مكثب، سوداوي					
5. غير تقليدي يتماشى مع الأفكار الجديدة					
6. محجوز (مقيد)					
7. غير أناني، يساعد الآخرين					
8. غير مهتم أحيانا					
9. هادئ، يستطيع أن يتعامل جيدا مع الضغوط					
10. فضولي حول أشياء كثيرة					
11. ممتلئ بالطاقة والحيوية					
12. يبدأ المشاجرات مع الآخرين					
13. موثوق به في العمل					
14. ممكن أن يكون متوترا					
15. مُبتكر، عميق التفكير					
16. يمتلك الكثير من الحماس					
17. لديه طبيعة متسامحة					
18. يميل لعدم التنظيم					
19. كثير القلق R					
20. لديه مخيلة خصبة					
21. يميل إلى الهدوء					
22. موثوق به على العموم					
23. ميل إلى الكسل					
24. مستقر عاطفيا، لا ينزعج بسهولة R					
25. مبتكر					
26. ذو شخصية حازمة					
27. ممكن ان يكون بارد ومنعزل					
28. مثابر حتى نهاية المهمة					
29. متقلب المزاج					
30. مثن للقيم الفنية والجمالية					
31. خجول أحيانا، غير مندفع					
32. لطيف ومراعي غالبا لأي شخص					
33. يؤدي المهام بكفاءة					
34. يبقى هادئا في المواقف المتوترة R					
35. يفضل الأعمال الروتينية					
36. اجتماعي وميال للاختلاط					
37. فظ أحيانا مع الآخرين					
38. يخطط لما يقوم به ويتبع الخطة					
39. يتوتر بسهولة					
40. يتأمل ويتلاعب بالأفكار					
41. قليل الاهتمامات الفنية					
42. يحب التعاون مع الآخرين					
43. تشرذ أفكاره بسهولة					
44. سفسطاني (مغالط) في الفنون والموسيقى والأداب					

BFI scale scoring ("R" denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

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## The Buss-Perry Aggression Questionnaire (1992)

### مقياس الخصائص العدوانية

عزيزي.....فيمايلي عدد من الفقرات التي يمكن ان تنطبق عليك او لا ارجو قرائتها جيدا والاجابة عنها بمدى انطباقها عليك اذا كانت (لاتنطبق عليك ابدا) تختار 1 و 5 عندما (تنطبق عليك تماما), علما ان ليس هناك صح او خطأ . ان هذه الاسئلة هي لاغراض البحث العلمي ولن يطلع عليه احد سوى الباحث فقط. ان اجابتك مهمة لنا وتساعدنا كثيرا في انجاز البحث شكرا على المساعدة.

العدوان المادي

ليس من صفاتي ابد	تتطبق علي تماما
1	5
2	4
3	

- 1- في لحظة ما لا استطيع السيطرة على رغبتني في ضرب شخص اخر.
- 2- في لحظة استفزاز كافية, ربما اضرب شخص اخر؟
- 3- اذا ضربني شخص ما اعيد له الضربه؟
- 4- انا ادخل في عراك اكثر قليلا من معدل الاشخاص الاخرين.
- 5- اذا كان لابد من اللجوء للعنف لادافع عن حقي فسوف افعل.
- 6- هناك اشخاص يدفعونني الى حد الوصول الى الضرب.
- 7- استطيع ان افكر انه ليس هناك سبب وجيه لضرب شخص.
- 8- انا هددت اشخاص اعرفهم.
- 9- انا اصبح كالمجنون وذلك يجعلني اكسر الاشياء.

### العدوان اللفظي:

- 1- انا اقول لاصدقائي بصراحة عندما لا اتفق معهم.
- 2- انا غالبا ما اجد نفسي غير متفق مع الاخرين.
- 3- عندما يزعجني الاخرين , ربما اقول لهم ما اعتقد عنهم.
- 4- لا استطيع الحصول على الحجج عندما يختلف الناس معي.
- 5- اصدقائي يقولون انني بطريقة ما مجادل.

### الغضب

- 1- انا اشتعل غضبا بسرعة لكن اهداء بسرعة.
- 2- عندما اصاب بالاحباط اترك الاهتياج ليظهر.
- 3- اشعر بانني احيانا كالبارود يمكن ان انفجر.
- 4- انا شخص مزاجي.
- 5- بعض اصدقائي يعتقد بانني متهور.
- 6- انا احيانا الوح بالقبظه بدون سبب وجيه.
- 7- لدي صعوبه بالسيطرة على مزاجي.

### العدوانية

- 1- احيانا تستحوذ علي الغيرة.
- 2- اشعر احيانا كأن الحظ لم يحالفني ابدا.
- 3- بقية الناس يحصلون دائما على فرصة اخرى.
- 4- انا اتسال لماذا اشعر احيانا بانني افضل في بعض الاشياء.
- 5- انا اعلم بان "اصدقائي" يتحدثون عني بغيابي.
- 6- انا اشك بالصدقات القوية و الغريبة .
- 7- انا اشعر احيانا بان الناس يضحكون علي بغيابي.
- 8- عندما يكون الناس لطفاء جدا , انا اتسال ماذا يريدون.

## An 8-item Short-form Health-related Quality-of-Life Questionnaire

مقياس الصحة المرتبط بجودة الحياة SF-8

عزيزي ..... فيما يلي بعض الاسئلة حول صحتك البدنيه وهل اثرت على اعمالك ونشاطاتك ارجو

الاجابة عنها بوضع اشارة ( ) على البديل المناسب. علما ان هذا الاستبيان هو لاغراض البحث

العلمي ولن يطلع عليه احد سوى الباحث . اجاباتك مفيده جدا للدراسة شكرا لتعاونك معنا. الباحث

- 1- عموما كيف تقيم صحتك خلال الاسبوع الماضي؟  
ممتاز جدا    جيد جدا    مقبول    ضعيف    ضعيف جدا
- 2- خلال الاسبوع الماضي, كم مره مشاكلك الصحة الجسدية حدثت من القيام بانشطتك العاديه (مثل المشي او صعود السلالم)  
ولا مره    جدا قليل    احيانا    كثيرا    لم اتمكن من القيام اي نشاط
- 3- خلال الاسبوع الماضي, بسبب مشاكلك الصحية الجسدية , كم كان لديك من الصعوبات في عمك داخل البيت وخارجه؟  
ولا مره    جدا قليل    احيانا    كثيرا    لم اتمكن من اداء عملي
- 4- كم مره عانيت من الام جسديه خلال الاسبوع الماضي؟  
ولا مره    جدا قليل    متوسط    شديد    شديد جدا
- 5- خلال الاسبوع الماضي, كم من الطاقة كان لديك؟  
كثيرا    مقدار كاف    بعض منها    قليلا    لا توجد
- 6- خلال الاسبوع الماضي, كم مره تاثرت نشاطاتك الاجتماعيه مع عائلتك او اصدقائك بسبب مشاكل الصحة البدنيه او العاطفيه؟  
ولا مره    قليلا    بشكل متوسط    كثيرا    لم اتمكن من القيام باي نشاط
- 7- خلال الاسبوع الماضي, كم مره ازعجتك المشاكل العاطفيه(مثل الشعور بالقلق, الكأبة , او تعكر المزاج)  
ولا مره    بشكل خفيف    متوسط    كثيرا    بشكل كبير جدا
- 8- خلال الاسبوع الماضي, كم مره منعتك مشاكلك الشخصية او العاطفيه من القيام بعملك المعتاد او النشاطات اليومية؟  
ولا مره    عدد قليل    بعضها    كثيرا    لم اتمكن من القيام بنشاطاتي اليومية

1-General health – الصحة العامة –

2- Physical functioning -الوظائف الجسديه-

3- Role – physical- الادوار الجسديه-

4- Bodily pain -الالم الجسدي-

5- Vitality -الحيويه-

6- Social functioning -الوظيفة الاجتماعيه-

7- Role – emotional -الدور العاطفي-



## مقياس عوامل الصحة المرتبطة بمقياس عوامل الشخصية الخمس الكبرى hp5i

عزيزي..... ستجد فيمالي عدد من الفقرات حول عاداتك او افكارك او طريقة ردود فعلك وكيف تشعر, مهمتك هو ان تختار الاجابه المناسبه لكيفية تصرفك ومشاعرك ليس فقط الان وانما في اغلب الاحيان. ان هذا الاستبيان هو لاغراض الدراسة فقط ولن يطلع عليه احد سوى الباحث. اجاباتك مهمه جدا ارجو ان تجيب عن كل الاسئلة. شكرا على المساعدة.

الفقرات	لا تتط بق علي مطلقا	لا تتط بق علي بشكل تام	تنطبق علي جزئيا	تنطبق علي تماما
1- حياتي مليئة باشياء مثيرة للاهتمام.				
2- غالبا ما اشعر بعدم الاستقرار والراحة من غير اسباب واضحة.				
3- انا اجيد قول التعليقات الساخرة				
4- لي ميل للعمل الارتجالي دون التفكير بما سيحدث.				
5- اجد ان من السهل الاستمتاع بالحياة.				
6- انا لا احلل مشاعري عادة.				
7- اتقبل الضغوط بسهولة عندما يطلب مني الاسراع في عملي.				
8- اذا عاملك شخص ما بسوء, اشعر بان عليك ان تعامله بالمثل.				
9- غالبا ما اخذ الامور بعجالة كبيرة.				
10- اعتقد ان الناس تميل كثيرا الى المبالغة في مدى اهمية مشاعرهم.				
11- اشعر في كثير من الاحيان بالسعادة والابتهاج عندما اكون على وشك لقاء صديق حميم.				
12- غالبا ما اشعر بتوتر كبير عندما ارتدي ملابس للخروج.				
13- اذا انتقدني شخص ما, لا اخشى الرد عليه بحدة وسخرية.				
14- عادة ما اتكلم قبل ان افكر.				
15- غالبا ما اجد صعوبة في فهم ما يعنيه الناس عندما يتحدثون عن مشاعرهم.				
16- احاول تكريس وقتي للاشياء التي تجعلني اشعر بالمتعة.				
17- تجفني الضوضاء غير المتوقعة.				
18- الشخص الذي يسيء لي او لعائلتي او اصدقائي يستطيع توقع المشاكل.				
19- اعتبر نفسي شخص مندفع.				
20- افضل عدم التورط في مشاكل الاخرين.				

عوامل الشخصية وفقراتها

abbreviation*	English scale label
AA-	Antagonism
CI-	Impulsivity
EH+	Hedonic capacity
NN+	Negative affectivity
OA-	Alexithymia

AA-	CI-	EH+	NN+	OA-
		+	+	
3	4	1	2	6
8	9	5	7	10
13	14	11	12	15
18	19	16	17	20