

THE IMPACT OF CULTURE AND TRAUMA EXPOSURE ON AUTOBIOGRAPHICAL
MEMORY SPECIFICITY

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In loving memory of my unique and special sister Sharon.

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Abstract

Posttraumatic stress disorder (PTSD) is a disabling disorder that can develop in response to exposure to trauma. There is general agreement that disruptions in autobiographical memory (AM) occur in individuals with PTSD. Reduced autobiographical memory specificity (AMS) is one way this disruption is manifested, and is also present in trauma survivors. Empirical evidence has demonstrated that cultural variations in self-construal can affect AMS. Individuals from cultures valuing an interdependent self (e.g. Asian cultures) produce fewer specific memories than those from cultures valuing an independent self. The literature concerning adjustment to trauma exposure has yet to consider the role that cultural variation in self-construal may play.

This study investigated the impact of culture and trauma exposure on AMS. It was predicted that British participants would retrieve a greater number of specific memories than Chinese participants, and that participants who reported a higher amount of trauma exposure would recall fewer specific memories than participants who reported a lower level of trauma exposure. In total 64 participants ($n = 37$ British; $n = 27$ Chinese) were recruited from a non-clinical university population. A 2 (culture: British vs. Chinese) x 2 (trauma exposure: high vs. low) between-groups design was used to compare AMS.

Consistent with the study hypotheses, a significant difference in AMS was found between British and Chinese students, which represented a large-sized effect, and a significant difference in AMS was found between low trauma and high trauma groups, which represented a medium-sized effect. There was no interaction between culture and trauma exposure on AMS, thus indicating that the difference between high and low trauma exposure groups was evident within both cultural groups. It can be concluded that the impact of trauma exposure on AMS is not limited to Western cultures.

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1 Introduction

1.1 Overview

Posttraumatic stress disorder (PTSD) is a disabling disorder. One of the dominant psychological processes implicated in PTSD is autobiographical memory (AM). There is general agreement that disruptions in AM occur in individuals with PTSD. Research has consistently shown that trauma survivors and individuals with PTSD have difficulty retrieving specific memories about their personal past. The phenomenon of reduced autobiographical memory specificity (AMS) has been observed across a range of trauma types and within non-clinical samples. Reduced AMS is associated with the onset and maintenance of PTSD, and poor treatment outcome.

AM is widely considered to be central to our sense of self. The reciprocal relationship between AM and the self is well established in the literature and supported by cross-cultural empirical evidence. The literature suggests that our sense of self develops within the context of our culture. Within cultures that value autonomy and independence, typically Western cultures such as the UK, the self is conceived of as a unique, independent, self-contained individual. Cultures that value relatedness and interdependence, such as Asian cultures, see the self as connected to the surrounding social context and relatedness is emphasised. There is evidence that cultural variation in self-construal, which is defined as the way in which the very definition of the self is constructed and perceived, can affect AMS. Individuals from cultures valuing an interdependent self produce fewer specific memories than those from cultures valuing an independent self. The concept of self-construal is further elaborated in Section 1.4 of this chapter.

To date this evidence has yet to be brought together in a coherent model that provides both an understanding of the relationship between trauma exposure, PTSD and AMS, whilst accounting for the relationship between culture, the self and AM and the impact of culture on

AMS. This thesis will attempt to bring these research areas together by exploring the impact of cultural variations in the self and trauma exposure on AMS. There is an urgent need for such research given that almost 5 million people in the UK are not from Western cultures and PTSD is found to be higher in ethnic minority groups, and refugee and asylum seeker populations. Therefore, there is a clear need for further research to be able to guide clinicians working with trauma survivors from non-Western cultures.

This introductory chapter will begin by presenting a brief description of the clinical and diagnostic features of PTSD. Next, the psychological processes associated with PTSD will be outlined. Cognitive theories of PTSD will then be described followed by current treatment approaches. AM function is discussed followed by a consideration of the phenomenon of reduced AMS in light of current empirical evidence. The chapter then moves onto the relationship between culture, the self and AM. Finally, the chapter concludes by describing the rationale and aims for this study, followed by the research questions and hypotheses to be tested.

1.2 Posttraumatic Stress Disorder

1.2.1 Clinical Features and Diagnosis

PTSD is an anxiety problem that develops in some people after traumatic events. The diagnostic criteria for PTSD consist of seven criteria (Criterion A to F). According to the Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV-TR*, American Psychiatric Association; APA, 2000), the key feature of PTSD is the development of characteristic symptoms following exposure to an extreme traumatic stressor (Criterion A). For Criterion A to be satisfied, both of the following must have been present at the time of exposure; the person experienced, witnessed, or was confronted with an event(s) involving actual or threatened death or serious injury, or a threat to the physical integrity of self or others, and the person's response involved intense fear, helplessness or horror. The characteristic

symptoms resulting from exposure are outlined as: persistent re-experiencing of the traumatic event (e.g. recurrent and intrusive recollections) (Criterion B); persistent avoidance of stimuli associated with the trauma, such as effortful avoidance of thoughts and feelings, and numbing of general responsiveness (Criterion C); and persistent symptoms of increased arousal, for example hyperarousal (Criterion D). These symptoms must be present for more than one month (Criterion E), and cause clinically significant distress or impairment (Criterion F).

Whilst it is difficult to establish an exhaustive list of traumatic events that would qualify as a traumatic stressor, the *DSM-IV-TR* (2000) has identified a range of potential events. Events experienced directly include military combat, violent personal assault (e.g. sexual assault, physical attack), being kidnapped, terrorist attack, torture, natural or manmade disasters, severe automobile accidents, or being diagnosed with a life-threatening illness. Witnessed events include observing the serious injury or unnatural death of another person due to violent assault, accident, war or disaster, or unexpectedly witnessing a dead body. Events experienced by others includes violent personal assault, serious accident, or serious injury experienced by a family member or a close friend; learning about the sudden, unexpected death of a family member or a close friend; or learning that one's child has a life-threatening disease.

1.2.2 Epidemiology

Most people are thought to experience a traumatic event at some point in their lives (Resick, 2001). Norris (1992) found that 69% of the general population have experienced a traumatic event. Vrana and Lauterbach (1994) observed that 84% of a university student sample reported experiencing at least one event of sufficient intensity to potentially elicit PTSD. However, not all individuals go on to develop PTSD. A recent National Comorbidity Survey (Kessler, et al., 2005) identified lifetime prevalence for PTSD of 6.8% in adults, with a higher rate in women than men (9.7% versus 3.6% respectively). The risk of developing

PTSD in those who have experienced trauma is thought to vary depending on trauma severity, with estimated prevalence rates of 30% for rape (e.g., Breslau, 2001; Foa & Street, 2001), and up to 50% amongst torture survivors (Yehuda, McFarlane, & Shalev, 1998). A recent review article of the epidemiology of PTSD provides a more detailed examination of such findings (Johnson, Maxwell, & Galea, 2009).

It is becoming increasingly recognised that PTSD is a universal response to trauma exposure present in many different cultures (Foa, Keane, Friedman, & Cohen, 2009). Moreover, poor posttraumatic psychological adjustment has been found to be higher in ethnic minority groups (Norris, Perilla, Riad, Kaniasty, & Lavizzo, 1999), refugee and asylum seeker populations, and in countries with socio-political unrest and conflict (Margoob, 2006).

1.2.3 The Burden of PTSD

The personal burden of PTSD is substantial. PTSD has been shown to be associated with drug and alcohol abuse (e.g. Brady, Back, & Coffey, 2004; Chilcoat & Breslau, 1998; Keane & Wolfe, 1990), co-morbid mental health problems (e.g. Chung, Symons, Gilliam, & Kaminski, 2010; Keane & Wolfe, 1990), increased physical health problems (e.g. Schnurr, & Jankowski, 1999; Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000) and a lowering of immune functioning (Altemus, Dhabhar, & Yang, 2006; Stam, 2007). The World Health Organization's (WHO) Global Burden of Disease analysis revealed that PTSD results in almost 3.5 million years of healthy lost life worldwide (WHO, 2004). There is also evidence that individuals with PTSD are at an increased risk for suicide (see Kotler, Iancu, Efroni, & Amir, 2001 for a review).

The economic burden associated with PTSD must also be considered. PTSD can be associated with adverse workplace outcomes and an increased use of healthcare services (e.g. Deykin et al., 2001; Greenberg, et al., 1999). An American study revealed an annual cost of \$3 billion dollars of lost productivity due to PTSD (Kessler, 2000). Kessler (2000) suggested

that the socio-economic burden associated with PTSD is similar to that associated with depression. This further highlights the importance of continued research into understanding the factors involved in the onset and maintenance of PTSD, and developing ever more effective treatment methods.

1.2.4 The Course of PTSD

A number of factors are considered important in determining the course and severity of PTSD. It has been consistently demonstrated within the literature that demographic characteristics, such as gender and race are associated with differing rates of PTSD (see Brewin, Andrews, & Valentine, 2000). Other risk factors include previous exposure to trauma such as child abuse (e.g. Andrews, Brewin, Rose, & Kirk, 2000); pre-trauma intelligence quotient (IQ; e.g. Macklin et al., 1998); age at trauma (Brewin et al., 2000); trauma event type, with the highest risk associated with assault and violence (Breslau et al., 1998); cognitions and appraisals at the time of the event (Dunmore, Clark, & Ehlers, 1999); and interpersonal factors, such as perceived social support (e.g. Boscarino, 1995; Brewin et al., 2000).

In light of the above findings, it is clear that not all traumatic experiences lead to the development of post-traumatic psychological symptoms. Variables outside of the event itself may be required for the onset of PTSD symptoms. This section will now examine the psychological processes thought to be associated with the onset and maintenance of PTSD.

1.2.5 PTSD and Psychological Processes

1.2.5.1 PTSD and memory. PTSD is characterised by a range of cognitive phenomena. Disturbances in memory, for example recurrent and intrusive memories of the trauma, are the most unique cognitive phenomena associated with PTSD. There is significant empirical evidence that PTSD is associated with memory deficits, which has been replicated across trauma types including Vietnam veterans (e.g. Bremner et al., 1993; Yehuda et al., 1995) and

childhood abuse survivors (e.g. Bremner et al., 1995), with some evidence indicating that this finding may be cross-cultural (e.g. Gil, Calev, Greenberg, Kugelmass, & Lerer, 1990).

Therefore, the role that memory plays in adjustment to trauma has sparked much interest; especially AM. Several recent PTSD theories (e.g., Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000; Foa & Rothbaum, 1998) posit that AM holds a central position in the development and maintenance of PTSD. These theories will be discussed in detail in Section 1.2.6.

1.2.5.2 PTSD and other psychological processes. A range of other psychological processes has been implicated in the onset and maintenance of PTSD. Attention, and specifically attentional bias, is one such process considered important in PTSD (Brewin & Holmes, 2003). Attentional bias is defined as the preferential encoding of potentially threatening stimuli whereby attention is drawn to such stimuli (Bryant & Harvey, 1997). There is evidence that individuals with PTSD have an attentional bias to trauma-related stimuli (e.g. Beck, Freeman, Shipherd, Hamblen, & Lackner, 2001; Buckley, Blanchard, & Neill, 2000). PTSD has also been associated with disturbances in cognitive-affective reactions, which refers to a reaction that cannot be conceptualised as either a belief or an emotion since it shares characteristics of both (Brewin & Holmes, 2003). For example, one of the diagnostic criteria for PTSD according to the DSM-IV-TR (2000) is the experience of intense fear, helplessness or horror at the time of the traumatic event. Helplessness is an extreme state that is neither an emotion nor a belief, instead representing a reaction consisting of characteristics of both. There is evidence indicating a strong relationship between helplessness and PTSD in victims of violent crimes, as well as between intense fear and horror reactions (e.g. Brewin, Andrews, & Rose, 2000). Mental defeat, defined as the perceived loss of one's autonomy and mentally "giving up" efforts to retain one's identity (Ehlers, Maercker, & Boos, 2000, p. 45), has also been associated with PTSD (Ehlers et al.,

2000). It seems, therefore, that some emotions depend not just on the traumatic event itself but also on the cognitive appraisal of the event. Other psychological processes including beliefs and cognitive coping strategies such as avoidance (e.g. Dunmore et al., 1999), and social support (e.g. Brewin et al., 2000), as well the occurrence of dissociative symptoms such as emotional numbing (e.g. Murray, Ehlers, & Mayou, 2002) have also been found to be related to PTSD. Whilst similar patterns of disorder in these psychological processes have been observed in other clinical samples, such as anxiety and depression, it is the disturbance in memory (i.e. flashbacks) that appears to be unique to PTSD (Brewin & Holmes, 2003).

1.2.6 PTSD and the brain

Over the past few decades' research has sought to understand both the psychological reactions to the experience of traumatic stress and the neurological substrates that may underpin these processes. Evidence from neuroimaging studies in individuals with PTSD has indicated that areas of the brain may be damaged by psychological trauma. The most replicated structural finding is hippocampal volume reduction (Hull, 2002). MRI studies (e.g. Gurvits et al., 1996) have found evidence of hippocampal damage in veterans with combat-related posttraumatic stress disorder. Gurvits et al. (1996) found that the volume of the hippocampal formation was reduced by 20% and the loss was found to be proportional to the amount of combat exposure the veteran had experienced. More recent studies (e.g. Bremner, 1999) have observed similar effects in adults with PTSD who had experienced severe childhood abuse. A recent meta-analysis (Karl et al., 2006) examined structural abnormalities of the hippocampus and other brain regions in individuals with PTSD compared to trauma-exposed and non-exposed control groups. When compared to trauma-exposed controls, severe PTSD in adult samples was associated with smaller hippocampal volumes, and within all such comparisons effect sizes increased with PTSD severity.

There is general agreement that the hippocampus plays an important role in the formation of new AMs about experienced events. Thus, this reduction in volume may provide some further insight into why individuals with PTSD often have difficulty with intentional recall of the event and demonstrate reduced AMS, a phenomenon reliably observed in PTSD discussed further in Section 1.3.4, since the loss of hippocampal volume may limit the proper evaluation and categorisation of experience and interrupt the formation of AM's.

It is a possibility that small hippocampi are a risk factor for PTSD preceding the trauma exposure itself, as opposed to a consequence of traumatic stress or PTSD. A recent twin study (Gilbertson et al., 2002) found that both veterans with PTSD and their non-trauma exposed monozygotic twin had smaller hippocampi than trauma-exposed and unexposed twin pairs without PTSD. Moreover, PTSD severity in PTSD twin halves that were exposed to trauma was negatively correlated with their own hippocampal volume as well as that in their unexposed identical twin. Such findings suggest that small hippocampi may indeed be a risk factor for the development of PTSD. An in-depth examination of this field of research is beyond the scope of this introduction; see Karl et al. (2006) and Stam (2007) for more thorough reviews.

1.2.7 Psychological Theories of PTSD

Psychological adjustment to traumatic experiences has long been of theoretical interest. Following the introduction of PTSD into the *DSM-III* (1980) numerous theories emerged to explain the characteristic features that define this disorder, including psychoanalytic theories (e.g. Lifton, 1988; Ulman & Brothers, 1988), and cognitive theories (e.g. Brewin et al., 1996; Conway, 2005; Ehlers & Clark, 2000; Foa, Steketee, & Rothbaum, 1989; Horowitz, 1976). The cognitive approach seems to provide the most developed framework for understanding PTSD and psychological responses to trauma. Therefore, this section will examine influential cognitive theories of PTSD that place memory as central to

the onset and maintenance of PTSD, which is pertinent to the present study. This will begin with two early cognitive theories: the stress response theory (Horowitz, 1976; 1986; 1997); and the fear network account (Foa et al., 1989), followed by a discussion of current cognitive theories: emotional processing theory (Foa & Riggs, 1993; Foa & Rothbaum, 1998); dual representation theory (Brewin et al., 1996); the self-memory system (Conway, 2005; Conway & Pleydell-Pearce, 2000); and Ehlers and Clark's (2000) cognitive appraisal model. The theories covered in this section are by no means an exhaustive list, nor do they represent a universally held view of the current theorising within this field of research. Instead, they represent the most prominent cognitive approaches to understanding responses to trauma, and the development and maintenance of PTSD.

1.2.7.1. Stress response theory (Horowitz, 1976; 1986; 1997). Described as “the first influential cognitive model of reactions to trauma” (Dalglish, 2004, p. 233), this theory proposes that individuals hold schema about the world and themselves against which new information is interpreted and integrated into existing, longer-term representations. Following exposure to a traumatic event there is an initial “crying out” reaction whereby individuals are unable to organise their thoughts and memories of the trauma within these representations. This failure to assimilate new trauma information within current meaning structures, otherwise known as failure to “complete”, activates psychological defence mechanisms to avoid memories of the trauma and prevent this information from entering consciousness. This is experienced as denial, numbing and avoidance of trauma reminders. Horowitz proposes a second response is also at work; the need to match the new trauma information with existing representations, so it becomes integrated and thus “completed”. This need results in trauma-related information breaking through into consciousness (e.g. flashbacks, nightmares and intrusive thoughts) until successful completion has taken place. Individuals are thought to swing between avoidance and intrusions as these two responses compete, and it is this

process of oscillation that allows the traumatic material to be processed and gradually assimilated into long-term, pre-trauma representations. Persistent posttraumatic symptoms are thought to arise from a failure to process and integrate the new information within the oscillation process.

Whilst this theory has considerable explanatory power, there are some limitations. For example, it is not clear how the gap between new trauma information and existing representations is bridged (Dalgleish, 2004), or the way in which the existing structures fail to integrate new information. Furthermore, there is little discussion of the individual differences in trauma responses, nor why some individuals go on to develop PTSD whilst the majority who experience a traumatic event do not.

1.2.7.2 Fear network account (Foa et al., 1989). Foa et al.'s (1989) fear network model of PTSD offers a framework for understanding how trauma information is emotionally processed. Similar to Horowitz's model, this account proposes that failure to appropriately process the memory of the trauma results in psychopathology, thus emphasising the need for the memory to be integrated within existing memory systems and representations. The fear network is conceptualised as an associative network within long-term memory consisting of three key parts: information about the feared object; information about cognitive, behavioural, and physiological responses to the feared object; and information linking these parts together. When one or more of these parts is encountered, the fear network is activated, thus resulting in a fear reaction. Dalgleish (2004) describes the fear network as "a memory record of the trauma". This account of PTSD offers an explanation for many of the core symptoms, including reexperiencing, which is thought to occur when one or more parts of the network are activated, and avoidance/numbing, which are seen as a means to minimise the risk of activating the network.

1.2.7.3 Emotional processing theory (Foa & Riggs, 1993; Foa & Rothbaum, 1998).

Building upon the earlier fear network account, the emotional processing theory is underpinned by three core components: pre- and post-trauma memory records, schemas and posttraumatic reactions of self and others. The nature of these components and the interactions between them are thought to determine the extent of posttraumatic symptomatology (Dalgleish, 2004). This theory made a number of key additions to the fear network account, including placing greater emphasis on the disorganised nature of the trauma memory. The model suggests that disrupted and biased information processing at the time of the trauma accounts for the lack of coherence within traumatic memory records. Further important extensions to the earlier fear network model include elaboration of the relationship between PTSD and knowledge available prior to, during and after the trauma, as well as an increased emphasis on negative posttrauma appraisals of the self and others that may be interpreted as a sign of incompetence or failure. This account offers a strong explanatory framework for understanding PTSD. Furthermore, it is associated with exposure therapy, which has been shown to be a highly effective treatment.

1.2.7.4 Dual Representation Theory (DRT; Brewin et al., 1996). Within DRT, PTSD is conceptualised as a particular type of unsuccessful adaptation to trauma (Brewin et al., 1996). The principle underlying this theory is that trauma memories are represented in fundamentally different ways to that of ordinary, day-to-day memories (Brewin & Holmes, 2003). In this theory, it is proposed that two memory systems operate simultaneously. The first of these systems is involved with the individual's conscious experience of the trauma, which forms verbally accessible memories (VAMs). VAMs are oral or narrative memories that can be deliberately retrieved when required and are fully integrated with other AMs. VAM representations of traumatic events are therefore fully contextualised in an individual's past, present, and future. Information within this system has been sufficiently attended to and

consciously processed to be stored in long-term memory in a way that can be deliberately recalled at a later time. Since VAMs register conscious evaluations of the trauma as it is happening as well as after the event, VAMs are accompanied by both primary emotions (occurring at the time of the event) and secondary emotions (which occur during appraisal of the event after it has occurred) (Brewin & Holmes, 2003). The other system consists of situationally accessible memories (SAMs). SAMs are thought to have been acquired from lower level perceptual processing of the trauma, and contain information that cannot be deliberately accessed. For example, particular sounds that did not receive a sufficient amount of conscious attention as to become part of the VAMs system. Flashbacks are thought to be a reflection of the SAMs system since they are triggered involuntarily by situational cues. In contrast to VAMs, SAMs are not thought to be contextualised within an individual's autobiographical database (Daglish, 2004).

There is some empirical support for DRT. For example, Holmes, Brewin, and Hennessy (2004) conducted a series of experiments based upon this theory in which participants viewed a trauma film under different encoding conditions. This included carrying out a concurrent visuospatial or verbal task, following which the number of intrusive memories of the film were recorded. Based upon the DRT, it was predicted that the visuospatial task would require resources from the SAM system, thereby resulting in poorer encoding of perceptual information and fewer intrusive memories compared with controls. Conversely, the verbal task was expected to draw upon the VAM system resources. This would therefore interrupt encoding leading to a less-detailed conscious representation, and resulting in more intrusions compared with controls. As predicted, this pattern of results was observed. Although there are limitations associated with using the trauma film paradigm, such as being in a controlled environment, such data provide support for DRT.

1.2.7.5 The Self-Memory System (SMS; Conway, 2005; Conway & Pleydell-Pearce, 2000). The SMS is a conceptual framework that views memory as the database of the self. The SMS is comprised of a working self in conjunction with a conceptual self and the autobiographical knowledge base. The working self consists of a motivational hierarchy of goals that interconnect and are represented at different levels of specificity. This goal hierarchy acts as a central control to initiate and maintain coherence between goals. The personal goals held by an individual influence the encoding and retrieval of AMs. The conceptual self consists of non-temporally specified self-structures, such as attitudes, beliefs and values that exist independently of specific episodes. The autobiographical knowledge base is comprised of a hierarchy of knowledge containing both episodic memories and autobiographical knowledge, through to abstract self-conceptual knowledge. The relationship between the working self and the autobiographical knowledge base is reciprocal; while the working self controls the accessibility of autobiographical knowledge, the autobiographical knowledge base constrains the goals and self-images of the working self.

According to the SMS, the construction of AMs occurs via two retrieval processes: generative retrieval and direct retrieval. Generative retrieval involves a top-down search process involving the use of conceptual representations to form the basis of the search. Once the search criteria have been identified, lifetime period or general event level knowledge at the top of the hierarchy is rapidly activated and proceeds to spread through the autobiographical knowledge base from general representations through to more specific event knowledge at the bottom of the hierarchy. Direct retrieval corresponds to the experience of immediate activation of a specific memory in response to direct triggering by an internal or external cue, thus bypassing any generative search. Once the sought after knowledge has been accessed the search comes to an end, and the everyday memory is integrated into the

existing autobiographical base. The retrieval process is guided by the need to reconstruct memories that accord with one's goals and self-image.

Traumatic experiences and trauma memories are thought to threaten individuals' current goals and plans (Conway and Pleydell-Pearce, 2000), a threat to which the working self cannot adapt. In the absence of active goals that can assist integration of the experience into the autobiographical knowledge base, it remains an event-specific representation that instead comes to be associated with the working self and its goals. Trauma memory, therefore, "is poorly elaborated and inadequately integrated into its context in time and place with other autobiographical memories and the conceptual self" (Jobson, 2009, p. 370).

Trauma knowledge is triggered by activation of the working self's goals, which are always thought to be active to some extent, and consequently this knowledge remains highly accessible. This explains the phenomenon of intrusive memories often seen in PTSD. Difficulties in intentional retrieval of the trauma and easy triggering of the memory in response to specific cues are also accounted for by the SMS. The unintegrated memory lacks the connections to other AMs to be recalled via generative retrieval. It is therefore activated via direct retrieval whereby cues associated with the traumatic event activate the memory and the ability to control retrieval is compromised. The SMS is motivated to protect itself from change and maintain coherence (Conway, 2005), which may result in distortions of memory in an attempt to preserve coherence during traumatic experiences.

1.2.7.6 Cognitive appraisal model (Ehlers & Clark, 2000). This model builds on the SMS (e.g. Conway, 2005) and focuses on the maintenance of PTSD. It suggests that PTSD symptoms only persist in those individuals who process their trauma experience in such a way as to produce a sense of serious and current threat, which can be either external (e.g. the world is not safe) or internal (e.g. I am in danger). The model argues that this sense of current threat occurs as a direct result of two processes: individual differences in the appraisal of the

trauma event and/or its sequelae, and individual differences in the nature of the trauma memory itself.

Negative appraisals of the trauma itself and/or its sequelae are proposed to create a sense of serious, current threat. Several types of appraisals are implicated including overgeneralisation of threat across a range of normal activities (e.g. “Nowhere is safe”), overestimation of the likelihood of further traumatic events occurring (e.g. “I attract disaster”), and negative appraisals of ones own actions during the trauma (e.g. “I cannot cope with stress”). Other appraisals are thought to focus more on the trauma sequelae, such as PTSD symptoms following the trauma (e.g. “I’ll never get over this”), other people’s reactions (e.g. “I cannot rely on other people”), and on the wider consequences of the trauma, such as physical consequences (e.g. “I will never be able to lead a normal life again”).

Another key process implicated in creation of the current sense of threat is the nature of the trauma memory. Ehlers and Clark (2000) identified the paradox in PTSD between poor intentional recall that lacks accurate sequencing of events and vivid unintentional re-experiencing by proposing that this pattern is due to the way the trauma memory is processed. Firstly, they argue that memories for traumatic events are poorly elaborated and integrated into the AM base, lacking any context in time or place, as outlined in the SMS. This explains the difficulties associated with intentional recall due to the absence of a clearly specified retrieval route, and the re-experiencing of the past as here-and-now because of the absence of a temporal context, the easy triggering by similar cues. Secondly, strong Stimulus-Stimulus (S-S) and Stimulus-Response (S-R) associations are made for traumatic material. Therefore, any encounter with stimuli related to the original trauma increases the likelihood of intrusive re-experiencing of the traumatic memory. These strong associations help the individual to make predictions about future sources of danger; any stimulus that was present before or during the event become associated with the prediction of danger to the self. Retrieval of

information learnt as a result of associative learning is cue-driven and unintentional, meaning that the individual may be unaware of the triggers for re-experiencing a traumatic memory. This account of the nature of the traumatic memory offers a comprehensive explanation for the phenomenon of reexperiencing symptoms and the pervasive sense of current, serious threat that characterises persistent PTSD.

As well as providing an account of the processes underlying this sense of threat, Ehlers and Clark go on to propose the emergence of behavioural and cognitive responses as a reaction to this threat, which consist of the avoidance symptoms seen in PTSD. Similar to the role of safety behaviours in other anxiety disorders, these responses serve to alleviate distress in the short term by removing/controlling the sense of threat. However, as is also the case in anxiety, they actually play a maintaining role in PTSD by preventing the individual from making any cognitive change. Empirical support was provided for this model by Fairbrother and Rachman (2006), who sought to test the hypothesis that appraisals of the trauma itself and/or its sequelae contribute to the persistence of PTSD. In a sample of female sexual assault survivors, they found a significant positive association between appraisals of the assault, and its sequelae, and PTSD symptoms.

To summarise, Ehlers and Clark's model suggests that PTSD persists because of a disturbance of AM characterised by poor elaboration, the absence of any context and strong associative memory, in addition to negative appraisals of the trauma and/or its sequelae. Behavioural and cognitive coping strategies in response to this sense of threat serve to maintain the disorder by preventing cognitive change. This theory provides a theoretical framework for the development of a cognitive-behavioural treatment approach for PTSD.

1.2.8 Treatment Approaches for PTSD

In general, PTSD theories state that two key processes are involved as highlighted above. First, PTSD is associated with disturbances in AM (e.g., Brewin et al., 1996; Conway,

2005; Ehlers & Clark 2000). Second, PTSD is associated with negative appraisals of the trauma event and/or its sequelae (e.g. Ehlers & Clark, 2000). Effective treatment of PTSD targets these two processes (Resick, 2001). The recommended treatment for PTSD (National Institute for Health and Clinical Excellence; NICE, 2005) is trauma-focused psychological treatment, which includes trauma-focused cognitive behavioural therapy (CBT). The major stages of trauma-focused CBT include engagement, psychoeducation, anxiety management, prolonged exposure, cognitive restructuring, and relapse prevention work (Creamer & Carty, 2006; Harvey, Bryant, & Tarrier, 2003).

The most effective programs appear to be those that rely on repeated exposure to the trauma memory and in vivo exposure to situations avoided since the event, on cognitive restructuring of the meaning of the trauma, or a combination of these. A recent randomised controlled trial (Resick, Nishith, Weaver, Astin, & Feuer, 2002) compared two versions of CBT, cognitive processing therapy and prolonged exposure. Both were found to be effective in reducing PTSD symptoms. The opportunity to confront trauma memories through exposure is considered to be the most empirically supported component of all successful PTSD treatments (e.g. Creamer & Carty, 2006; Harvey et al., 2003). There is a growing body of research indicating that repeated generative recall of traumatic events as a function of prolonged exposure techniques is effective in reducing posttraumatic stress (e.g. Ehlers, Clark, Hackmann, McManus, & Fennell, 2005). Further support comes from recent empirical evidence (e.g. Dalgleish, Hauer, & Kuyken, 2008) that found attempting to suppress intrusive trauma memories actually enhanced the likelihood of remembering the trauma, enhanced access to other negative personal information and compromised AMS.

1.2.9 Interim Summary

In summary, PTSD is a disabling disorder considered a universal response to exposure to traumatic experiences. One of the dominant psychological processes implicated

in PTSD is AM. There is general agreement within current cognitive theories that there are disruptions in AM occur in individuals with PTSD. The current recommended treatment of choice for PTSD is trauma-focused CBT. Prolonged exposure, both imaginal and in vivo, and cognitive restructuring are key features of treatment, and there is a wealth of empirical evidence demonstrating their effectiveness. Section 1.3 will now focus specifically on AM by describing the functions it is proposed to serve and the impact of trauma exposure.

1.3 Autobiographical Memory

1.3.1 Definition

AM is defined as memory for the events of one's life (Conway & Rubin, 1993) and is argued to be essential to human functioning (Conway & Pleydell-Pearce, 2000). AM relates to an individuals' major goals and to their emotions and personal meanings (Eysenck & Keane, 2000), and is widely considered to be central to our sense of self (Cohen, 1989). AMs are thought to be constructed rather than simply reproduced. Bluck, Alea, Habermas, and Rubin (2005) state that the remembering individual "is not simply an information processor...but rather an organism processing information in ecological context" (p. 92). AM is conceived as motivated and goal driven (Conway, 2005).

1.3.2 Functions of AM

AM research is vast. Recently, this research has shifted from trying to understand AM from the perspective of how much and how well individuals can remember personal events (e.g. research investigating eyewitness testimony and false memories; Laney & Loftus, 2008; Loftus, 1979; Loftus & Bernstein, 2005), to exploring the function of AM. This approach has focused on how and why individuals remember past events and subsequently recall certain things, and the function that remembering, reflecting on and sharing personal experiences may serve (Bluck, 2003). Current literature concerning this latter point suggests three broad functions of AM: directive, social and self (Bluck & Alea, 2002; Pillemer, 1992).

1.3.2.1 Directive. The directive function of AM is described as the “use of the past to make plans and decisions in the present and for the future” (Bluck, 2003, p. 115). There are a number of hypotheses concerning ways in which AM is thought to be directive. For example, it has been suggested that AM can be used for problem solving by allowing people to ask new questions of old information (Baddeley, 1987; Cohen, 1998), which also enables us to predict future events (Baddeley, 1987). Robinson and Swanson (1990) state that AM helps individuals to use past experiences to develop an understanding of the inner world of others around them, which then enables the prediction of their future behaviour.

1.3.2.2 Social. The social function of AM is argued to be fundamental (Neisser, 1988). Cohen (1998) proposes that the most basic social function served by AM is the provision of conversation material, which facilitates social interaction. AM is thought to play an important role in developing, maintaining and nurturing social bonds (Bluck et al., 2005; Pillemer, 1998), as well as in maintaining intimacy in relationships, eliciting empathy from others, teaching others through giving advice (Alea & Bluck, 2003) and initiating new social relationships by providing others with information about oneself (Cohen, 1998).

1.3.2.3 Self. The self function of AM is of particular relevance to the present study. AM is argued to be important for supporting our sense of identity and self-continuity (Conway, 1996) and in the development of a coherent sense of self over time (Barclay, 1996; Brewer, 1986), which is considered important for a stable sense of self (Conway, 2005). As Bluck et al. (2005) observe, “self-continuity is probably the most commonly referred to self function in the theoretical literature” (p. 109). It has been suggested that our self-concept is defined through our autobiographical stories (Fivush, 1988; MacAdams, 1992), which is thought to emerge during childhood through parent-child reminiscing (Fivush, 1998; Fivush, 2001) and continue to develop throughout adolescence (Habermas & Bluck, 2000).

Clear links have been made between AM and the development of our sense of self. The relationship between the self and AM is considered to be reciprocal, forming “a coherent system in which, in the healthy individual, beliefs about, and knowledge of, the self are confirmed and supported by memories of specific experiences” (Conway, 2005, p. 595). Within this relationship, the self is instrumental in the encoding, organisation and retrieval of AMs (Conway, 2005; Wang & Conway, 2004). Who we are is thought to influence the information that we attend to, what we subsequently go on to store about day-to-day experiences and what we later retrieve about these personal events (Howe, 2004). The self is also seen as reliant on AM. Cohen (1989) suggests an individuals’ self-concept, or identity, is dependent on their recollection of their personal history. There is empirical evidence that memory can actually be distorted by the influence of the self (Barclay & Wellman, 1986; Neisser, 1981) in order to support the goals of the self and maintain coherence (Conway, 2005). This notion is supported by the SMS (Conway & Pleydell-Pearce, 2000; discussed further in Section 1.2.6.5), which offers a framework for understanding the relationship between AM and the self. AM is considered to be key in maintaining an individuals’ identity and coherent sense of self over time, even in the face of adverse experiences such as trauma (Bluck et al., 2005).

Whilst the empirical evidence in support of these theoretically derived functions is limited with only a small number of studies offering preliminary support (e.g. Hyman & Faries, 1992; Pasupathi, Lucas, & Coombs, 2002), there is rich theoretical support for the directive, social, and self functions of AM.

1.3.3 The Emergence of AM

AM and the self operate at the individual and cultural level, whereby the construction of AMs occurs within the context of culture in such a way as to be “congruent with the culture’s goals, values, and belief systems (Wang & Conway, 2004, p. 912). Nelson and

Fivush's (2004) social cultural developmental theory suggests that AM is a fundamentally distinct form of memory that emerges gradually across a child's early years within the context of developments in language, memory, the self and others, and mental states (theory of mind). AM is characterised by significant cultural variations across the life span and is "embedded within a social cultural milieu in which particular forms and contents of experiences are valued and shared" (p. 489). Maternal reminiscing style is a fundamental social cultural tool essential in the development of AM. Maternal reminiscing style has been shown to predict children's AM skills (e.g. Harley & Reese, 1999), with children of highly elaborative mothers able to recall more information than children of less elaborative mothers. Parental reminiscing styles have been shown to be culturally sensitive. Studies (e.g. Wang, Leichtman, & Davies, 2000) have found that Asian mothers are less elaborate than American mothers. Therefore the way a mother talks to their child helps in the development of their AM, which appears to be influenced by cultural norms.

1.3.4 Autobiographical Memory Specificity (AMS)

Interest in the function of AM has not been restricted to experimental settings, but has extended beyond into clinical practice where differences in AM between clinical and non-clinical populations have been observed. Empirical evidence supports the notion that AM function, specifically the ability to provide specific AMs, may be influenced by an individual's psychopathology. These findings and observations will now be discussed.

1.3.4.1 AMS and psychopathology. AMS is considered to be the ability to retrieve specific AMs, and has attracted much research attention over the past two decades (Hermans, Raes, Philippot, & Kremers, 2006). Specific memories are defined as memories of personal events from an individual's past that occurred once and are typically shorter in duration than one day (e.g. Hermans, et al., 2006; Raes, Hermans, Philippot, & Kremers, 2006). Williams and Broadbent (1986), whilst exploring mood-congruent memory in suicidal patients,

observed that many of the individuals in the study produced overgeneral summaries of similar events as opposed to recalling specific memories as requested. Since then, the phenomenon of reduced AMS, where an individual produces general AMs even when prompted for specific memories, has been consistently observed across a number of clinical populations including depression (e.g., Williams et al., 2007), eating disorders (e.g., Dalgleish et al., 2003), acute stress disorder (ASD; e.g., Kangas, Henry, & Bryant, 2005), and PTSD (e.g. McNally, Lasko, Macklin, & Pitman, 1995; Schönfeld & Ehlers, 2006; Sutherland & Bryant, 2008). It is typically assessed using a cue word procedure known as the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986), which will be discussed in Section 1.3.4.3.

The research in this area has demonstrated that this phenomenon is of more than just theoretical importance, but also has important clinical implications. The empirical evidence has indicated that reduced AMS contributes to the onset of PTSD (e.g. Harvey, Bryant, & Dang, 1998; Kleim & Ehlers, 2008); the onset and maintenance of depression (e.g. Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002 ; van Minnen, Wessel, Verhaak, & Smeenk, 2005); predicts poorer outcome in depressed individuals (e.g. Brittlebank, Scott, Williams, & Ferrier, 1993), and is associated with impaired problem-solving skills (e.g. Evans, Williams, O'Loughlin, & Howells, 1992; Goddard, Dritschel, & Burton, 1996; Sutherland & Bryant, 2008). A reliable relationship has been found to exist between increased severity of posttraumatic stress and reduced AMS in trauma-exposed samples (e.g. Dalgleish, Rolfe, Golden, Dunn, & Barnard, 2008; Kuyken & Brewin, 1995), which was replicated in a recent non-clinical study (Hauer, Wessel, & Merckelbach, 2006). A better insight into the aetiology of reduced AMS has the potential to further understanding of the onset and maintenance of these disorders and assist in developing ever more effective assessment and treatment methods.

1.3.4.2 AMS and trauma exposure. The relationship between trauma exposure and reduced AMS has been reliably observed (see Moore & Zoellner, 2007, for a review). Reduced AMS has been shown to be evident across a range of trauma types including combat veterans (e.g. McNally et al., 1995; McNally, Litz, Prassas, Shin, Weathers, 1994), assault survivors (e.g. Kleim & Ehlers, 2008; Schönfeld & Ehlers, 2006) and refugees (e.g. Moradi et al., 2008). The affect regulation hypothesis (Williams, 1996; Williams, Stiles, & Shapiro, 1999) proposes that reduced AMS in response to trauma exposure serves as a protective mechanism to reduce the emotional distress associated with traumatic experiences. It is proposed that when attempting to retrieve a specific AM memory is searched according to a hierarchical system whereby categorical memories are generated first, following which an increasingly refined search is made for an appropriately specific memory. This is equivalent to the generative retrieval route within the SMS (Conway & Pleydell-Pearce, 2000). Within this theoretical context reduced AMS results from a failure to inhibit general, categorical memories from higher up the hierarchy thus prematurely shortening the search for specific memories at a general level thereby avoiding accessing painful information. In contrast, intrusive recollections of specific trauma memories in day-to-day life are suggested to arise from a process of “direct” AM retrieval (e.g. Conway & Pleydell-Pearce, 2000).

1.3.4.3 The Autobiographical Memory Test (AMT). The AMT has been widely used within AMS research (Griffith et al., 2009). The traditional AMT procedure, as reported by Williams and Broadbent (1986), asks participants to recall a specific AM within a specified time limit in response to a cue word. Cue words typically vary in emotional valence, describing both positive (e.g., happy, interested) and negative emotions (e.g., angry, lonely), and are presented one at a time. Participants’ responses are scored as specific if they specify a particular event that lasted less than one day or non-specific if they do not. Further distinctions have been made between categoric non-specific memories if individuals respond

with a summary or category of repeated memories, and extended non-specific memories if they recall an event that was longer than one day (e.g., Williams & Dritschel, 1992; Dalgleish et al., 2007). The impact of cue word valence on AMS has produced inconsistent findings. Some studies (e.g., McNally et al., 1994) have found less specificity of memories in response to positive cue words whilst others (e.g., McNally et al., 1995) observed less specificity in response to both positive and negative cue words amongst individuals with PTSD compared to non-PTSD controls.

A review of the literature where the AMT has been used to explore the relationship between AMS and trauma exposure revealed that AMT protocol differed across studies. The total number of cue words varied, ranging from a total of 10 (e.g., Sutherland & Bryant, 2008) to 24 (e.g., Dalgleish et al., 2008). Maximum response time also varied, with some studies allowing 30 seconds for memory retrieval following cue word presentation (e.g., Kleim & Ehlers, 2008; Moradi et al., 2008; Schönfeld & Ehlers, 2006) whilst others allowed 60 seconds (e.g., Dalgleish et al., 2008; Harvey et al., 1998; Kangas et al., 2005; McNally, et al., 1995; McNally et al., 1994; Sutherland & Bryant, 2008). A shorter response time may have resulted in an underestimation of specificity, and amount of available response time has been shown to moderate performance on the AMT (van Vreeswijk & de Wilde, 2004). There was also variation in scoring, where participants' responses were scored according to whether they were specific or general responses. As Moore and Zoellner (2007) observe, these are often not functionally equivalent measures. Despite these variations the phenomenon of reduced AMS is consistently found in studies using the AMT.

One area where the AMT has not been used is within cultural research, and at the time of this study there were no published accounts of the AMT being used within non-Western samples. Therefore, it is highly relevant to examine the potential influence of culture on AMT performance. In the absence of knowledge about cultural differences when using the AMT,

findings that emerge from research using this procedure cannot be generalised beyond those cultural populations in which it was employed.

1.3.5 Interim Summary

AM is defined as memory for the events of one's life and is considered to be central to our sense of self. AM relates to an individual's major goals and to their emotions and personal meanings. AM has been argued to serve a number of functions, including a self function. A disturbance in AM is a central feature of current PTSD theories and the phenomenon of reduced AMS has been widely observed in individuals with a history of trauma exposure. This phenomenon is typically assessed using the AMT. Although AMT protocol has been found to vary across studies, the phenomenon of reduced AMS is consistently found using this procedure.

1.4 Culture, the Self and AM

This chapter will begin by outlining the development of the self over time. Secondly, Markus and Kitayama's (1991) theory of self-construal will be outlined. The reciprocal relationship between the self and AM will be further elaborated alongside a discussion of the impact of cultural variation in the self on AM.

1.4.1 The Construction of the Self

Rather than being conceptualised as a singular structure, the self has been described as representing a combination of self-schemata, which include cognitive representations from both specific autobiographical events as well as more general representations (Markus, 1977). Moreover, the self is not seen as static but rather as dynamic, evolving over time. It has been suggested that the self first emerges during childhood (Fivush, 1998; Fivush, 2001) and continues to develop during adolescence (Habermas & Bluck, 2000), only becoming more stable and enduring in late adolescence and early adulthood, often referred to as identity (Erikson, 1950; Waterman, 1999).

1.4.2 Cultural Variations in the Self

Interest in the nature and function of the self has not been constrained to understanding its developmental underpinnings, but has also extended to the cross-cultural arena. Research within the field of cultural psychology has emphasised that many psychological processes are not universal, and highlighted the significant role that culture plays in influencing how individuals think about and view themselves (Heine & Lehman, 1997). Self-construal, how the self is constructed and understood by the individual, is widely accepted to exist on a cultural level and a number of theories (e.g. Hofstede, 1980; Markus & Kitayama, 1991) have suggested that individuals from different cultures can hold markedly different understandings of the self, with a commonly held view being that of the construal of the self in two divergent ways; individualistic, independent and autonomous, versus collectivist, interdependent and ensembled. The former is typically attributed to Western cultures, whilst the latter is attributed to Eastern cultures (e.g. Hofstede, 1980).

1.4.2.1 Markus and Kitayama's theory of self-construal. In what is considered to be one of the most important and influential theories within cultural psychology in the past two decades (Matsumoto, 1999), Markus & Kitayama (1991) focus on the cultural differences in how individuals view themselves, and what they believe about the relationship between the self and others, in particular the degree of separation from or connectedness to others. They distinguish between two types of self-construals, namely the independent and interdependent self. The most significant difference between these construals is the role that is assigned to the other in defining the self, and they are considered to have implications for a range of psychological processes; specifically cognition, emotion and motivation. Within the independent construal, the self is conceived as a bounded, autonomous, and independent person consisting of unique internal attributes. Markus and Kitayama state that these internal attributes are important in regulating behaviour in a way that is consistent with these

attributes, namely as an independent entity. These representations of the inner self are the most elaborated within memory, and thus the most accessible when thinking of the self. The role of others within this construal is for self-evaluation and social comparison. This independent view of the self is argued to be the most clearly illustrated within American and Western European cultures where a necessity of such a culture is to be independent of others, and discover and express one's uniqueness (e.g. Johnson, 1985).

Conversely, the interdependent view of the self is considered to be exemplified by Asian cultures, as well as some other non-Western cultures such as Latin-American and African cultures. Within such cultures relatedness of individuals to others is emphasised. Within the interdependent construal, the individual is not seen as separate from the social context but rather as connected to others. Markus and Kitayama state that "within such a construal, the self becomes most meaningful and complete when it is cast in the appropriate social relationship" (p. 227). The experience of interdependence involves viewing the self as part of an "encompassing social relationship" and acknowledging that one's behaviour is determined by, contingent on and organised by what the individual understands to be the thoughts, feelings, and actions of the others in the relationship. The role of others is for self-definition. In contrast to the goal of the independent self to become independent of others and expressing their autonomy, the goal of the interdependent self is to fit into meaningful relationships. The interdependent self possesses internal attributes, but these are thought to be situation-specific and secondary to the primary goal of interdependence.

Markus and Kitayama (1991) do not assume homogeneity within cultural groups but acknowledge the possibility of differences within Western and non-Western cultural groups, stating that the distinction they make between independent and interdependent self-construals "must be regarded as general tendencies that may emerge when the members of the culture are considered as a whole" (p. 225). They suggest individuals within a given cultural group

will be more likely to share the same self-construal (Markus & Kitayama, 1994) and acknowledge the possibility that there may be self-construals that cannot readily be classified as either independent or interdependent.

Despite the widespread regard with which this theory is held, it is not without some criticism. Matsumoto (1999) identifies problems with the empirical evidence cited by Markus and Kitayama (1991) specifically that they seem to be a test of country differences rather than cultural differences by assuming that the countries being compared are associated with the underlying self-construals in the absence of any assessment of this. Matsumoto suggests a move away from the dichotomous Western vs. non-Western view of self-construal to “one that incorporates similar self-cognition mechanisms in all humans, primed to different degrees by context, culture, and the psychological domain accessed” (p. 304).

To summarise, within individualistic societies the self is typically associated with attributes such as independence and uniqueness. These societies tend to be Western societies, such as Western Europe (Green, Deschamps, & Paez, 2005). Within collectivistic societies, the self is associated with a sense of group functioning as opposed to an individual focus, and typical attributes include interdependence with others and collectively defined roles. These societies are typically non-Western, such as Asia (Green et al., 2005). Cross-cultural theories relating to self construal have continued to uphold this cultural distinction, and emphasise the relationship between the self and AM (e.g. Markus & Kitayama, 1991). It is widely accepted that in individualistic cultures an independent self is emphasised whilst an interdependent self is emphasised in collectivist cultures. The following section will focus on the relationship between AM, the self and culture and the empirical evidence from this field of research.

1.4.3 AM, the Self and the Impact of Culture

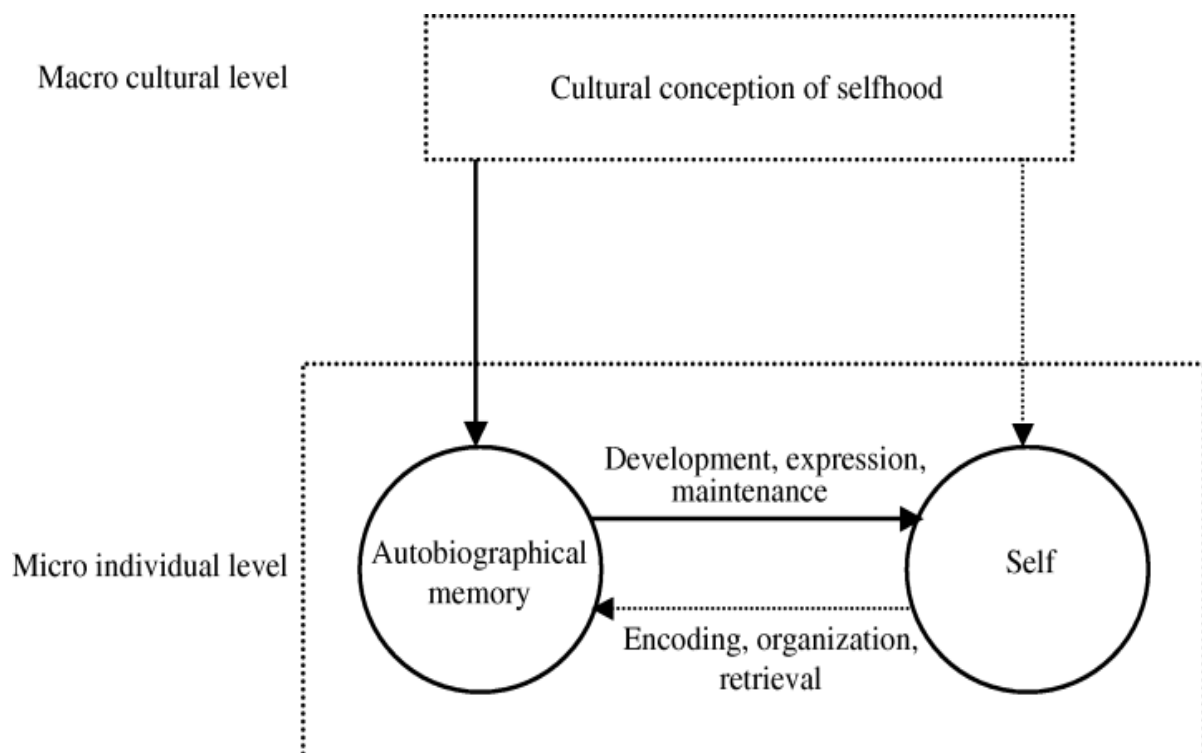
AM holds a central position within theories concerned with the self, which extends to theories pertaining to cultural differences in self-construal. It is now widely acknowledged

that AM and the self are fundamentally related to one another, forming a reciprocal relationship where AM is argued to define and maintain the self (Conway & Holmes, 2004; Wang & Conway, 2004), whilst the self is seen as functional in encoding, organising, and retrieving AM (Wang & Conway, 2004). It has been proposed (Howe, 2000; Howe & Courage, 1997; Nelson & Fivush, 2004) that it is the emergence of the cognitive self during the first few years following birth that is the catalyst for the emergence of AM. Moreover, AM is argued to operate at the cultural level to assist the individual to be congruent with their culture's goals and beliefs (Wang & Conway, 2004). The independent-interdependent distinction has been shown to impact on AM and was found to be evident in maternal reminiscing style (e.g. Harley & Reese, 1999; Nelson & Fivush, 2004)

Empirical support for cultural distinctions in the self and its impact on AM has been found in child and adult autobiographical remembering (e.g., Han, Leichtman, & Wang, 1998; Jobson & O'Kearney, 2008a; Wang, 2001; Wang, 2008; Wang & Conway, 2004). Children and adults from individualistic cultures tend to retrieve self-revealing, self-focused, emotionally elaborate, specific, autonomous AMs and favour a more detailed sense of the self. In contrast, children and adults from collectivistic cultures tend to focus on collective activities, social interactions and significant others and are less elaborate about the self (e.g. Jobson & O'Kearney, 2008a; Wang, 2001; Wang & Conway, 2004; Wang et al., 2000). A recent study by Wang (2008) found that when Asian American participants were primed to focus on their American self they recalled more self-focused, personal experiences and less socially oriented AMs than those who had been primed to focus on their Asian self. In an earlier study, Wang and Conway (2004) observed that American participants, considered to be more individualistic, provided more self-focused AMs compared to Chinese participants, who provided more group-oriented AMs when asked for twenty memories from any period in their life.

Of particular relevance to the proposed study is the evidence of differences in AMS across cultures. Researchers (e.g., Han et al., 1998; Wang & Conway, 2004) have found that child and adult Chinese participants are less likely to provide specific memories than their American counterparts. Wang and Conway (2004) suggest that specificity is required in individualistic cultures as a means of differentiating the self from others, which serves to reaffirm the self as an autonomous self. In cultures where interdependence is emphasised, memory specificity is not considered to be as important since the aim of the self is to promote relatedness and interdependence thus the retrieval of specific AMs may compromise this pursuit. The self is thought to influence the encoding and retrieval of AMs and AM functions to develop, express and maintain the self (Figure 1).

Figure 1. Wang and Conway's (2004) representation of the relations between culture, self and memory.



Cultural variation in AMS has been observed in recent study (Jobson, 2009) where individuals from independent cultures provided more specific memories than those from interdependent cultures. Therefore, the current evidence base suggests that specificity “is an important technique in reaffirming the self “(Jobson, 2009, p. 457) and enhancing the autonomous self.

1.4.4 Interim Summary

Cross-cultural theories of self-construal propose that the self can be construed in two ways; individualistic, independent and autonomous, versus collectivist, interdependent and ensembled. The former is typically attributed to Western cultures, whilst the latter is attributed to Eastern cultures. It is widely accepted that a reciprocal relationship exists between AM and the self; AM is argued to define and maintain the self, whilst the self is seen as functional in encoding, organising, and retrieving AM. There is evidence that cultural variation in self-construal can impact on AMS whereby individuals from cultures valuing an interdependent self, such as Asian cultures, provide fewer specific memories than individuals from cultures valuing an independent, e.g. Western cultures. Memory specificity seems to be an important means of reaffirming the self.

1.5 Rationale for Current Study and Study Aims

Current PTSD theories and literature concerning adjustment to trauma provide a sound conceptualisation of the role of AM in trauma adjustment, yet this appears to be in the absence of consideration of the cultural impact on AM, and the role that the self plays in this relationship. Despite the abundance of research supporting the theoretical proposition that AM holds a central position in how an individual responds to trauma, and the consistent finding that cultural variations in self-construal impact on autobiographical memory, these two positions have yet to be brought together into a coherent model that provides both an understanding of the aetiology and maintenance of PTSD, whilst accounting for the impact of

culture on AM. There are obvious clinical implications of adopting a universal approach to the understanding and treatment of PTSD and adjustment to trauma.

Therefore, it seems highly relevant to attempt to bring these research areas together by exploring the impact of cultural variations in the self and trauma exposure on AM, specifically AMS. This is even more pertinent when one considers the cultural diversity within Britain, together with the presence of refugees and asylum seekers who may have experienced trauma and the evidence that reduced AMS is associated with the onset and maintenance of PTSD and poor treatment outcome. Furthermore, the research that has explored the phenomenon of reduced AMS using the AMT have done so using American or European samples, which somewhat limits the generalisability of these findings to non-Western populations. Consequently, the proposed study will attempt to investigate the impact of culture and trauma exposure on AMS within a non-clinical population. The proposed study has a number of unique features. First, it intends to use the AMT with an Asian sample, something that has not been previously reported. Second, it plans to investigate cultural differences in AMS, which is underresearched in the literature. Finally, it aims to investigate the impact of culture and trauma exposure on AMS.

1.6 Research Questions and Hypotheses

Based on the current literature, reviewed above, and the aims of the study the following research questions and hypotheses were generated:

1. What is the influence of culture on AMS?
 - a. It is hypothesised that British participants will report significantly more specific memories, as measured by the AMT, compared to the Chinese participants.
2. What is the influence of trauma exposure on AMS?

- a. It is hypothesised that individuals who have experienced a higher amount of trauma exposure will report significantly fewer specific memories than those who have experienced a lower level of trauma.
3. Is there an interaction between trauma exposure and culture in terms of AMS?

2 Method

2.1 Overview

In this chapter, the study design is described. This is followed by participant information and a description of the recruitment process. Third, the measures are described in detail. Fourth, the study procedure is outlined and ethical considerations are discussed. Finally, the statistical analysis plan is outlined.

2.2 Design

The main aim of the study was to explore the impact of culture and trauma exposure on AMS, as measured by performance on the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). A 2 (culture: British vs. Chinese) x 2 (trauma exposure: high vs. low) between-groups design was used to compare the performance on the AMT of four groups of participants: British high trauma exposure, British low trauma exposure, Chinese high trauma exposure, and Chinese low trauma exposure. To create the low and high trauma exposure groups a median split was used based on participants' Trauma History Questionnaire (THQ; Green, 1996) total score.

2.3 Participants

2.3.1 Inclusion and Exclusion Criteria

Participants had to be enrolled in an undergraduate level of study to ensure they had an equivalent level of education. Participants were excluded if they had a current psychiatric diagnosis as research suggests that a number of diagnoses are associated with reduced AMS; therefore the presence of a psychiatric diagnosis may be a confounding factor.

2.3.2 Sample Size

A power calculation using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) was carried out to estimate the required sample size for a 2 x 2 ANOVA. The planned sample size for this study was 128 participants, based on an α -level of .05 and a power of .80 with a

medium effect size ($f = .25$), considered to be an appropriate estimate in the absence of previous research.

2.3.4 Recruitment Procedure

British undergraduate students and Chinese international undergraduate students were recruited from the University of East Anglia (UEA). Information about the study (see Appendix A) was circulated in a number of ways. Permission to contact undergraduate students via email was sought from the UEA Heads of Schools. Where permission was granted, secretaries within the school were asked to circulate this information to their students via email. Posters containing the same information were displayed in the international office, the university library and other communal student areas such as the student's union. The UEA Asian Society was contacted by the researcher to seek permission to circulate the same information amongst its members. Participants responding to initial information were invited to attend a session with the researcher on the UEA campus. Upon arrival they were provided with additional, more detailed information about the study (Appendix B) and were requested to provide signed consent forms (Appendix C) prior to participation. .

2.4 Ethical Considerations

2.4.1 Ethical Approval

Ethical approval for this study was sought from and granted by the UEA Faculty of Health Ethics Committee. See Appendix D for letter of confirmation of approval.

2.4.2 Informed Consent

Individuals who attended a session with the researcher were given standardised information (Appendix B) before the assessment informing them that they were under no obligation to participate in the study and of their right to withdraw from the study at any point without having to give a reason. Individuals were also informed that all information gathered during the study would remain anonymous. Individuals who wished to participate in the study

were asked to sign consent forms, which were then placed in an envelope that remained separate from all other study materials to ensure anonymity was maintained. Participants were requested to sign consent forms prior to participation. All participants provided written informed consent to take part in the study.

2.4.3 Managing Risk and Distress

It was identified that some questions within the questionnaires may be distressing since they ask individuals to think about significant distressing life experiences. Participants were informed of their right to withdraw at any point if they became too distressed during the study, and told that they did not have to answer any question they did not wish to. Contact details for the researcher and research supervisor were provided on the participant information sheet for participants who wished to contact them in the event of experiencing any distress. Written information about university support and counselling services, as well as external support organisations was also provided (Appendix E), and participants were advised to seek advice from their general practitioner (GP) if they continued to feel distressed.

2.4.4 Confidentiality

Data were managed in accordance with the Data Protection Act (1998). Raw data were stored in a locked filing cabinet. This information was only available to the researcher and research supervisor. Where information was electronically stored, no personal details were accessible. Personally identifying information was not stored with the raw study data. Participants were identified with unique identity numbers only. Upon completion of this study participant' contact details for the iPod prize draw, described in Section 2.6.2, were securely destroyed. Participants were made aware of these issues and that confidentiality may be broken if the researcher had any concerns about the individuals' safety.

2.5 Measures

All of the measures described below were presented to participants in English within the questionnaire booklet (Appendix F) in the following order: AMT, Hopkins Symptom Checklist – 25 (HSCL-25; Derogatis, Lipman, Rickels, & Cori, 1974), Twenty Statements Test (TST; Kuhn & McPartland, 1954), THQ and Impact of Event Scale – Revised (IES-R; Weiss & Marmar, 1997).

2.5.1 AMT

The AMT is a cue word procedure and is routinely used to measure AMS. Typically, the AMT involves presenting participants with cue words (e.g., happy, angry) and asking them to retrieve a specific AM in response to each word. The current study followed Henderson, Hargreaves, Gregory and William's (2002) procedure, in which participants were asked to write down their memories. The instructions given to participants closely followed those used in previous AMT studies (e.g. Williams & Broadbent, 1986) with one exception: instructions were written in the questionnaire booklet before the cue words were presented. The instructions that participants were given were as follows:

The task involves remembering personal, or autobiographical, memories.

Autobiographical memory is memory for events that happened to you and issues that are related to yourself. So this includes memories for specific experiences such as remembering buying your first car, as well as memory for personal facts about your life, such as whether you own a car or not. On the following pages of this booklet you will see 10 cue words. Each word is written on a separate page. Please do not look at these words yet. Once you have finished reading these instructions I will ask you to turn over the page and the memory task will begin. You will see a word written at the top of each page. Your task is to recall the first autobiographical memory that comes to mind when you see the word. The memories can be from any time period in your

life; they may have happened very recently or perhaps a long time ago, and they may be important or trivial memories. For example, if the cue word was CHOCOLATE, you would provide the first autobiographical memory that came to mind about chocolate. Once you have recalled the memory, please write it down in the lined space beneath the word. You will have 60 seconds to write down as much as you like about the memory. I will let you know when the time is up, and ask you to turn over to the next page. Please do not go onto the next cue word until instructed to do so.

Following these instructions, cue words were printed at the top of separate pages in the questionnaire booklet with a lined area underneath for participants to write down their retrieved memory. Participants were told to stop writing by the researcher after 60 seconds and to indicate an approximate date for the memory before being asked to turn the page for the next cue word. Cue words were presented in the questionnaire booklet in a fixed order with alternating positive and negative words: happy, sorry, safe, angry, interested, clumsy, successful, hurt, surprised and lonely, as per Hermans et al. (2004). These cue words have been used in several well controlled studies (e.g. Dalgleish et al., 2007; Kuyken & Brewin, 1995; Williams & Broadbent, 1986).

In contrast to these studies, participants received no instructions or prompt to be specific for the duration of the AMT. Whilst the AMT is widely considered to be a valid tool when used with clinical populations, there is evidence to suggest it may be less sensitive when assessing AMS in non-clinical populations (e.g. Raes et al., 2007). Therefore, Raes et al. (2007) suggest that omitting the instruction to be specific is more appropriate and sufficient to enhance sensitivity when using non-clinical university samples. Since this study used a non-clinical population, the instruction to be specific was omitted to enhance the sensitivity of the AMT.

Coding of memories was in line with previous research using the AMT (e.g. Dalgleish et al., 2007; Griffith et al., 2009) in which memories were classified as either specific or non-specific. Memories were coded as specific if they referred to a specific event that happened on a particular occasion and lasted less than one day. Non-specific memories were memories that occurred at a specific time or place but lasted longer than one day, or were memories of events that occurred repeatedly over time with no indication of a specific time or place. If the participant failed to recall a memory within the time limit or recorded things that were not memories, this was coded as no memory. Inter-rater reliability was established with a second independent Chinese rater who was blind to the study hypotheses and the cultural group of the participants. A total of 20% of the written responses were scored for specificity, which were chosen randomly from within the two groups of participants. Inter-rater reliability for coding a memory as specific or non-specific was good (Kappa; $\kappa = .76$). The AMT can be found on p. 98 of the questionnaire booklet (Appendix F).

2.5.2 HSCL – 25 (Derogatis et al., 1974)

Depression has been shown to impact on autobiographical memory retrieval (Williams & Scott, 1988) and was therefore assessed throughout the study using Part II of the HSCL-25, which contains 15 items that measure symptoms of depression. The measure requires individuals to indicate how much each symptom has bothered or distressed them during the past week using a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*extremely*). The HSCL-25 has consistently been shown to correlate with major depression according to the *DSM-IV* (1994) across a range of different populations (e.g. Kleijn, Hovens & Rodenburg, 2001), including university samples (e.g. Jobson & O’Kearney, 2006), and has been used extensively in cross-cultural studies (e.g. Mollica, Wyshak, de Marneffe, Khuon & Lavelle, 1987). The HSCL-25 has been shown to possess high internal consistency ($\alpha = .84 - .87$), with high test-retest reliability ($r = .75 - .84$) and adequate inter-rater reliability ($r = .64$).

- .80; Derogatis et al., 1974). Internal consistency of the HSCL-25 in the present sample was good, Cronbach's $\alpha = .84$. The HSCL-25 can be found on p. 109 of the questionnaire booklet in Appendix F.

2.5.3 TST (Kuhn & McPartland, 1954)

The TST is a technique used to assess an individuals' sense of self or identity. It asks individuals to provide 20 statements in response to the question "Who Am I?", beginning "I am...". The TST has been widely used to examine and control for cultural differences in an individual's sense of self (e.g., Wang, 2001; Watkins & Gerong, 1999), and was used in this study as a measure of cultural independence/interdependence. The TST has been shown to possess adequate psychometric properties (coefficient of reproducibility .90; test-retest reliability .85; Kuhn & McPartland, 1954).

Coding of responses was line with previous research (e.g. Jobson & O'Kearney, 2008b). The responses made by participants were coded as either independent for statements that referred to a personal quality of the individual (e.g. "I am happy") or interdependent when responses were concerned with relationships, interpersonal roles, or social categories (e.g. "I am a girl", "I am Chinese", "I am in love"). Each participant received an independent and interdependent score, which was the ratio of each type of self-cognition divided by the total number of responses. The TST can be found on p. 110 of the questionnaire booklet in Appendix F.

2.5.4 THQ (Green, 1996)

The THQ is a 24-item measure of an individuals' history of exposure to potentially traumatic events that corresponds to Criterion A of the criteria for PTSD, according to the *DSM-IV* (1994). The THQ addresses the lifetime occurrence of traumatic events in three categories: crime; general disaster/trauma; and physical and sexual assault experiences. Individuals are required to indicate whether or not they have experienced the event and if so,

the number of times and approximate age(s) of occurrence. For physical and sexual assault questions individuals are asked to indicate whether the experience was repeated, and if so, approximately how often and at what age. The THQ has been shown to possess adequate test-retest reliability ($k = .57$ to $.89$) and high inter-rater reliability ($k = .76$ - 1.0 ; Mueser et al., 2001), and has been used with individuals from collectivistic cultures in previous studies (Fizman, Cabizuca, Lanfredi & Figueira, 2005). The THQ has also been identified in the literature as a commonly used trauma assessment instrument amongst health professionals (Elhai, Gray, Kashdan & Franklin, 2005) and has been used in previous research with non-clinical university student samples (e.g. Green, 1996), including Chinese university student samples (e.g., Fu & Yao, 2005; He, Pan & Meng, 2008; Ling, Zhang & Yang, 2008; Shen, 2009; Yu, Fu & Yao, 2006). The THQ can be found on p. 111 of the questionnaire booklet in Appendix F.

2.5.5 IES-R (Weiss & Marmar, 1997)

The IES-R is a 22-item self-report measure that assesses subjective distress caused by traumatic events. The IES-R corresponds directly to the *DSM-IV* (1994) symptoms of PTSD and is comprised of three sub-scales: avoidance, intrusions and hyperarousal. The present study measured the total score of these sub-scales. The IES-R has been shown to possess high internal consistency ($\alpha = .96$) for the total scale and for the three subscales: avoidance ($\alpha = .87$); intrusions ($\alpha = .94$); and hyperarousal ($\alpha = .91$). It has a high degree of intercorrelation between sub-scales ($r = .52$ -. 87), and test-retest reliability across a 6-month interval, ranging from $.89$ to $.94$ (Weiss & Marmar, 1997; Creamer, Bell & Failla, 2003). The IES-R has been widely used within cross-cultural research (Asukai, et al., 2002; Wu & Chan, 2004) and is an appropriate measure when assessing trauma in non-clinical university samples (e.g., Jobson & O’Kearney, 2006). The internal consistency for the IES-R found in the current study was found to be excellent for the total scale, Cronbach’s $\alpha = .94$. The internal consistency was

also found to be good for the Intrusions subscale, $\alpha = .89$, Avoidance subscale, $\alpha = .84$, and the Hyperarousal subscale, $\alpha = .82$. The IES-R can be found on p. 117 of the questionnaire booklet in Appendix F.

2.5.6 Demographics

All participants completed a demographic information sheet that gathered information about participants' including age, gender, ethnicity, level of education and length of time living in the UK. This information was collected to assess how comparable the two groups of participants were and the generalisability of the findings to the wider population. The demographics form can be found on p. 119 of the questionnaire booklet in Appendix F.

2.6 Procedure

Before beginning the study, cue words were subjected to translation and back-translation with the help of two native, bilingual Chinese volunteers. This ensured that cue words retained their meaning and emotion so that all participants responded to the same word. The first volunteer translated the cue words from English into simplified Chinese characters, which is one of two standard sets of Chinese characters within the Chinese written language that are used to represent spoken Chinese; the other being traditional. The second volunteer performed the back-translation into English. The back-translated English words were then compared to the original English list and no differences were found, thus the original list was used.

2.6.1 Data Collection Procedure

All eligible consenting participants completed the study on the UEA campus over approximately 40 minutes. Participants were given a questionnaire booklet containing the AMT, standardised measures and demographics information sheet (Appendix F). The booklet did not include participants' names. The AMT was completed first to ensure that memories were not primed by the other measures that ask about distressing experiences and symptoms

of depression. Participants were instructed to turn the page in the booklet every 60 seconds throughout the AMT. Following this, participants completed the measures in the following order: HSCL-25, TST, THQ and IES-R, followed by the demographics information sheet. Completed questionnaire booklets were stored separately from signed consent forms. Coding and scoring data from the AMT and measures were then entered into SPSS version 16.0 (SPSS Inc., Chicago, IL) for statistical analysis.

On completion of the questionnaire booklet, participants were given the opportunity to ask any questions about the study, and were provided with written information about university support and counselling services, and external support organisations, as described in Section 2.4.3.

2.6.2 iPod Prize Draw

On completion of the study, participants were given the opportunity to be entered into an iPod Shuffle prize draw, as a way of thanking them for participating. Participants were asked to provide contact details if they wished to be entered, which were immediately placed into an envelope that was separate to their consent form and questionnaire booklet. On completion of the study, the researcher drew an email address out of the envelope at random to select the winning participant. Following the draw, all contact details were securely shredded.

2.7 Plan of Analysis

A median split procedure was carried out to form the high and low trauma exposure groups. This was achieved using the median value from the total THQ scores within each cultural group. Participants were assigned to a high trauma group if their individual total score fell above the median value or to a low trauma group if their score fell below. This process produced a total of four participant groups: British high (n=18), British low (n=19), Chinese high (n=14), Chinese low (n=13).

All analyses were carried out using SPSS 16.0. Data gathered from the questionnaire booklets were entered into SPSS and visually inspected for missing or inaccurate data entries. Descriptive statistics were conducted to examine the distribution of the raw data and identify any missing data. Box-plots were used to check for outliers, which were replaced by changing the score to be one unit above the next highest score in the data set (Field, 2009). The raw data distribution was visually inspected using histograms. Skewness and kurtosis statistics were converted to z-scores; given the small sample size obtained, values above 1.96 were considered to be significantly different to 0 ($p < .05$; Field, 2009) and therefore non-normally distributed. The Shapiro Wilk (S-W) test was used to check the raw data for normality, and Levene's test was used to test for homogeneity of variance.

Where data were found to be non-normal and/or variances were unequal, a log transformation was carried out on positively skewed data, and an inverse and log transformation was carried out on negatively skewed data. Prior to transformation a constant was added to data sets containing zero or negative values. Histograms and box-plots were used to visually examine the transformed data and the effectiveness of transformation. Tests (S-W and Levene's) were conducted on the transformed data. Where variances were found to be homogenous then parametric analyses were conducted using the transformed data.

Analysis of Variance (ANOVA) is based on the assumptions of normality and homogeneity of variance; however, it is considered to be a very robust statistical procedure and violations of these assumptions are unlikely to affect the validity of the analysis, especially in the case of the normality assumption (Howell, 1997). When sample sizes are unequal, the assumption of homogeneity should not be violated. Therefore, given that the present study has unequal sample sizes, ANOVAs were conducted as long as the homogeneity assumption was satisfied. Chi-square tests were used for categorical data.

To test the main hypotheses of the study, a 2 (culture: British vs. Chinese) x 2 (trauma exposure: high vs. low) ANOVA was conducted with the number of specific memories recalled as the dependent variable. Effect size estimates were determined using Cohen's d , which is considered to be a less biased measure than partial eta squared (η^2) (Field, 2009).

If group differences in number of years living in the UK, self-rated written English skills or self-rated study difficulty were observed, Analysis of Covariance (ANCOVA) was conducted to examine whether ANOVA main effects and/or interactions remained statistically significant when these variables were statistically controlled. Where effects remain significant this rules out the possibility that group differences can be explained by simply having lived longer in the UK, having better perceived written English skills, or how difficult the participant found the study to be. Where no ANCOVA is reported then no group differences in these variables were observed.

To examine any differences between the number of specific memories recalled in response to positive and negative cue words, a 3-way mixed model ANOVA was conducted with culture (British vs. Chinese) and trauma exposure (high vs. low) as between-subjects factors, and cue type (positive vs. negative) as the within-subjects factor.

3 Results

3.1 Overview

This chapter will begin by describing the study participants. Second, the process by which the data was checked to ascertain whether it met the assumptions for parametric analyses will be summarised. This will be followed by an outline of the descriptive data for each group. Third, each hypothesis will be tested. Fourth, the findings of subsidiary analyses are presented, which sought to explore the influence of potentially confounding cultural variables, e.g. length of time living in the UK, and be consistent with previous AMT research by examining the impact of cue word valence. Finally, this chapter concludes with a summary of the key findings.

3.2 Study Participants

Participants were recruited between October 2009 and May 2010. A total of 104 potential participants responded to initial study information via email contact with the researcher, 65 of whom agreed to attend a session. All participants provided written informed consent to take part in the study. One individual was excluded from the study due to psychiatric diagnosis, therefore 64 participants were successfully recruited. These included 41 women and 23 men who were aged between 18 years and 41 years (mean; $M = 21.39$ years). Of these, 37 participants were British undergraduate students and 27 were Chinese international undergraduate students. See Table 1 for participant characteristics data.

3.3 Treatment of Data

Prior to hypothesis testing, data were screened for missing data and errors. This process identified that there were no missing data and no identifiable errors in the data set.

3.4 Testing Assumptions for Parametric Analyses

The variables of interest were tested for how well they met the assumptions for parametric analyses. The main findings are summarised below.

3.4.1 AMT

Exploration of the AMT data did not indicate significant skew or kurtosis, as interpreted using converted z -scores. The Shapiro-Wilk (S-W) test indicated that all distributions could be considered normal. Homogeneity of variance was tested using Levene's test (Levene, 1960), which revealed that variances in AMT data were equal across cultural groups (British, Chinese), $F(1, 62) = 0.91, ns$, trauma groups (high, low), $F(1, 62) = 0.06, ns$, and culture x trauma groups (British high trauma, British low trauma, Chinese high trauma, Chinese low trauma), $F(3, 60) = 0.92, ns$.

3.4.2 HSCL-25

No significant skew or kurtosis was identified within the HSCL-25 data and the S-W test indicated that all distributions were normal. Levene's test found that variances were homogenous across cultural groups, $F(1, 62) = 0.45, ns$, trauma groups, $F(1, 62) = 2.17, ns$, and culture x trauma groups, $F(3, 60) = 0.84, ns$.

3.4.3 TST

No significant skew or kurtosis was found within the TST data. The S-W test confirmed that all distributions were normal. For the independent response data, the variances were equal across cultural groups, $F(1, 62) = 0.68, ns$, trauma groups, $F(1, 62) = 0.41, ns$, and culture x trauma groups, $F(3, 60) = 2.14, ns$. For the interdependent response data, the variances were equal across all groups: culture, $F(1, 62) = 0.70, ns$, trauma, $F(1, 62) = 0.39, ns$, and culture x trauma, $F(3, 60) = 2.12, ns$.

3.4.4 THQ

The THQ data were found to be non-normally distributed and Levene's test revealed that variance of the scores was significantly different between cultural groups, $F(1, 62) = 6.102, p = .02$, trauma groups, $F(1, 62) = 16.416, p < .001$, and between culture x trauma groups, $F(3, 60) = 3.762, p = .02$. Log transformations were applied to the data. This process

did not improve the distribution of the data, which remained non-normal for all groups but improved the homogeneity of variances between cultural groups, $F(1, 62) = 3.34$, *ns*, trauma groups, $F(1, 62) = .63$, *ns*, and culture x trauma groups, $F(3, 60) = 1.32$, *ns*. Therefore, log transformed THQ data were used for all subsequent data analysis.

3.4.5 IES-R

The IES-R culture x trauma group data were found to be non-normally distributed but showed equal variances between groups, $F(3, 60) = .67$, *ns*. Outliers were identified within the data. These scores were adjusted, in line with the data analysis plan in Section 2.7, which reduced the skew and kurtosis thus improving the distribution of the data without compromising homogeneity, $F(3, 60) = .92$, *ns*. Therefore, this adjusted data set was used for all further analyses.

3.5 Descriptive Data

3.5.1 Participant Characteristics

Participant characteristics are presented in Table 1 .

3.5.1.1 Demographics. There was no significant difference between the four groups in gender distribution, $\chi^2(3, N = 64) = 1.37$, *ns*. In terms of age, there were no differences between cultural groups, $F(1, 60) = 1.21$, *ns*, and trauma groups, $F(1, 60) = .00$, *ns*, and the interaction was not significant, $F(1, 60) = .571$, *ns*. There was a significant difference between cultural groups in the length of time living in the UK, $F(1, 60) = 122.32$, $p < .01$. As expected, the British group reported having lived in the UK for significantly longer than the Chinese group. There was no difference between trauma groups, $F(1, 60) = .04$, *ns*, and the interaction was not significant, $F(1, 60) = .00$, *ns*. There was a significant difference between cultural groups in self-rated written English skills, $F(1, 60) = 21.02$, $p < .01$. As expected, the British group reported better written English skills than the Chinese group. However, there was no difference between trauma groups, $F(1, 60) = .163$, *ns*, and the interaction was

not significant, $F(1, 60) = .134, ns$. There were no differences in self-rated study difficulty between cultural groups, $F(1, 60) = .99, ns$, and trauma groups, $F(1, 60) = .467, ns$, and the interaction was not significant, $F(1, 60) = 1.66, ns$.

3.5.1.2 Depression, trauma exposure and PTSD symptoms. There was no significant difference in HSCL scores between the British and Chinese groups, $F(1, 60) = .23, ns$. The high trauma group scored significantly higher on this measure than the low trauma group, $F(1, 60) = 7.33, p < .01$, which would be expected. The interaction was not significant, $F(1, 60) = .06, ns$. There was no significant difference in amount of trauma exposure between cultural groups, $F(1, 60) = .35, ns$. The high trauma group scored significantly higher on the THQ than the low trauma group, $F(1, 60) = 116.90, p < .01$, as would be expected. The interaction was not significant, $F(1, 60) = 3.26, ns$. There was a significant difference in PTSD symptoms, as measured by the IES-R, between cultural groups, $F(1, 60) = 6.80, p < .05$. Chinese participants ($M = 26.63$, standard deviation; $SD = 16.84$) scored significantly higher than British participants ($M = 16.11, SD = 15.60$). Trauma groups differed significantly, $F(1, 60) = 6.21, p < .05$, with the low trauma group ($M = 16.03, SD = 13.06$) scoring significantly lower than the high trauma group ($M = 25.06, SD = 19.06$), as would be expected. There was no significant interaction, $F(1, 60) = 2.75, ns$.

3.5.1.3 Independence/interdependence. As expected, the Chinese participants ($M = .54, SD = .20$) provided significantly fewer independent statements on the TST than the British participants ($M = .77, SD = .16$), $t(62) = 5.29, p < .01, r = .56$.

Table 1

Participant characteristics and measures data

	British High <i>n</i> = 18	British Low <i>n</i> = 19	Chinese High <i>n</i> = 14	Chinese Low <i>n</i> = 13
Age range, years (mean, SD)	18 - 41 (21.44, 5.32)	18 - 39 (22.32, 5.27)	19 - 27 (21.07, 1.98)	18 - 25 (20.31, 2.29)
Gender <i>n</i> (%)				
Female	10 (55.6)	14 (73.7)	9 (64.3)	8 (61.5)
Male	8 (44.4)	5 (26.3)	5 (35.7)	5 (38.5)
UK residency, years	20.47 (7.24)	20.21 (8.70)	2.75 (3.17)	2.35 (1.83)
Written English skills ^a	4.22 (1.17)	4.21 (1.08)	2.93 (1.27)	2.69 (1.38)
Study difficulty ^a	2.22 (1.35)	1.68 (0.82)	2.14 (0.95)	2.31 (1.11)
HSCL-25	29.56 (7.83)	25.26 (6.07)	29.14 (7.99)	24.00 (5.03)
TST, Independent	.78 (.19)	.77 (.13)	.59 (.16)	.48 (.22)
IES-R total	18.39 (18.04)	15.00 (15.93)	34.43 (18.24)	18.85 (11.72)
THQ ^b	0.79 (0.11)	0.48 (0.19)	0.87 (0.08)	0.44 (0.11)

Note. Mean (standard deviation) data unless otherwise stated.

^aBased on participant self-assessment. ^bLog transformed data.

3.6 Hypothesis Testing

The three main research questions and associated hypotheses were investigated using a 2 (culture; British vs. Chinese) x2 (trauma exposure; high vs. low) ANOVA. These findings will now be discussed. Table 2 shows the descriptive data for the AMT for each participant group. Examples of specific and non-specific AM's can be found in Appendix G.

Table 2

AMT mean (and standard deviation) data

	British High <i>n</i> = 18	British low <i>n</i> = 19	Chinese High <i>n</i> = 14	Chinese Low <i>n</i> = 13
AMT score ^a	6.33 (1.50)	7.26 (1.85)	2.07 (1.21)	3.08 (1.55)
Positive cues ^b	3.00 (1.28)	3.47 (1.07)	1.29 (0.83)	1.85 (1.14)
Negative cues ^c	3.33 (0.59)	3.79 (1.03)	.79 (0.80)	1.23 (0.83)

^a Number of specific memories recalled in total. ^b Number of specific memories recalled in response to positive cue words. ^c Number of specific memories recalled in response to negative cue words.

3.6.1 Research Question 1

It was hypothesised that British participants would report significantly more specific memories, as measured by the AMT, compared to the Chinese participants. There was a significant main effect of culture on AMS, $F(1, 60) = 113.14, p < .01$. The British group ($M = 6.80, SD = 1.73$) reported a greater number of specific memories than the Chinese group ($M = 2.56, SD = 1.45$). Therefore, hypothesis 1a was upheld. The estimated effect size of this difference was large ($d = 2.67$).

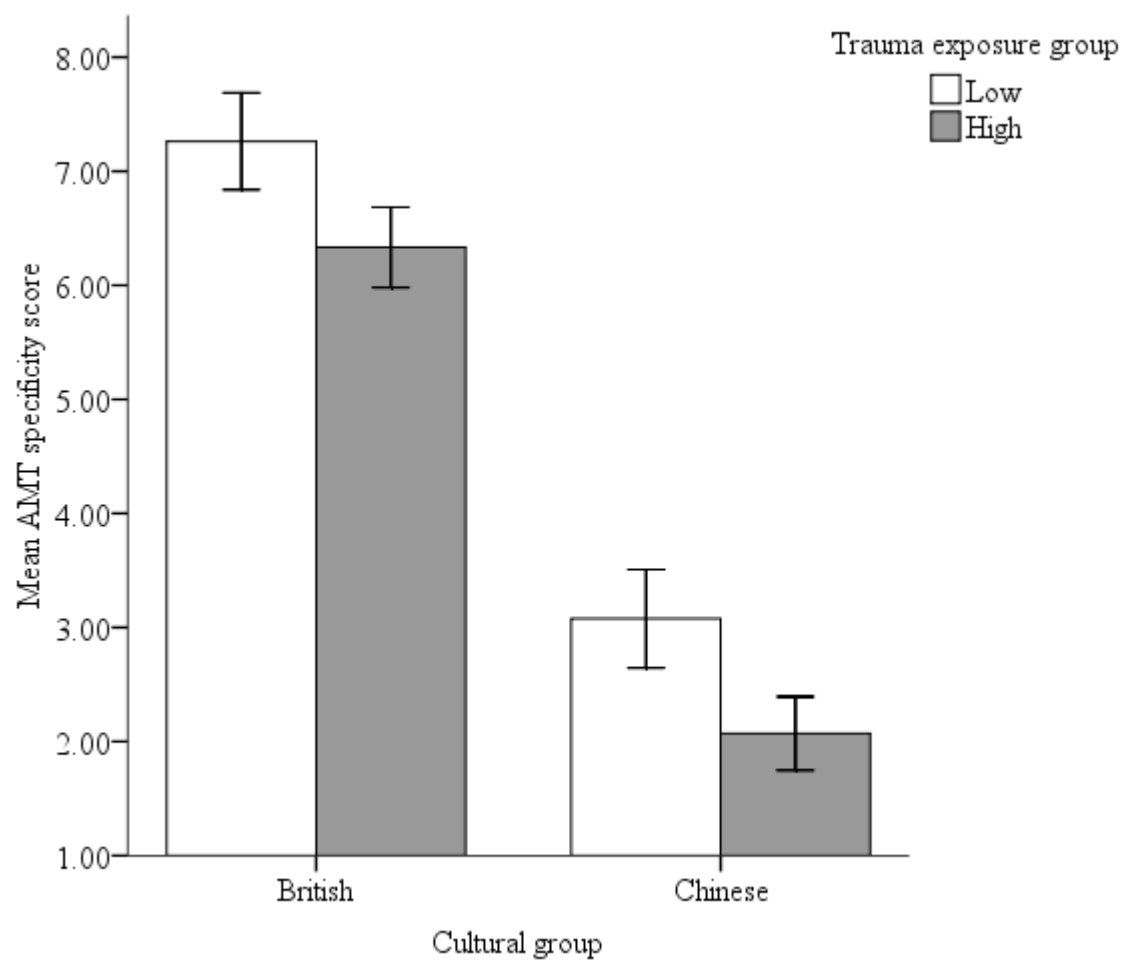
3.6.2 Research Question 2

This study hypothesised that individuals who have experienced a higher amount of trauma exposure would report significantly fewer specific memories than those who have experienced a lower level of trauma. There was a significant main effect of trauma exposure on AMS, $F(1, 60) = 5.94, p < .05$. The high trauma group ($M = 4.47, SD = 2.54$) reported fewer specific memories than the low trauma group ($M = 5.56, SD = 2.70$). Therefore, hypothesis 2a was upheld. A medium effect size was estimated ($d = .40$).

3.6.3 Research Question 3

The study also investigated the interaction between culture and trauma exposure on AMS. There was a non-significant interaction between culture and trauma exposure on AMS, $F(1, 60) = .01, ns$. Data are shown in Figure 2.

Figure 2. Mean AMT specificity scores for each group (error bars represent +/- 1 standard error).



3.7 Subsidiary Analyses

3.7.1 Impact of Observed Group Differences

Group differences were found between British and Chinese participants in the number of years spent living in the UK and in self-rated written English skills. Therefore, two 2

(culture) x 2 (trauma exposure) ANCOVAs were conducted with each of these variables as covariates. There was still a cultural main effect, $F(1, 59) = 76.68, p < .01$, trauma exposure main effect, $F(1, 59) = 6.07, p < .05$, and the interaction remained non-significant, $F(1, 59) = .04, ns$, when length of time was statistically controlled. Similarly, there was still a cultural main effect, $F(1, 59) = .85.0123, p < .01$, trauma exposure main effect, $F(1, 59) = 5.76, p < .05$, and the interaction was not significant, $F(1, 59) = .01, ns$, when self-rated English ability was statistically controlled.

3.7.2 Relationship between AMS and PTSD Symptoms

Previous research (e.g. Dalgleish et al., 2008; Kuyken & Brewin, 1995) has shown there to be a negative relationship between PTSD symptoms and AMS, with the number of specific memories recalled decreasing as PTSD symptoms increase. Correlation analyses (Table 3) revealed a significant negative relationship between AMS and PTSD symptoms across the whole sample. A significant negative relationship was also observed within the Chinese group, and the high trauma exposure group.

Table 3

Correlations between IES-R total scores and AMT specificity scores for each group

	Overall sample	Culture		Trauma	
		British	Chinese	High	Low
IES-R	-.33**	-.04	-.33*	-.38*	-.20

* $p < .05$ (one-tailed). ** $p < .01$ (one-tailed).

3.7.3 Recall of Specific Memories in Response to Cue Word Valence

To explore the impact of cue word valence on the number of specific memories recalled a 3-way mixed model ANOVA was conducted, with culture (British vs. Chinese)

and trauma exposure (high vs. low) as between-subjects factors, and cue word valence (positive vs. negative) as the within-subjects factor. There was no significant main effect of cue word valence on AMS, $F(1, 60) = .62, ns$, indicating that across the entire sample there was no effect of cue word valence on the number of specific memories recalled. There was a significant main effect of culture, $F(1, 60) = 113.14, p < .05, r = .81$, and a significant main effect of trauma exposure, $F(1, 60) = 5.94, p < .05, r = .30$ on AMTS, as would be expected from the main analyses.

There was a significant interaction between cue word valence and culture, $F(1, 60) = 8.81, p < .05, r = 0.36$, thus indicating that the number of specific memories recalled in response to positive vs. negative cues differed between British and Chinese participants. To further explore this interaction, two paired-samples *t*-tests were conducted. The results showed there was no significant difference in the number of specific memories recalled to positive ($M = 3.24, SE = .20$) versus negative ($M = 3.57, SE = .14$) cue words within the British sample, $t(36) = -1.71, ns$. A significant difference was found within the Chinese sample, $t(26) = 2.50, p < .05, r = .38$, where a greater number of specific memories were recalled in response to positive ($M = 1.56, SE = .20$) versus negative ($M = 1.00, SE = .16$) cue words .

There was no significant interaction between culture and trauma exposure, $F(1, 60) = .01, ns$, or trauma exposure and cue word valence, $F(1, 60) = .05, ns$. The culture x trauma exposure x cue word valence interaction was not significant, $F(1, 60) = .03, ns$.

3.8 Chapter summary

Analyses revealed that British and Chinese participants were well matched on gender, age, self-rated study difficulty, depression symptoms, and trauma exposure. Despite the Chinese group having lived in the UK for significantly fewer years than the British group and reporting poorer written English skills, neither of these variables were found to influence

AMS. Therefore, these findings indicate that performance on the AMT was not confounded by group differences in demographic variables or perceived written English skills.

Consistent with the study hypotheses, a significant difference in AMS was found between British and Chinese participants, which represented a large-sized effect. Chinese participants recalled fewer specific memories than British participants. A significant difference in AMS was found between low trauma and high trauma groups, which represented a medium-sized effect. The high trauma exposure group retrieved fewer specific memories than the low trauma exposure group. There was no interaction between culture and trauma exposure on AMS.

Subsidiary analyses revealed a significant negative relationship between AMT performance and PTSD symptoms, which is consistent with previous literature. A significant negative relationship was observed within the Chinese sample, and the high trauma exposure sample. These findings will be discussed further in Chapter 4.

Finally, a significant interaction between cue word valence and culture was found. Further exploration revealed that the Chinese sample retrieved a greater number of specific memories in response to positive cue words compared to negative cue words. This pattern was not observed within the British group.

4 Discussion

4.1 Overview

PTSD is a disabling disorder that may develop in response to exposure to traumatic events. It is characterised by a range of cognitive phenomena that include avoidance, recurrent and intrusive memories, flashbacks and difficulties with intentional recall of the event. Cognitive theories of PTSD suggest that AM plays a central role in the onset and maintenance of, and recovery from, PTSD. Whilst these theories have differed in their understanding of the trauma memory and the exact nature of the role AM plays, there is general agreement that individuals with PTSD experience disruptions in AM and that the trauma memory is poorly elaborated thus failing to be integrated with the individuals' other personal memories, resulting in symptoms of PTSD.

AM holds a prominent position within the literature regarding the self and self-construal. Research has shown there to be a link between culture, self construal and AM. Individuals from independent cultures typically provide more specific AMs compared with those from interdependent cultures. It has been suggested (e.g. Jobson, 2009; Wang & Conway, 2004) that specificity serves as a way of reaffirming and enhancing the autonomous self in individualistic cultures, such as the UK, but is less important in collectivistic cultures where the aim of the self is to promote relatedness, something which may be compromised by the retrieval of specific AMs. The phenomenon of reduced AMS has also been observed within PTSD samples and samples of people with a history of trauma exposure.

Despite evidence in support of theories that emphasise the key role AM plays in adjustment to trauma and the evidence that cultural variation in self-construal impacts on AM, these two positions have yet to be brought together in a coherent model of PTSD. Moreover, much of the literature concerning reduced AMS and trauma exposure has been carried out using the AMT within Western samples. This has obvious clinical implications for

adopting a universal approach to the understanding and treatment of PTSD. This thesis, therefore, sought to explore the impact of culture and trauma exposure on AMS.

Consequently two groups of participants were recruited, British and Chinese students, who were then allocated to a high vs. low trauma exposure group based on their THQ total scores.

This chapter begins by describing the findings of this study in relation to the hypotheses outlined in Section 1.6 of the Introduction. Second, the strengths and limitations of the study are discussed in relation to the study design, participants, measures, procedure and data analysis. Thirdly, the theoretical and clinical implications of the findings are considered. Fourthly, suggestions for future research within this area are outlined. Finally, the chapter concludes with a summary of the main findings and their implications.

4.2 Summary of Findings

In total, 64 participants took part in this study: 37 British participants and 27 Chinese participants. Participants were assigned to either a high trauma exposure group or a low trauma exposure group using a median split procedure based on their THQ score. This resulted in four participant groups as follows: British high ($n = 18$), British low ($n = 19$), Chinese high ($n = 14$) and Chinese low ($n = 13$). The three main hypotheses investigated in this study were developed using previous research. The main research questions and hypotheses will now be discussed in relation to the findings of this study.

4.2.1 Research Question 1

It has been consistently shown in the literature (e.g. Han et al., 1998; Jobson, 2009; Wang & Conway, 2004) that individuals from Asian cultures, which value an interdependent self, are less specific when recalling AMs than those from independent/Western cultures such as the UK, which value an independent self. Therefore it was hypothesised that British participants would recall a greater number of specific memories than Chinese participants, as measured by the AMT.

British participants recalled significantly more specific memories than Chinese participants, which represented a large-sized effect (Figure 2), thus supporting the first hypothesis. The findings were consistent with previous studies that have found differences in AMS in individuals from independent versus interdependent cultures (e.g. Jobson, 2009; Wang & Conway, 2004).

4.2.2 Research Question 2

Previous research (e.g. Kleim & Ehlers, 2008; McNally et al., 1995; Schönfeld & Ehlers, 2006) has reliably found that individuals with a history of trauma exposure recall fewer specific memories than controls when tested using the AMT. Thus, it was hypothesised that participants who reported experiencing a higher amount of trauma exposure would retrieve fewer specific memories than participants who reported a lower level of trauma exposure.

Participants in the high trauma exposure group reported significantly fewer specific memories than participants in the low trauma exposure group, which represented a medium-sized effect (Figure 2), thus supporting the second hypothesis. The findings were consistent with previous studies.

4.2.3 Research Question 3

The third aim of the study was to investigate the interaction between culture and trauma exposure on AMS. Given no research has been conducted investigating this phenomenon, hypotheses regarding this research question could not be generated. No interaction was found between culture and trauma exposure. The difference between high and low trauma exposure groups was evident within both cultural groups; individuals with a higher amount of trauma exposure recalled fewer specific memories.

4.2.4 *Subsidiary Analyses*

4.2.4.1 Impact of observed group differences. In addition to the main hypotheses, further analyses were carried out to examine whether the above findings were the consequence of two potentially confounding variables: years of residency in the UK and self-rated written English skills. As expected the Chinese participants reported having lived in the UK for significantly less time and rated their written English skills as significantly poorer than their British counterparts. ANCOVA analyses revealed that neither of these variables appeared to influence the findings of the study and the main effects observed remained significant. This strengthens the main findings by ruling out the possibility that group differences can be explained by simply having lived longer in the UK or having better perceived written English skills.

4.2.4.2 Relationship between AMS and PTSD symptoms. Second, in line with previous studies (e.g. Dalgleish et al., 2008; Kuyken & Brewin, 1995), the relationship between PTSD symptoms and AMS was explored. The analyses revealed a significant negative relationship between PTSD symptoms and AMS. This is consistent with previous research that has found a negative relationship between PTSD symptoms and AMS in clinical samples (e.g. Dalgleish et al., 2008; Kuyken & Brewin, 1995) and a non-clinical study (Hauer et al., 2006). Evaluation of the two groups individually identified a significant negative relationship between PTSD symptoms and AMS for the Chinese group but not for the British group. This was surprising since there was no difference in the amount of trauma exposure reported between the Chinese and British participants. Furthermore, this is in contrast to previous research (e.g. Hauer et al., 2006). There are a number of possible explanations for why this relationship was not evident in the British group in the present study. Firstly, it is important to note that follow-up correlations were underpowered because of the small sample size. Secondly, this study used a non-clinical sample, therefore the range of scores on the IES-R

within the British group may have been too narrow to reveal a relationship. While it is surprising that the relationship between PTSD symptoms and AMS was not evident in British group, what is of interest to the current study is that the relationship was present in the Chinese group since this has not been explicitly examined to date. The present study provides evidence that individuals from interdependent cultures who have higher levels of posttraumatic stress symptoms have reduced AMS compared with those who have lower levels of posttraumatic stress symptoms.

4.2.4.3 Recall of specific memories in response to cue word valence. Third, the impact of cue word valence (positive versus negative) on the number of specific memories recalled is typically explored within research using the AMT. For that reason the present study conducted further analyses to examine the effect of cue word valence on specificity. Findings within the literature have been mixed, with some studies (e.g. Harvey et al., 1998; McNally et al., 1994) reporting that trauma samples retrieved fewer specific memories to positive cues than controls whilst others (e.g., McNally et al., 1995) observed retrieval of fewer specific memories to both positive and negative cue words amongst individuals with PTSD compared with non-PTSD controls. Analyses revealed a significant interaction between cue word valence and culture in this study. Cue word valence was shown to have no impact on the number of specific memories recalled within the British sample. Conversely, the Chinese sample recalled significantly more specific memories in response to positive cue words than negative words.

This is an interesting finding; the cue word valence had an influence on the number of specific memories recalled by the Chinese group. The findings of this study did not show any relationship between the amount of trauma exposure and cue word valence, which is perhaps not unexpected given that a non-clinical sample was used and the findings within clinical samples have been, at best, mixed. What the present study does contribute to this evidence

base is the introduction of cultural variation, and provision of grounds for exploring this further in future research.

4.3 Study Strengths and Limitations

4.3.1 Design

This study used a between-groups design to investigate AMS in participants from different cultural backgrounds: British and Chinese. A limitation of this type of design is that it becomes difficult to maintain homogeneity when using independent groups and introduces the possibility that factors not accounted for (e.g. socioeconomic status) differed between groups. Gathering further demographic data could have resolved this. A further possible limitation in the design of this study was the omission of any measurement of factors that may influence AMS, for example, basic memory ability, current day-to-day stress levels and alertness. The presence of participant differences in these factors could potentially account for observed group differences in AMS. In the absence of data, this cannot be ruled out. Despite these limitations, group comparisons revealed that British and Chinese participants were successfully matched on age, gender, self-rated study difficulty, depression symptoms and trauma exposure.

A median split was used to allocate participants to trauma exposure groups. This procedure turns a continuous variable into a categorical variable by finding the median of the continuous variable and labelling values above this as *high* and below as *low*, for example, thus dichotomising the continuous variable. Participants in the present study were allocated to either a high trauma exposure group or a low trauma exposure group based on their individual THQ total score. This procedure has some limitations. Firstly, when a continuous variable is split into a categorical variable every value within each category is considered to be equal even when there may be considerable variability between category scores. A possible solution would be to use only the tails of the data to dichotomise the variable, for

example the top third and bottom third of the scores to minimise variability of scores.

However, this is not appropriate with smaller samples, such as those used in this study, as the consequent reduction in sample size would result in a loss of statistical power. Secondly, this procedure is argued to underestimate the strength of relationships resulting in smaller effect sizes in ANOVA and a reduction in statistical power when dichotomising a single continuous variable (e.g. MacCallum, Zhang, Preacher, & Rucker, 2002; Maxwell & Delaney, 1993). It is possible, therefore, that the observed effect sizes in this study are an underestimation of the relationships found. Given that the present study identified significant main effects of trauma exposure and culture, representing medium and large sized effects respectively, the impact to these findings is likely to be minimal. A final criticism of the median split procedure is a psychometric issue. The median split relies upon the median values of the sample to classify participants thus making it vulnerable to between-sample differences. For example, a value of 20 on the THQ in one study may result in the participant being assigned to the high trauma exposure group. It is conceivable that in a different study with a different sample the same participant with the same score of 20 may be placed in the low trauma group. This scenario would make generalisations about the population of a specific sample difficult since they may differ from sample to sample. Despite these criticisms median splits are routinely performed within research. Moreover, within this study a smaller than planned sample was recruited and the findings represented medium to large sized effects. This suggests that use of the median split procedure did not compromise the statistical power of this study.

4.3.2 Participants

A non-clinical sample was used in this study for a number of reasons. Firstly, previous research suggests that the pattern of reduced AMS seen in individuals with PTSD (i.e. clinical samples as in McNally et al., 1995; Schönfeld & Ehlers, 2006; Sutherland & Bryant, 2008) also occurs in individuals without PTSD (i.e. non-clinical samples such as

university populations as in Jobson & O’Kearney, 2006). To date there are no published studies that have used the AMT with an Asian sample, which is a strength of this study, and it was therefore considered most appropriate to examine the effects within a non-clinical population. In addition, the practicalities of recruiting two independent clinical groups from different cultures who were matched on potentially confounding variables such as age and written/spoken English skills were beyond the available time and resources of this study. As mentioned previously, however, the participants in this study were successfully matched on a number of variables including education (i.e. all undergraduate students), age, gender, self-rated study difficulty and depression symptoms. This increased the chances of detecting a significant difference between groups or an interaction between variables as a result of culture or trauma exposure. A further strength of this study is that all the international students were Chinese thus making them a more homogeneous group than previous cross-cultural studies (e.g. Jobson & O’Kearney, 2008a, 2008b) that have used heterogeneous Asian international student populations.

Preliminary analyses prior to hypothesis testing found that Chinese participants reported having lived in the UK for significantly less time and rated their written English skills as significantly poorer than their British counterparts, as would be expected. ANCOVA analyses revealed that neither of these variables influenced the findings of the study. This was interpreted as evidence that the number of years spent living in the UK or written English skills did not influence AMS, and that the main findings did not occur as a result of only these variables.

A number of additional cultural factors should be considered within this study. The Western cultural environment that this study was conducted in and the international student status of the Chinese students, which is often accompanied by high education, high socioeconomic status within country of origin and good resilience, may have impacted the

findings. Based on their international status, Chinese participants may also reasonably be expected to be in touch with, or at least aware of, Western norms, which may have been influential. However, cultural differences were still observed in the face of these factors thus further strengthening confidence in the findings of this study.

A power calculation based on α -level of .05 and power of .80 with a medium effect size ($f = .25$) prior to data collection indicated a desired sample size of 128. In total, 64 participants were successfully recruited. A post-hoc power calculation using G*Power (Faul et al., 2007) was performed to examine the estimated power of the study in light of the effect sizes found, which were larger than predicted, and the sample size obtained. This study was found to have adequate power (.87) to detect large-sized group differences.

A smaller than planned sample size was obtained predominantly because of difficulties in recruitment. At the time of submitting an application for ethical approval to the UEA Faculty of Health Ethics Committee, the protocol for contacting students about research participation via email was to first seek permission from the Head of each School. If permission was granted then an email advertising the research would be forwarded to all students within the School, typically by the course secretary. Ethical approval was granted for this, following which the recruitment process was initiated as described. Five Heads of Schools granted permission to contact their students and an email was circulated amongst students within these Schools. The remaining Heads of Schools indicated that a new procedure was pending further to discussion at a university executive meeting concerning the recruitment of student volunteers for research and that they would respond once a decision had been received. Despite attempts to follow this up, no further information was communicated regarding this issue. At a later date, the researcher was informed that a new protocol for contacting students had been instigated following this meeting, which involved submitting a single application to the Dean of Students (DoS) office who would then

schedule the release of research advertisements in a staggered fashion over the academic year. Unfortunately, by the time this information was communicated the schedule was full. To further complicate matters, contact with students via Heads of Schools became prohibited. Attempts were made to negotiate with the DoS office given that this study had previously received ethical approval to recruit in this manner, and that the retrospective application of the new protocol would influence recruitment for this study. Following negotiations, it was agreed that a single email advertising this study would be sent out during the Easter holiday period. Consequently, fewer students than anticipated received information about the study thus limiting the number of potential participants.

Following the decision of the DoS office, several other avenues for recruitment were explored. These included requesting permission to circulate information about this study via email from the Head of Student Services at the INTO centre on the UEA campus and from each UEA society's president and secretary, which included the Asian Society and the Chinese Society. Posters were displayed in communal areas such as the university library and student's union building, and on notice boards within halls of residence. Flyers were given to students by hand on campus. A number of UEA Facebook groups were joined and the study was advertised via their main pages. A link to information about this study was displayed on the desktop of UEA networked computers and as a screen saver. The study was also advertised in the campus newspaper and an E-Bulletin circulated by the International Student Advisory Team. Overall, the most successful recruitment method was email contact via the Heads of Schools since students were able to directly reply to the researcher and did not require them to note down contact details from a poster, for example, and then remember to make contact. The new protocol for contacting students may have a number of advantages for future studies, but seriously compromised recruitment in the present study.

4.3.3 Measures

This study used a range of valid and reliable measures in line with previous research within this field. The HSCL-25, IES-R and THQ have also all been used extensively within cross-cultural research, which therefore supports their inclusion in the present study. This study found high levels of internal consistency on the HSCL-25 ($\alpha = .84$) and IES-R ($\alpha = .94$), thus indicating good reliability.

The methodology used in this study was limited in that no measure of basic memory ability was included. A measure of this kind was not included firstly, because it would not address the main study hypotheses, and secondly, to ensure that testing time was kept to a minimum and thereby avoid overloading participants. Therefore the possibility that differences between groups were the result of variation in basic memory ability cannot be ruled out.

4.3.3.1 AMT. A number of strengths were associated with the parameters used for the AMT. A modified version of the AMT appropriate for non-clinical university samples was used within this study, in line with previous non-clinical studies (e.g. Raes et al., 2007). Before beginning this study, cue words were subjected to translation and back-translation with the help of two native, bilingual Chinese volunteers, as described in Section 2.6 of Chapter 2. This ensured that cue words retained their meaning and emotion so that all participants responded to the same word. In addition inter-rater reliability was established with the help of a second independent Chinese rater who was blind to the study hypotheses and the cultural group of the participants, which further strengthens the reliability of the study findings. The use of the AMT with an Asian sample has not previously been reported, therefore the findings of this study contribute to the current literature in a unique way by introducing the impact of culture within this area of research. Further studies are needed,

however, to confirm the validity of the AMT when used with individuals from non-Western cultures.

In a study of this nature there are potential cultural implications of using “Western” methodology with non-Western samples. This raises the issue of the validity of these tools as well as the question of translation, and equating of stimuli and questionnaires. As Markus and Kitayama (1991) state, “can psychologists readily assume that when an American and a Japanese use the word *embarrass* it indicates a similar emotional experience?” (p. 248). This raises an important point within the present study, where the cue word *clumsy* was not easily understood by one of the Chinese participants, who asked for further explanation of this word during testing. Once an explanation was provided the semantic meaning was understood but may have differed in emotional meaning. Providing the Chinese translation alongside the English cue words may have prevented the potential for confusion or misunderstandings.

4.3.4 Procedure

A strength of this study was the use of a well established AMT protocol in line with previous trauma research with non-clinical samples, which increases confidence in the validity and reliability of findings. Furthermore, all participants were tested under the same conditions by the same researcher. This ensured that the procedure was equivalent across all participants so any group differences cannot be attributed to procedural variation. The AMT was completed first to ensure that memories were not primed by the other measures that ask about distressing experiences and symptoms of depression.

It may have been of value to gather qualitative data in conjunction with the quantitative data to gain additional knowledge about potential cultural issues that may not be adequately captured by questionnaire studies designed for well-examined populations. This is a potential avenue to be explored within future research.

4.4 Theoretical Implications

The main findings of this study support the predictions relating to relationships between culture, trauma exposure and AMS that were outlined in Chapter 1, and thus confirmed the study hypotheses. The results of this study therefore support the substantial research that has been conducted using Western populations, which shows that individuals with a history of trauma have difficulty recalling specific memories about their personal past. Consistent with previous research (e.g. Wang & Conway, 2004), this study demonstrated that individuals from Chinese culture provide less specific AMs than those from British culture. The present study also demonstrated that the difference in AMS between high and low trauma exposure groups was evident within both cultural groups; individuals with a higher amount of trauma exposure recalled fewer specific memories. Although the sample in the present study was non-clinical, the findings offer preliminary evidence that reduced AMS is not simply a marker of psychopathology in general and PTSD specifically. It supports the literature that highlights the relationship between trauma exposure and reduced AMS and suggests that the same pattern exists in the general population (including other cultural populations), whereby those individuals with a greater amount of trauma exposure exhibit reduced AMS. In light of the empirical evidence that reduced AMS contributes to the onset of PTSD (e.g. Harvey et al., 1998; Kleim & Ehlers, 2008) and is associated with impaired problem-solving skills (e.g. Evans et al., 1992; Goddard et al., 1996), it is conceivable that reduced AMS may be a risk factor that precedes the development of PTSD.

The affect regulation hypothesis (Williams, 1996; Williams et al., 1999) suggests that reduced AMS is a protective mechanism aimed at reducing emotional distress associated with traumatic experiences by terminating memory search processes prematurely at a more general lower-level thus avoiding distressing specific memories at a higher-level. The findings of the present study support this explanation. Further support for this explanation is provided by the

findings that even in Chinese populations, where specificity is not as highly valued and people provide less specific memories than those from Western cultures, the same pattern of findings is evident.

This study replicated previous research demonstrating that those from independent cultures provide more specific memories than those from interdependent cultures. This finding supports Wang and Conway's (2004) theory that the self influences encoding and retrieval of AM, and AM functions to develop, express and maintain the self. In light of this, Wang and Conway suggest that specificity is required in independent cultures to "serve an important means to differentiate the self from others, thereby re-affirming the self as an autonomous self" (2004, p. 912). Cultures emphasising interdependence do not value the specificity of AMs because the aim of the relatedness self is to achieve interdependence, and the retrieval of specific AM has the potential to undermine this objective (see Figure 1 in Chapter 1, Section 1.4.3). This study found that while those from Chinese culture provide fewer specific AMs than those from British culture, a history of trauma exposure can cause difficulties in recalling specific memories about the personal past in individuals from both the British and Chinese cultures.

These findings indicate that even though there are cultural differences in AMS, the protection of the self from distressing memories remains an important goal, thus supporting the affect regulation hypothesis (Williams, 1996; Williams et al., 1999). The affect regulation hypothesis accounts for reduced AMS in terms of difficulties in searching a SMS (e.g. Conway, 2005; Conway & Pleydell-Pearce). The SMS proposes a unique relationship between AM and the self, and is comprised of a working self in conjunction with a conceptual self and autobiographical knowledge base. The findings of this study indicate that whilst it may be a current goal of the working self to maintain coherence via culturally appropriate remembering (as suggested by the SMS; i.e. level of specificity in accordance

with goals), it may also be a current goal to protect the self from distressing memories, as predicted by the affect regulation hypothesis. This pattern was found within both cultural groups, which suggests both goals are working.

4.5 Clinical Implications

PTSD theories suggest the involvement of two key processes; disturbances in AM (e.g., Brewin et al., 1996; Conway, 2005; Ehlers & Clark 2000), and negative appraisals of the trauma event and/or its sequelae (e.g. Ehlers & Clark, 2000). Effective treatment of PTSD targets these two processes (Resick, 2001). The current recommended treatment of choice for PTSD is trauma-focused psychological treatment, which includes both trauma-focused CBT and eye movement desensitisation and reprocessing (EMDR) (NICE, 2005). The most effective trauma-focused CBT programs appear to be those that rely on repeated exposure to the trauma memory and in vivo exposure to situations avoided since the event, on cognitive restructuring of the meaning of the trauma, or a combination of these (e.g. Resick et al., 2002). There is strong empirical support for the efficacy of trauma-focused CBT programmes in the treatment of PTSD. Several randomised controlled trials (RCTs) within the past decade have found CBT to superior to that of other therapies and waiting list conditions across a range of trauma types (e.g. Blanchard et al., 2003; Bryant, Moulds, Guthrie, Dang, & Nixon, 2003; Ehlers et al., 2005; Kubany, Hill, & Owens, 2003; Resick et al., 2002). Current studies have explored the feasibility of intensive cognitive therapy for PTSD (CT-PTSD; Ehlers et al., 2010) and the effectiveness of internet-based CBT (e.g. Klein et al., 2010). Ehlers et al. (2010) conducted a small-scale (n = 14) study to examine the acceptability and effectiveness of an intensive version of CT-PTSD, an effective version of trauma-focused CBT (e.g. Ehlers et al., 2005). The findings indicated that intensive CT-PTSD was well tolerated by patients, evidenced by no drop-outs, and as effective as weekly CT-PTSD with a greater reduction in depressive symptoms. Klein et al. (2010) in a similarly small-scale study (n = 22) trialled a

10-week internet-based CBT program. Significant improvements in PTSD severity ratings were observed at the end of the program and were maintained at 3-month follow up. Further large-scale studies are warranted to further explore these promising findings that may offer clinically effective and time-effective alternatives to weekly treatment. The present study found the same pattern of difficulty recalling specific memories was evident in both British and Chinese participants; individuals with a higher amount of trauma exposure recalled fewer specific memories. This suggests that the same techniques used in Western treatment models, such as exposure, may be appropriate in the treatment of non-Western individuals. However, further research looking specifically at this issue is needed.

The phenomenon of reduced AMS in PTSD is of clinical importance since it is associated with other important aspects of psychological functioning including poorer problem solving (e.g. Evans et al., 1992; Goddard et al., 1996; Sutherland & Bryant, 2008), delayed recovery from affective disorders (e.g. Brittlebank et al., 1993) and problems imagining future events (e.g. Williams et al., 1996). Reduced AMS has been indicated to maintain PTSD (e.g. Schönfeld & Ehlers, 2006). A recent study by Sutherland and Bryant (2007) found that symptom reduction during CBT for PTSD led to improved retrieval of specific memories. Identifying factors that enhance treatment response in PTSD is of important clinical value and must be considered within the context of an individuals' culture.

Whilst it may be appropriate to apply similar techniques for treating PTSD cross-culturally given that a similar pattern of reduced AMS was found within both cultural groups in this study, in light of what is known about cultural variation in self-construal, treatment models may need to adapt in order to incorporate variation in the self with a view to emphasising an independent vs. interdependent self as culturally appropriate. A key stage in CBT for PTSD is exposure. For individuals from cultures that value an interdependent self, such as China, an emphasis on the relatedness aspects of the memory may be more relevant

and engaging for the client. Conversely, for individuals from cultures that value an independent self, such as the UK, a focus on the autonomous elements of the memory may be more relevant. Cognitive restructuring is also a central component of CBT for PTSD, which involves addressing dysfunctional thoughts and beliefs about the world, other people, and the self that have arisen from, or been strengthened by, the trauma. The restructuring of beliefs should take into account cultural variations in how the individual views the self, others and the world in line with an independent/interdependent focus. This may also extend to a consideration of cultural differences in social roles and the impact that trauma may have on these roles. Cognitive restructuring may involve restructuring beliefs to align with the conceptual self and be consistent with those aspects of the self valued within that culture.

4.6 Future Research

Based on the theoretical and clinical implications discussed above, it is clear that future studies aimed at investigating the relationship between reduced AMS and trauma exposure are of clinical importance. Such studies should aim to draw this research into the cultural sphere by exploring the clinical implications of cultural variations in the self on the treatment of PTSD. The research that has explored the phenomenon of reduced AMS using the AMT have done so using American or European samples, which somewhat limits the generalisability of these findings to non-Western cultures. Further research is needed to allow for generalisability and the validation of the AMT as a cross-cultural tool.

Given that this study found significant main effects of trauma and culture on AMS within a relatively small non-clinical sample ($n = 64$), it seems important to extend this to larger clinical samples in the future to enable generalisation of the findings of this study beyond the population recruited. Since the same pattern of reduced AMS was found within both cultural groups in this study, future studies could extend this by recruiting from other cultures valuing an interdependent self to assess the reliability of this finding on a wider

cultural scale. Moreover, it may be of value to compare data across a range of cultural groups, from within both independent and interdependent cultures. In addition, future extensions of this study should aim to gather data on factors that may impact on AMS, as outlined in Section 4.3.1.

As discussed in Chapter 1, AMT protocol has been found to vary across studies (see van Vreeswijk & Wilde, 2004 for a review); for example, the number of cue words used, which was shown to moderate performance on the AMT. In light of these findings it seems important to attempt to establish a universal protocol that can be used when administering the AMT, which would more easily allow for comparisons across studies. Given that there is very limited research using the AMT with populations outside of the Western European countries and North America, future research exploring the validity and reliability of this tool within other cultures and non-Western samples is important if the AMT is to be of value within a multi-cultural society such as exists within Britain. Other than North America and East Asia, “no other culture areas have been studied so extensively, and no two culture areas have been compared in as many studies” (Fiske, Kitayama, Markus, & Nisbett, 1998), which demonstrates the need for more cross-cultural research.

4.7 Conclusions

One of the dominant psychological processes implicated in PTSD is AM. There is a general consensus that disruptions in AM occur in individuals with PTSD. One way in which this is manifested is a reduction in AMS, a phenomenon that has been reliably found amongst trauma survivors in clinical and non-clinical samples. AM holds a prominent position within the literature concerning self-construal, and cultural variation in self-construal has been shown to impact on AMS. Individuals from cultures that value an interdependent self produce fewer specific memories than those from cultures valuing an independent self. To date this evidence has yet to be brought together in a coherent model that accounts for both the

relationship between culture, the self and AMS, and the relationship between trauma exposure and AMS. While the AMT has been widely used to explore this latter relationship, the literature is lacking in drawing this research into the cultural sphere and at the time of this study there was no published account of use of the AMT within an Asian sample.

This study set out to explore the impact of trauma exposure and culture on AMS in a non-clinical university sample. Based on empirical evidence demonstrating reduced AMS in individuals with a history of trauma, and within individuals from Asian (collectivistic) cultures, it was predicted that the same patterns would be observed in this study. The findings indicate that Chinese participants retrieve fewer specific memories than British participants. Furthermore, participants with high trauma exposure recall significantly fewer specific memories than participants with low trauma exposure. Both of these findings are consistent with the literature. Whilst those participants from Chinese culture provided less specific AMs than those from British culture, the finding that those with a history of trauma have difficulty recalling specific memories about their personal past was also present in the Chinese group. The impact of trauma exposure on an individual's ability to recall specific memories is not limited to Western cultures

Future research aimed at identifying the impact of culture on adjustment to trauma is of great clinical importance given that almost 5 million people in the UK are not from Western cultures, and furthermore PTSD is found to be higher in ethnic minority groups, and refugee and asylum seeker populations. Therefore, there is a clear need for further research in this area in order to guide clinicians working with trauma survivors from non-Western cultures.

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Appendix A

Invitation to Participate in Research

Would you like to take part in a research study looking at memory? Volunteers will be entered for an iPod Shuffle prize draw!

This research study is interested in memory, and whether culture has an effect on how we remember personal information. The study is also interested in the relationship between memory and distressing experiences.

The study is looking for British undergraduates and Chinese international undergraduates to take part. All that is required of volunteers is approximately 45 minutes of their time to fill in some questionnaires and complete a short memory task. If you complete all of this then you will be entered into an iPod Shuffle prize draw.

If you are interested in taking part and would like some more information then please contact me on the details below;

Email: c.humphries@uea.ac.uk

Phone: 07746 219246

Thank you for taking the time to read this information, and I look forward to hearing from you soon.

Clare Humphries

(Trainee Clinical Psychologist)

Appendix B

Participant Information Sheet

My name is Clare Humphries, and I am a trainee clinical psychologist at UEA. Thank you for considering volunteering for the study, which is part of my Doctorate in Clinical Psychology. Please read this information carefully. It will tell you more about the study and what will happen to the results. Please ask if anything is unclear or you would like more information;

What is the purpose of the study?

The study is about memory and how culture may affect the way people remember personal information.

Why have I been invited to take part?

You have been invited to take part because you are either a British undergraduate student or a Chinese international undergraduate student.

Do I have to take part?

No, it is entirely up to you to decide whether you take part. After you have read this information, I will ask you to sign a consent form to show that you are happy to take part. You are free to withdraw from the study at any time, without giving a reason.

What will happen to me if I take part?

I will ask you to meet me in the Elizabeth Fry or Med building on campus, where I will then ask you to complete a short memory task, which will involve writing down a memory in response to each of 10 words that you will be shown, and then fill in 4 short questionnaires. It is expected that this will all take no longer than 45 minutes. Once you have completed the study, you will be given the choice to provide your email address that I will enter into an iPod Shuffle prize draw as a way of saying thank you for taking part.

There is the possibility that some people may find certain questions distressing since they ask you to think about distressing life experiences and personal events. If you agree to participate and find that you become too distressed during the study to continue, you have the right to end your participation. You also do not have to answer any questions that you do not wish to, or make you uncomfortable. Should you experience distress following completion of this study, you are advised to contact your GP or one of the organisations listed on your 'Important Information' sheet.

What will happen to the results?

All of the answers to the questionnaires and the memory task will be strictly confidential, and your name will not appear on any of them. Each participant will have their own code so that no one will know whose answers are whose. I will only ask for your contact details if you wish to be entered into the iPod prize draw, but this will be kept separately from all other information and will be shredded at the end. All of the questionnaires and memory task sheets will be locked in a secure cupboard at UEA, where they will be kept for 5 years, and will only be available to me and my supervisor. Following this, all information will be securely destroyed. There will be another person involved who will help me score the memory task, but they will not have access to any personal information about you or who completed the task. I will write up the results of the study as part of my Doctorate in Clinical Psychology, which may also be sent to peer-reviewed journals. You will not be identifiable on any of these documents.

What are the possible benefits of taking part?

Although there are no direct benefits in you taking part, the results of this study may help to gain a better understanding about how culture may affect our memory for personal information. If you decide to take part, then you will have the opportunity to enter an iPod Shuffle prize draw.

What if there is a problem, or I am unhappy with the study?

If you have any problems or further questions during the study, or you are not happy about the study then please ask me, or contact me or my supervisor on the details below.

Who has reviewed the study?

The study has been reviewed by the Faculty of Health Research Ethics Committee (University of East Anglia), and they have approved it.

Further information and contact details

If you have any other questions about the study or would be interested in finding out more about the results of the study, then please ask me or contact me, or my supervisor, on the details below;

Clare Humphries (Trainee Clinical Psychologist)

School of Medicine, Health Policy, and Practice,

UEA, Norwich NR4 7TJ.

E-mail: c.humphries@uea.ac.uk

Laura Jobson (Clinical Lecturer)

School of Medicine, Health Policy, and Practice,

UEA, Norwich NR4 7TJ.

E-mail: l.jobson@uea.ac.uk

Appendix C
Consent Form

Please place your initials in the boxes below if you agree with the following statements;

I confirm that I have read and understood the information on the Participant Information Sheet

I understand who will have access to my results

I understand that I do not have to take part in the study, and that I can change my mind at any time

I agree to take part in the study

NAME (please print):

SIGN:

DATE:

Appendix D

Ethical Approval

Faculty of Health

Clare Humphries
41 Devonshire Road
Cambridge
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Research Office, Room 1.09
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16 February 2011

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Dear Clare

Project title: The impact of culture and trauma exposure on autobiographical memory specificity in a non-clinical population - 2009022

The resubmission of your above proposal has been considered by the Chair of the FOH Ethics Committee and we can now confirm that your proposal has been approved.

Please could you ensure that any amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the committee? Please could you also arrange to send us a report once your project is completed?

The committee would like to wish you good luck with your project.

Yours sincerely,

A handwritten signature in blue ink that reads 'Jane Carter'. The signature is written in a cursive style.

Jane Carter

Appendix E

Contact Details for Support Agencies

Thank you for agreeing to take part in my study. Your participation is very much appreciated!

Due to the nature of the study, there is the possibility that some people may find certain questions within the questionnaires distressing since they ask you to think about distressing life experiences.

Should you experience distress following completion of this study, you are advised to contact your GP or one of the organisations listed below.

UEA counselling/support service;

University Counselling Service: 01603 592651

For support or advice in the UK;

British Association for Counselling and Psychotherapy (BACP): 0870 443 5252

ASSIST (Assistance, Support and Self-Help in Surviving Trauma), 24hr PTSD helpline: 01788 560 800

Alternatively, you can contact myself or my research supervisor (details provided below) if you have any further questions or concerns about the study and/or your participation in it;

Clare Humphries (Trainee Clinical Psychologist)

School of Medicine, Health Policy, and Practice,

UEA, Norwich NR4 7TJ.

E-mail: c.humphries@uea.ac.uk

Dr Laura Jobson (Clinical Lecturer)

School of Medicine, Health Policy, and Practice,

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E-mail: l.jobson@uea.ac.uk

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Appendix F
Questionnaire Booklet

School of Medicine, Health Policy and Practice
Doctoral Programme in Clinical Psychology



University of East Anglia

Norwich NR4 7TJ England

QUESTIONNAIRE BOOKLET

Thank you for participating in this research. This is your questionnaire booklet, which contains a memory task and 4 questionnaires. You are required to read all the items on the questionnaires including any instructions, and to respond as honestly as you can.

It is expected that this will all take no longer than 45 minutes. If you agree to take part in the study you will be given the choice to provide your email address, which will then be entered into an iPod Shuffle prize draw as a way of saying thank you for taking part.

If you have any questions whilst completing the questionnaire booklet, please feel free to ask me and I will do my best to answer your questions. If you have any questions or concerns after you have completed the study then please do not hesitate to contact me. My contact details can be found on the **Participant Information Sheet**.

AFTER FINISHING THIS, PLEASE WAIT AND DO NOT GO ON UNTIL FURTHER INSTRUCTED TO BY THE RESEARCHER.

Task 1: MEMORY TASK

INSTRUCTIONS: The task involves remembering personal, or autobiographical, memories. Autobiographical memory is memory for events that happened to you and issues that are related to yourself. So this includes memories for specific experiences such as remembering buying your first car, as well as memory for personal facts about your life, such as whether you own a car or not.

On the following pages of this booklet you will see 10 cue words. Each word is written on a separate page. Please do not look at these words yet. Once you have finished reading these instructions I will ask you to turn over the page and the memory task will begin.

You will see a word written at the top of each page. Your task is to recall the first autobiographical memory that comes to mind when you see the word. The memories can be from any time period in your life; they may have happened very recently or perhaps a long time ago, and they may be important or trivial memories. For example, if the cue word was CHOCOLATE, you would provide the first autobiographical memory that came to mind about chocolate.

Once you have recalled the memory, please write it down in the lined space beneath the word. You will have 60 seconds to write down as much as you like about the memory. I will let you know when the time is up, and ask you to turn over to the next page. Please do not go onto the next cue word until instructed to do so.

If anything is not clear about the task or you have any questions then please ask me now. If not, then let's begin the memory task!

AFTER FINISHING THIS, PLEASE WAIT AND DO NOT GO ON UNTIL FURTHER INSTRUCTED TO BY THE RESEARCHER.

Task 2

INSTRUCTIONS: Listed below are some symptoms or problems that people sometimes have. Please read each one carefully and decide how much the symptom bothered or distressed you in **the last week**, including today. Place a check in the appropriate column.

Depression Symptoms	Not at all	A Little	Quite a bit	Extremely
1. Feeling low in energy, slowed down				
2. Blaming yourself for things				
3. Crying easily				
4. Loss of sexual interest or pleasure				
5. Poor appetite				
6. Difficulty falling asleep, staying asleep				
7. Feeling hopeless about future				
8. Feeling blue/sad				
9. Feeling lonely				
10. Thoughts of ending your life				
11. Feeling of being trapped or caught				
12. Worrying too much about things				
13. Feeling no interest in things				
14. Feeling everything is an effort				
15. Feelings of worthlessness				

AFTER FINISHING THIS, PLEASE GO ON TO THE NEXT QUESTIONNAIRE.

Task 3

INSTRUCTIONS: Below are 20 blank areas for you to answer the question: "Who Am I?" Simply write an answer next to each "I am" and make each answer different.

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

I am _____

AFTER FINISHING THIS, PLEASE GO ON TO THE NEXT QUESTIONNAIRE.

Task 4

INSTRUCTIONS: The following is a series of questions about serious or distressing life events. These types of events actually occur with some regularity, although we would like to believe they are rare, and they affect how people feel about, react to, and/or think about things subsequently. The questionnaire is divided into questions covering crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences.

For each event, please **indicate (circle) whether it happened**, and if it did, the **number of times** and your **approximate age** when it happened (give your best guess if you are not sure). Also note the nature of your relationship to the person involved, and the specific nature of the event, if appropriate.

<u>Crime-Related Events</u>				If Yes	
				Number of times	Approximate age
1.	Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	NO	YES		
2.	Has anyone ever attempted to rob you or actually robbed you (i.e. stolen your personal belongings)?	NO	YES		
3.	Has anyone ever attempted to or succeeded in breaking into your home when you weren't there?	NO	YES		
4.	Has anyone ever tried to or succeeded in breaking into your home while you <u>were</u> there?	NO	YES		

<u>General Disaster and Trauma</u>				If Yes	
				Number of times	Approximate age
5.	<p>Have you ever had a serious accident at work, in a car or somewhere else?</p> <p><u>If yes, please specify:</u></p> <p>_____</p>	NO	YES		
6.	<p>Have you ever experienced a natural disaster such as a tornado, hurricane, flood, major earthquake, etc., where you felt you or your loved ones were in danger of death or injury?</p> <p><u>If yes, please specify:</u></p> <p>_____</p>	NO	YES		
7.	<p>Have you ever experienced a "man-made" disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury?</p> <p><u>If yes, please specify:</u></p> <p>_____</p>	NO	YES		
8.	<p>Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health?</p>	NO	YES		

				No. of times	Approximate age
9.	<p>Have you ever been in any other situation in which you were seriously injured?</p> <p>If yes, please specify:</p> <p>_____</p>	NO	YES		
10.	<p>Have you ever been in any other situation in which you feared you might be killed or seriously injured?</p> <p>If yes, please specify:</p> <p>_____</p>	NO	YES		
11.	<p>Have you ever seen someone seriously injured or killed?</p> <p>If yes, please specify:</p> <p>_____</p>	NO	YES		
12.	<p>Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason?</p> <p>If yes, please specify:</p> <p>_____</p>	NO	YES		
13.	<p>Have you ever had a close friend or family member murdered, or killed by a drunk driver?</p> <p><u>If yes</u>, please specify relationship (e.g.mother, grandson,etc.)</p> <p>_____</p>	NO	YES		

				No. of times	Approximate age
14.	<p>Have you ever had a spouse, romantic partner, or child die?</p> <p><u>If yes, please specify relationship</u></p> <p>_____</p>	NO	YES		
15.	<p>Have you ever had a serious or life-threatening illness?</p> <p><u>If yes, please specify:</u></p> <p>_____</p>	NO	YES		
16.	<p>Have you ever received news of a serious injury, life-threatening illness or unexpected death of someone close to you?</p> <p><u>If yes, please indicate</u></p> <p>_____</p> <p>_____</p>	NO	YES		
17.	<p>Have you ever had to engage in combat while in military service in an official or unofficial war zone?</p> <p>If yes, please indicate where.</p> <p>_____</p>	NO	YES		

<u>Physical and Sexual Experiences</u>				If Yes	
				Was it repeated?	Approximately how often and what age(s)?
18.	Has anyone ever made you have intercourse, oral or anal sex, against your will? <u>If yes, please indicate nature of relationship with person (e.g. friend, relative, parent, stranger)</u> _____	NO	YES		
19.	Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat? <u>If yes, please indicate nature of relationship with person (e.g. stranger, friend, relative, parent)</u> _____	NO	YES		
20.	Other than incidents mentioned in Questions 18 and 19, have there been any other situations in which another person tried to force you to have unwanted sexual contact?	NO	YES		
21.	Has anyone, including family members or friends, ever attacked you with a gun, knife or some other weapon?	NO	YES		
22.	Has anyone, including family members or friends, ever attacked you without a weapon and seriously injured you?	NO	YES		
23.	Has anyone in your family ever beaten, "spanked" or pushed you hard enough to cause injury?	NO	YES		

<u>Other Events</u>				If Yes	
				Was it repeated?	Approximately how often and what age(s)?
24.	Have you experienced any other extraordinarily stressful situation or event that is not covered above? <u>If yes, please specify.</u> _____ _____	NO	YES		

AFTER FINISHING THIS, PLEASE GO ON TO THE NEXT QUESTIONNAIRE.

Task 5

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you **during the past seven days** with respect to the **most distressing event** you have experienced.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Any reminder brought back feelings about it	0	1	2	3	4
I had trouble staying asleep	0	1	2	3	4
Other things kept making me think about it	0	1	2	3	4
I felt irritable and angry	0	1	2	3	4
I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
I thought about it when I didn't mean to	0	1	2	3	4
I felt as if it hadn't happened or wasn't real	0	1	2	3	4
I stayed away from reminders about it	0	1	2	3	4
Pictures about it popped into my mind	0	1	2	3	4
I was jumpy and easily startled	0	1	2	3	4
I tried not to think about it	0	1	2	3	4

I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
My feelings about it were kind of numb	0	1	2	3	4
I found myself acting or feeling as though I was back at that time	0	1	2	3	4
I had trouble falling asleep	0	1	2	3	4
I had waves of strong feelings about it	0	1	2	3	4
I tried to remove it from my memory	0	1	2	3	4
I had trouble concentrating	0	1	2	3	4
Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	0	1	2	3	4
I had dreams about it	0	1	2	3	4
I felt watchful or on-guard	0	1	2	3	4
I tried not to talk about it	0	1	2	3	4

AFTER FINISHING THIS, PLEASE GO ON TO THE NEXT QUESTIONNAIRE.

Demographic information

AGE: _____ years

GENDER (please circle): MALE FEMALE

ETHNICITY: _____

LEVEL OF EDUCATION (please tick as appropriate):

Undergraduate

Postgraduate

Other

(please specify): _____

LENGTH OF TIME LIVING IN UK: _____

How would you rate your *written* English skills? Please circle as appropriate:

1	2	3	4	5
Not very good	Quite good	Ok	Good	Very good

Are you currently experiencing any of the following (tick as appropriate):

Anxiety disorder

Depressive disorder

Posttraumatic stress disorder

Other mental health problem

Where did you hear about this study: _____

How difficult did you find the study? Please circle as appropriate:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5
Not very difficult	A bit difficult	Not sure	Quite difficult	Very difficult

THANK YOU VERY MUCH FOR YOUR COOPERATION! IF YOU HAVE ANY QUESTIONS, THEN DO NOT HESITATE TO ASK ME. THAT IS THE END OF THE STUDY!

Appendix G

Examples of Autobiographical Memories Provided by Participants

Examples of memories coded as specific

“On Saturday I was happy because I spent a lot of time with my dance class and got to know them better. We practiced and improved our dance” (British female participant in response to cue word ‘happy’).

“The day when I did my first experiment in Chemistry” (Chinese female participant in response to cue word ‘interested’).

“I broke my glass last night when I was doing the washing” (Chinese male participant in response to cue word ‘clumsy’).

“The day I got my degree result at uni, didn’t think I’d put enough work into it” (British male participant in response to cue word ‘surprised’).

Examples of memories coded as non-specific

“I was very happy when I had a journey in Europe with my family” (Chinese female participant in response to cue word ‘happy’).

“Being in my parents house and my old bedroom and spending time with my family” (British female participant in response to cue word “safe”).

“When aged 6 my mum used to say I didn’t know where I was in time and space” (British male participant in response to cue word ‘clumsy’).

“Any time I stay alone in the UK, even though I like travelling by myself” (Chinese male participant in response to cue word ‘lonely’).