Post-Traumatic Stress Disorder Following Stroke and Its Dispositional Risk Factors: A Cross-Cultural Study Between British and Chinese

By

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School of Psychology

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To my dear parents and Nali!

致我最亲爱的父母和Nali
POST-TRAUMATIC STRESS DISORDER FOLLOWING STROKE
AND ITS DISPOSITIONAL RISK FACTORS: A CROSS-CULTURAL
STUDY BETWEEN BRITISH AND CHINESE

XU WANG

Abstract

Objectives: This thesis aimed to: 1) explore the subjective experiences of British and Chinese stroke patients, 2) investigate the trajectory of post-stroke PTSD and its relationship between alexithymia, health locus of control, and psychiatric co-morbidity, and 3) compare the differences between the British and Chinese samples in post-stroke PTSD, psychiatric co-morbidity and risk factors.

Methods: Four focus group discussions in Britain and China were conducted for study 1. Study 2 was a prospective longitudinal design in which 90 British patients were recruited and assessed approximately 1.5 and 4 months after stroke using a battery of instruments. Study 3 was a cross-cultural study in which the data from the U.K. study above were compared with data from a group of 102 patients recruited from 3 hospitals in China, who were assessed using the same instruments described above.

Results: Seven categories of participants' subjective experiences (e.g., feelings at the time of stroke; perceived causes of stroke) were identified in study 1. In study 2, 30% and 50% of stroke patients fulfilled Full and Partial PTSD at baseline which, overall, declined overtime; Stroke patients were significantly worse than the healthy control in psychiatric co-morbidity. After controlling for post-stroke physical disability, difficulty in identifying feelings predicted both PTSD and psychiatric co-morbidity symptoms. Also, alexithymia interacted with chance health locus of control in predicting post-stroke PTSD. In study 3, British patients were at greater risk for developing PTSD than the Chinese. However, Chinese patients developed more somatic problems, anxiety, and depression. For the Chinese samples, alexithymia did not predict PTSD symptoms. Rather, coping styles (i.e., chance health locus of control) were significantly associated with post-stroke PTSD and co-morbidity after controlling for post-stroke physical disability.

Conclusion: Following stroke, people could experience PTSD symptoms which might change overtime and could also develop psychiatric co-morbidity. Although these psychological reactions existed in patients regardless of cultural differences, the way in which risk factors associated with outcomes changed depending on cultures.
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AUTHOR’S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

Throughout working on this thesis, relevant scientific seminars and conferences were regularly attended at which work was presented; and one paper prepared for publication (not yet submitted).

Awards

Conferences Attended
Conference Posters

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CHAPTER 1

A BRIEF INTRODUCTION TO STROKE

This chapter aims to provide a general understanding of stroke and its effects on individuals' physical and psychological functioning.

This chapter describes the following issues:

- A brief description of stroke
- Psychopathology of stroke
- A brief introduction of quality of life following stroke

1.1 A BRIEF DESCRIPTION OF STROKE

Stroke is a clinical disease which has a vascular origin and is characterised by fast developing focal or global disruption of cerebral functions, which usually last for more than 24 hours and can be fatal to some patients (World Health Organization, 1978). Neurologist Robert Robinson (1998) defined stroke as "the sudden loss of blood supply to a region of the brain leading to permanent tissue damage" (p. 1). In lay terms, stroke is a brain attack "when the blood supply to part of the brain is cut off" (The Stroke Association, 2006, p. 4). Vascular events lasting less than 24 hours are called Transient Ischaemic Attack (TIA), which is usually caused by a small quickly dissolvable blood clot in the brain (Lindley, 2003). The consequence of having a TIA is the high risk of developing a stroke, which will most often happen within 18 months (Bahra & Cikurel, 1999).

1.1.1 Epidemiology of stroke
It is estimated that every year 150,000 people in the U.K. have a stroke, with one person having a stroke every three minutes. A third of those affected will possibly die within the first 10 days, and a third will probably become disabled (The Stroke Association, 2004). About 30% to 43% of stroke patients may have another stroke within 5 years of the first one (Mant, Wade, & Winner, 2004). Stroke ranks as the third most frequent cause of death in the U.K., and as the most common cause of severe disability (Lindley, 2003). A stroke may occur to anyone at any age, but there are some common risk factors including being over 55 years old, a family history of stroke, Asian and African ethnicity, diabetes and high blood pressure (Department of Health, 1994; Rudd, Irwin, & Penhale, 2005; The Stroke Association, 2006).

1.1.2 Pathophysiology of stroke

About 80% of strokes are ischaemic strokes (caused by a blockage), the remaining 20% of strokes being haemorrhagic strokes (caused by a bleed) (Rudd et al., 2005, pp. 7 - 8). The effects of a stroke depend on which artery is affected. The stroke may affect either side of the body (Rudd et al., 2005). Strokes can have devastating effects on individuals' physical functioning as well as their cognitive ability.

Physical Effects:

- Motor impairment: This is the most common problem among acute stroke patients (Robinson, 1998). Impairment can vary from weakness of one side of the body (e.g. either of the upper or lower limbs or both) to mild or complete paralysis (Rudd et al., 2005).

- Speech problems: One third of patients will have communication difficulties following stroke, which may be one of three types: (The Stroke Association, 2005).
(a) DYSPHASIA (APHASIA) - patients with dysphasia know what they want to say, but are unable to express it clearly. The words they speak are not those they want to say. Alternatively they miss out crucial words in sentences (The Stroke Association, 2005).

(b) DYSARTHRIA - patients with dysarthria have trouble using voice to produce sounds or are not able to control the speed of their talk (The Stroke Association, 2005).

(c) DYSPRAXIA – patients with dyspraxia fail to "control and co-ordinate the movements" involved in talking or other activities (The Stroke Association, 2006, p. 2). For example, dish-washing activity, a patient with dyspraxia may wash the dishes first, then dry the dishes, then fill the sink, (A.M.O. Bakheit [personal communication], 20th March, 2004).

- Vision impairment: When the blood clot blocks the artery to the eye, and damages the retina, patients may experience partial vision on the same side or lose their vision completely. Double vision may result from a stroke which affects the brainstem (Rudd et al., 2005).

- Dysphagia (swallowing problems): Almost half of acute stroke patients have this problem, which can lead to them choking on food and drink. (Gordon, Hewer, & Wade, 1987; Smithard, O'Neill, Parks, & Morris, 1996).

- Elimination Problems: Patients who become incontinent (e.g., urinary incontinence) have to be catheterised (A.M.O. Bakheit [personal communication], 20th March, 2004).

Cognitive Effects:

- Memory problems: These include difficulty in prospective memory, verbal memory and visual memory (The Stroke Association, 2007). For example,
stroke patients may forget to do things such as keeping appointments (prospective memory), or have difficulty in recalling names (verbal memory) or faces (visual memory).

- Attention: Stroke patients with attention problems are easily distracted and find it hard to concentrate on "immediate matters" (e.g., the person who is speaking to them) (The Stroke Association, 2007, p. 3). They can become easily irritated or experience fatigue due to the disruption of attention (Ebrahim & Harwood, 1999).

- Emotional lability: Sometimes, stroke patients cry or laugh suddenly for no reason (Rudd et al., 2005). Emotional lability can make assessment of cognitive and psychological functioning difficult. For example, it is possible to over-diagnose depression when someone bursts into tears all the time when in fact this is a common effect following stroke (Lindley, 2003).

1.2 PSYCHOPATHOLOGY OF STROKE

A stroke may not only debilitate an individual’s functional and cognitive abilities, but also cause mood problems. There are many forms of post-stroke mood disorders (e.g., depression, anxiety, or even personality change) (Robinson, 1998). This section focuses on and describes the topics of post-stroke depression and anxiety disorder.

1.2.1 Post-stroke depression (PSD)

Researchers (e.g., Robinson, 1998; Rudd et al., 2005) have suggested that depression is the most common mood disorder following stroke. The incidence of PSD, summarised recently by Gall (2005), ranged from 22% to 55% in hospital populations, and 11% to 25% in community populations. PSD can hamper successful rehabilitation and negatively affect patients' recovery of functional status and cognitive performance (Gall, 2005; Morris, Raphael, & Robinson, 1992). Morris et al. (1992) conducted a
longitudinal study with 49 stroke patients 2 months after the stroke and followed them up 14 months later. They used a structured clinical interview to diagnose depression, assess patients' functional status, activities of daily living, and cognitive performance. At follow-up, depressed patients had made less progress than non-depressed patients in functional status and cognitive performance.

PSD can also affect social functioning. Clark and Smith (1998) conducted a longitudinal study in Australia, in which they examined 60 stroke patients using the Zung Self-Rating Depression Scale (Zung, 1965) and the Frenchay Activities Index (Holbrook & Skilbeek, 1983) to measure PSD and lifestyle activities, respectively. PSD was found to be associated with an inactive lifestyle and poor social functioning.

Many studies have investigated the aetiology of PSD and focused on the link between stroke severity (often measured by degree of impairment in functional independence and daily living activities) and depressive mood. The findings have been controversial. Most studies reported significant associations between functional disability and post-stroke depressive moods (Astrom, Adolfsson, & Asplund, 1993; Berg, Palomaki, Lehtihalmes, Lonnqvist, & Kaste, 2003; Burvill et al., 1995; Eastwood, Rifat, Nobbs, & Ruderman, 1989; Ebrahim & Harwood, 1999; Pohjasvaara et al., 1998), although some did not confirm such a relationship (Robinson & Price, 1982; Whyte, Mulsant, Vanderbilt, & Dodge, 2004).

Other risk factors for PSD include a history of previous stroke (Andersen, Vestergaard, Ingemannnielsen, & Lauritzen, 1995), previous depression or psychiatric problems (Andersen et al., 1995; Eastwood et al., 1989; Herrmann, Black, Lawrence, Szekely, & Szalai, 1998; Pohjasvaara et al., 1998), major life events (other than stroke) prior to stroke (Bush, 1999), living in a nursing home (Burvill, Johnson, Jamrozik, & Anderson, 1997), being divorced (Burvill et al., 1997), older age (Berg et al., 2003), and being female (Andersen et al., 1995; Wade, Legh-Smith, & Hewer, 1987). In terms of the
gender effect, however, a recent longitudinal study in which patients were assessed at 2, 6, 12 and 18 months post stroke found that males were more depressed than females 18 months post stroke (Berg et al., 2003).

Depressive symptoms following stroke are often persistent. Several longitudinal studies found that half the stroke sample who were depressed at the acute stage were also depressed in the follow up stage (Berg et al., 2003; Wade et al., 1987). Furthermore, there are some suggestions that mood disorder is a more specific complication of a stroke rather than simply a response to the disability. For example, Folstein, Maiberger, and McHugh (1977) compared 20 stroke patients and 10 orthopaedic patients in their functional disabilities - measured by Activities of Daily Living Index (Mahoney & Barthel, 1965b), and psychiatric symptoms - measured by the Visual Analogue Mood Scale (Folstein & Luria, 1973) and the Present State Exam (Luria & McHugh, 1974). They suggested that, even with equal levels of disability, stroke patients were significantly more depressed compared with orthopaedic patients. However, the small sample size limited the generalisation of their findings.

1.2.2 Post-stroke anxiety

Studies on anxiety following stroke have mainly focused on generalised anxiety disorder (GAD). As reviewed by Robinson (1998), the mean prevalence of stroke-related GAD ranged from 14.4% to 22%. The majority of patients with post-stroke GAD were also found to have co-morbid depression (Astrom, 1996; Castillo, Schultz, & Robinson, 1995; Schultz, Castillo, Kosier, & Robinson, 1997).

In comparison with studies on PSD, fewer research have looked into risk factors for developing post-stroke GAD. Studies of the relationship of post-stroke GAD and severity of physical impairment reported inconsistent results. Castillo and colleagues (Castillo et al., 1995; Castillo, Starksten, Fedoroff, Price, & Robinson, 1993) found no
relationship between post-stroke disability and post-stroke GAD. However, Åström (1996), in a longitudinal study (discharge from hospitals, 3 months, 1 year, 2 years and 3 years after stroke), reported that impairment of daily activities was associated with GAD at all follow-ups. Prior anxiety or psychiatric disorders also tended to be associated with post-stroke GAD (Castillo et al., 1995; Morrison, Pollard, Johnston, & MacWalter, 2005). Other reported risk factors included being female (Morrison et al., 2005; Schultz et al., 1997), younger age (Schultz et al., 1997), and avoidant coping style (Gillespie, 1997).

The severity of post-stroke anxiety disorder was found to be stable over time in several longitudinal studies (Åström, 1996; Gillespie, 1997; Morrison et al., 2005). Like PSD, GAD after stroke was also suggested to interfere substantially with social life and functional recovery (Astrom, 1996; Castillo et al., 1995).

1.3 BRIEF INTRODUCTION TO QUALITY OF LIFE FOLLOWING STROKE

Following the above sections, one can conclude with some confidence that stroke can have devastating effects on multiple domains of an individual's life. It is not surprising that many studies have reported poor global quality of life (QoL) following stroke. For example, Niemi and colleagues in Finland (Niemi, Laaksonen, Kotila, & Waltimo, 1988) assessed 46 stroke survivors under the age of 65 who had had a first stroke 4 years previously. Using a self-constructed questionnaire which measured four domains of life (working conditions, activities at home, family relationships, and leisure time activities), they concluded that 83% of patients still experienced impaired QoL compared with the pre-stroke level, although they had improved in daily living functioning. However, using a self-constructed questionnaire may not be optimal. In a recent community-based study, Sturm et al. (2004) interviewed 225 patients after their first-ever stroke, using a generic QoL measure – Assessment Quality of Life. They found impaired QoL in most of the patients 2 years post-stroke. They also suggested that their sample
"would rather give up half of their remaining years of life to live in full health" than continue living with the impaired activities of daily living (p. 2343).

Apart from a decline in global QoL following stroke, many studies have indicated that stroke can dramatically affect domain-specific QoL, which includes the following:

- Independent living / daily functioning. For example, King (1996) examined 86 patients who had a stroke 1 to 3 years prior to the study. In this cross-sectional study, QoL was measured using a disease specific QoL questionnaire (the Ferrans & Powers Quality of Life Index - Stroke Version), which "assesses satisfaction and importance of four domains" (health and functioning, socioeconomic, family and psychological-spiritual) (King, 1996, p.1). They found that QoL was lowest in the health and functioning domain. This finding was echoed by another study (Sturm et al., 2004) which reported that stroke survivors suffered especially badly in the independent living domain with regard to their post-stroke QoL.

- Work (e.g. early retirement or not having a job). Lawrence and Christie (1979) interviewed 45 Australian patients who had suffered a stroke 3 years earlier to explore various areas of psycho-social concern. They found a marked reversal of pattern showing that the majority of patients who were fully occupied (i.e., had a full-time job or were engaged in full-time house work) before the stroke became not at all occupied (i.e., had no occupation or responsibility apart from self-care) 3 years after the stroke. Thus, they concluded that a change in occupational status following stroke was one of the major life changes. Similarly, King’s study (1996) indicated that their sample was most dissatisfied with not having a job.

- Leisure activities. Lawrence and Christie (1979) reported that change in leisure activities in their sample was another important consequence of stroke besides
work. They identified that half of the participants in the "more physically disabled group" (people in this group need help with some daily living activities) had "completely withdrawn from all" leisure activities, although they were previously involved in them (p. 171). Niemi et al. (1988) also reported that, following stroke, the domain in which QoL most deteriorated was leisure time activities. However, some studies showed that QoL in terms of leisure activities could be improved. Åström, Asplund, and Åström (1992) assessed 50 stroke survivors repeatedly over 3 years (4-5 days after admission, 3 months, 1 year, 2 years and 3 years after the stroke). Using a self-constructed questionnaire measuring social network, living conditions and life satisfaction, they reported that between 3 and 12 months post-stroke, their sample had partly returned to the level of engagement in previous leisure-time activities and their life satisfaction was improved.

• Relationship with family. Lawrence and Christie (1979) reported that one-third of their sample who were minimally disabled following stroke, and two-thirds of the more severely disabled group experienced negative changes in interpersonal relationships within the family. However, this finding was contradicted by one study which showed that stroke patients were mostly satisfied with family life (e.g. relationship with children, spouse and so on) (King, 1996).

• Sexual life. Viitanen and colleagues (Viitanen, Fugl-Meyer, Bernspang, & Fugl-Meyer, 1988) assessed 62 long-term (4-6 years) stroke survivors and reported that more than half of their married sample were dissatisfied with sexual life following a stroke. A more recent study showed similar results. Using a stroke-specific QoL measure, the Polish version of the Ferrans and Powers Quality of Life Index - Stroke Version, Jaracz and Kozubski (2003) interviewed 72 patients 6 months after their stroke. They reported that satisfaction with sexual life was
ranked the lowest by their sample compared to other domains (i.e., psychological/spiritual, socioeconomic).

Although many studies reported poor QoL after stroke, some stroke patients did not experience significant changes in their QoL. For example, although Jaracz and Kozubski (2003) did report that QoL was clearly impaired in their stroke sample, and that they scored significantly lower in both overall and domain QoL scores than the comparison group, more than 70% of their stroke sample were generally satisfied or very satisfied with their lives. King (1996) also reported that the mean overall QoL score of their stroke sample was relatively high and "was comparable to that of a normal population" (p. 1). This finding might be related to the fact that their stroke occurred a long time ago - on average 19.2 months before the study. One needs to bear in mind that about half to a third of people who have had a stroke will return to a normal or nearly normal level of functioning (Rudd et al., 2005).

1.4 SUMMARY

Stroke is a sudden, chronically debilitating disease that can damage individuals' physical, cognitive and psychological functioning. Although some inconsistency exist in the results of related studies, on the whole one can conclude that a stroke can impair the global and domain specific QoL, as Niemi and colleagues (1988) put it: stroke often "radically and permanently changes the lives of its victims" (p.1101).

Considering the devastating effects of a stroke, it is not surprising that patients may subsequently develop psychiatric problems such as posttraumatic stress disorder (PTSD). In fact, some studies have reported similarities between stroke reactions and PTSD reactions resulting from assault, combat or road accidents (Thompson, 1991; Thompson, Sobolew-Shubin, Graham, & Janigian, 1989). The following chapter focuses on PTSD, its history and development, and reviews studies on PTSD following life-
threatening illnesses including stroke. It also focuses on the relationship between PTSD and such dispositional factors as personality (alexithymia) and coping (health locus of control).
CHAPTER 2

POST-TRAUMATIC STRESS DISORDER (PTSD) FOLLOWING STROKE AND ITS DISPOSITIONAL PREDICTORS: THE ROLE OF ALEXITHYMIA AND HEALTH LOCUS OF CONTROL

2.1 INTRODUCTION

The scientific study of psychological trauma has not been straightforward, though the concept of trauma has been described in the literature since ancient times. The interest in the study of trauma faded and has been rekindled several times. It was not until 1980 that the American Psychological Association (APA) included diagnostic criteria for post-traumatic stress disorder (PTSD) in the third edition of its Diagnostic and Statistical Manual of Mental Disorders (DSM-III) (APA, 1980). Since then a substantial body of research has emerged on PTSD following exposure to various traumatic events (i.e., combat, natural disasters, accidents, criminal or sexual assaults). Increasingly, research has been focusing on the topic of PTSD following life-threatening illness (i.e., cancer, cardiac disease, HIV and the like).

This chapter describes and reviews the following issues:

- Historical development and evolution of the concept of PTSD
- Definition and diagnostic criteria of PTSD
- PTSD and life-threatening illnesses
- PTSD and Stroke
- Personality (alexithymia) as a predictor of illness-related PTSD and psychiatric co-morbidity
- Coping (health locus of control) as a predictor of illness-related PTSD and psychiatric co-morbidity
2.2 HISTORICAL DEVELOPMENT AND EVOLUTION OF THE PTSD CONSTRUCT

The focus of this section is the history and development of the PTSD concept, and controversies surrounding it.

2.2.1 Historical development of the PTSD concept

The first case of psychological distress to be found in the literature was reported in 1900 BC by an Egyptian physician, who described hysterical reaction to trauma (Veith, 1965). Since then, historians and writers believe that exposure to life-threatening events (e.g., war, natural disasters, accidents and the like) could have a long-lasting impact on human being's psychological and physical well-being (Lasiuk & Hegadoren, 2006a). For example, after the Great Fire of London in 1666, Samuel Pepys (1666), in his diaries, described the traumatic event as "...so great was our fear... It was enough to put us out of our wits." (pp. 272-274). He also wrote that after the trauma, he was anxious and could not sleep well: "...both sleeping and waking, and such fear of fire in my heart, that I took little rest" (p. 280). These problems lasted even several months after the Fire – he could be frightened by a sign of chimney fire some distance away.

In the psychiatric literature, studies on psychological trauma have not been straightforward. Judith Herman (2001) had noted:

- The study of psychological trauma has a curious history- one of episodic amnesia. Periods of active investigation have alternated with periods of oblivion. Repeatedly in the past century, similar lines of inquiry have been taken up and abruptly abandoned, only to be rediscovered much later. (p.7)

Arguments on the etiology of trauma had existed since the beginning of psychiatrists' involvement with traumatised individuals (van der Kolk, Weisaeth, & van der Hart, 1996). Is traumatic stress organic or psychological? In 1866, an English surgeon John Erichsen used railroad spines to describe a syndrome of people who had
been involved in railway crashes. He considered injured patients’ emotional distress as organic problems (1866, cited in van der Kolk et al., 1996). Another surgeon Page (1885, cited in van der Kolk et al., 1996), however disagreed with Erichsen. He believed that railroad spines had a psychological origin. In 1889, German neurologist Herman Oppenheim (cited in Weisaeth & Eitinger, 1991) renamed the syndrome of railroad spines into traumatic neurosis. This was the first time the word trauma was used in psychiatry (Lasiuk & Hegadoren, 2006a).

Many studies had investigated the relationship between psychological trauma and hysteria since psychiatry became a scientific discipline (Lasiuk & Hegadoren, 2006a; van der Kolk et al., 1996). For example, in 1859, French psychiatrist Briquet observed 501 hysterical patients and found that previous trauma was the cause of their illness among 381 patients (Herman, 2001; van der Kolk et al., 1996). After observing his patients experiencing “altered states of consciousness” when they were reminded of previous traumatic events, Pierre Janet, another French psychiatrist, came to the conclusion that an association existed between hysteria, dissociation, and emotional distress caused by past trauma (Lasiuk & Hegadoren, 2006a).

Sigmund Freud also contributed to the understanding of psychological trauma. Freud noted the existence of stress brought out by past trauma, especially those happened during childhood development, and suggested that these events could be intensely distressing to an individual (Wilson, 1995). More importantly, Freud described the core of PTSD symptoms which were listed 70 years later in the DSM-III (APA, 1980). As Wilson (1995) pointed out, Freud noted “intrusive imagery (‘patients regularly repeat the traumatic situation in their dreams’)”, and “physiological hyperarousal (‘hysteriform attacks occur - the attack corresponds to a complete transplanting of the patient into the traumatic situation’)” (pp. 12-13).

Interest in the study of trauma then faded until the outbreak of World War I, when many soldiers were found to display a shell shock phenomenon, which referred to
the psychological consequences as exposure to the war (Myers, 1915). Those soldiers were reported to "act like hysterical women. They screamed and wept uncontrollably. They froze and could not move. They became mute and unresponsive. They lost their memory and the capacity to feel" (Herman, 2001, p.20).

The interest in studying trauma waned once again after World War I, and this, in Herman's (2001) term, the "period of amnesia" had not been rekindled until the outbreak of new war in Europe few years later. As the war prolonged, people began to realise that everybody could be mentally fragile no matter how brave they were (Lasiuk & Hegadoren, 2006a; Wilson, 1995). That is, the war could be traumatic to everybody. This period marked a turning point for the study of psychological trauma, as Lasiuk and Hegadoren (2006a) put it "...the idea about symptom formation on the battlefield shifted away from the biological or characterological inadequacies of the individual to the role of the environment in altering psychological and physiological behaviour" (p.18). Later, during World War II, American psychiatrist Herbert Spiegel, while working to prevent and reduce psychiatric problems in the war, concluded that peer support could help soldiers' to cope with the trauma of war (Spiegel, 1944). This led to recognition that environment and interpersonal relationships could influence psychological wellbeing.

In the 1960s, researchers began to study experiences of different traumas including Holocaust survivors (e.g., Nathan, Eitinger, & Winnik, 1963), and rape victims (Burgess & Holmstrom, 1974). In the 1970s, mental health professionals once again turned their attention to the traumatic effects of war namely, Vietnam War veterans (Lasiuk & Hegadoren, 2006a; Wilson, 1995). In 1980, both civilian trauma response syndromes (e.g., rape trauma syndrome, abused child syndrome) and military trauma response syndromes were included into the diagnosis of PTSD according to the third edition of the DSM (APA, 1980).

Since 1980s, literature on PTSD has been steadily increasing. Studies have focused on victims of mass violence, large-scale transportation accidents, motor vehicle
accidents, war, rape, sexual assault, intimate partner violence, stalking, torture, sex-trafficking, child abuse and others (Briere, 2004). Norris et al. (2002) and Norris, Friedman and Watson (2002) have recently provided an empirical review of the empirical literature from 1981 to 2001. It summarises the range of psychological problems that victims involved in most of the above traumas experienced. The major UK studies during this period include the King Cross fire (e.g., Sturgeon, Rosser, & Shoenberg, 1991), the Herald of Free Enterprise ferry disaster in 1987 (e.g., Joseph, Yule, Williams, & Hodgkinson, 1993), the Lockerbie Aircraft disaster (Brooks & McKinlay, 1992), the Marchioness disaster (Thompson, Chung, & Rosser, 1994; Thompson, Chung, & Rosser, 1995) and the Piper Alpha oil platform disaster (Hull, Alexander, & Klein, 2002). In addition, in China, two major earthquakes occurred in Yun Nan and He Bei provinces, which set the basis for several studies looking at PTSD among Chinese people (Cao, McFarlane, & Klimidis, 2003; Zhao et al., 2001). PTSD and its symptoms were identified in both studies.

2.2.2 Controversies surrounding the PTSD construct

Several issues have become the focus of intense controversy surrounding the PTSD construct since its diagnostic criteria appeared in DSM-III (APA, 1980). They included: how to define the stressor criterion, the homogeneity of PTSD construct and the relationship between PTSD and other co-existing psychiatric disorders (Davidson & Foa, 1991; Lasiuk & Hegadoren, 2006b).

How to define the stressor criterion of PTSD – A traumatic event was initially classified in DSM-III as being “outside the range of usual human experience” (APA, 1980, p.236). What constitutes normal human experience, however, depends on the context, for example, experience may be different in a nomadic tribe in Africa to a banker in New York.
Responding to this challenge, the stressor criterion of PTSD has been modified through several versions. In its current form (DSM-IV), the authors of DSM-IV specified that criterion A of PTSD included subjective perception as well as objective factors. That is (a) exposure to a traumatic event which involved actual or threatened death, serious injury, or a threat to the physical integrity of self or others together with (b) the individuals’ reaction to it (i.e., intense fear, helplessness, or horror) (APA, 1994).

**Homogeneity of PTSD construct** – this is another criticism of the DSM-III (APA, 1980) PTSD criteria. Psychiatrist Judith Herman (2001), after observing victims of prolonged and repeated trauma, argued that the PTSD construct did not capture sufficiently the full range of trauma reactions. She proposed that responses to trauma could be better understood as “a spectrum of conditions rather than a single disorder” (p. 119). These responses range from an acute stress reaction that needs no treatment and gets better by itself, to what she calls “classic or simple” PTSD, to the complex consequence that often result from prolonged and repeated trauma (Herman, 2001, p. 119). She named the latter “complex post-traumatic stress disorder” (p. 119). However, research carried out by the DSM-IV PTSD Task Force on the prevalence of “complex PTSD” did not lead to the inclusion of “complex PTSD” in DSM-IV (Friedman & Marsella, 1996). Hence, additional studies are needed.

**Co-occurrence of PTSD with other psychiatric disorders** – Many epidemiology studies on traumatic stress showed that most people who met PTSD diagnostic criteria also reported at least one other psychiatric disorders, including depression, anxiety, alcohol abuse and so on (e.g., Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 1999). In fact, some researchers have suggested a cascade model after consistently finding that PTSD and depression often co-exist. The model suggests that the causal pathways to PTSD and depression following traumatic events were inter-dependent (Lasiuk & Hegadoren, 2006b). The question is which comes first, PTSD or other psychiatric disorders. In a national survey on PTSD and psychiatric co-morbidity in
America, Kessler, Sonnega, Bromet, Hughes, and Nelson (1995) examined the time order of PTSD in relation to other psychiatric disorders and suggested that PTSD was the primary disorder. In line with this, some gender-specific studies suggested that women who developed major depression for the first time often have a history of PTSD or other anxiety disorder (Chilcoat & Breslau, 1998). However, the question of which comes first, PTSD or other psychiatric disorders, remains largely unanswered probably due to the retrospective design of most studies (Lasiuk & Hegadoren, 2006b).

2.2.3 Section summary

The development of the PTSD construct in the psychiatric discipline has not been straightforward. After its appearance in DSM-III (APA, 1980), the diagnostic criteria of PTSD have evolved through a series of refinements (APA, 1987; 1994). Controversies exist surrounding the PTSD concept and its diagnosis criteria. The arguments mainly focus on the defining features of stressor criterion, homogeneity of PTSD as a psychiatric entity, and the co-occurrence of PTSD with other psychiatric disorders.

2.3 DEFINITION AND DIAGNOSTIC CRITERIA OF PTSD

PTSD is a psychiatric disorder displayed when an individual is unable to fully recover from the effects of traumatic events (Shemesh & Stuber, 2006). Initially associated with psychological problems following combat experience, PTSD is now acknowledged as a potential consequence of exposure to a variety of traumatising events. Among various diagnostic criteria of PTSD, the most established ones are the DSM-IV (APA, 1994) and the tenth edition of the International Statistical Classification of Diseases, Injuries, and Causes of Death (ICD-10) (World Health Organization, 1992). This section reviews these two diagnostic criteria separately.

2.3.1 DSM-IV diagnostic criteria (APA, 1994)
According to DSM-IV, all of the following six criteria must be met to make a diagnosis of full PTSD. The criteria are: (APA, 1994, pp. 427 - 429).

A. The person has been exposed to a traumatic event in which both of the following were present:

(1) The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death, serious injury, or a threat to the physical integrity of self or others.

(2) The person's response involved intense fear, helplessness, or horror.

B. The traumatic event is persistently re-experienced in one (or more) of the following ways:

(1) Recurrent and intrusive distressing recollections of the event including images, thoughts, or perceptions.

(2) Recurrent distressing dreams of the event.

(3) Acting or feeling as if the traumatic event were recurring (e.g., a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated).

(4) Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

(5) Physiological reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma) as indicated by three (or more) of the following:

(1) Efforts to avoid thoughts, feelings, or conversations associated with the trauma.

(2) Efforts to avoid activities, places, or people that arouse recollections of the trauma.
(3) Inability to recall an important aspect of the trauma.

(4) Markedly diminished interest or participation in significant activities.

(5) Feeling of detachment or estrangement from others.

(6) Restricted range of affect (e.g., unable to have loving feelings).

(7) Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

D. Persistent symptoms of increased arousal (not present before the trauma) as indicated by two (or more) of the following:

(1) Difficulty falling or staying asleep

(2) Irritability or outbursts of anger

(3) Difficulty concentrating

(4) Hypervigilance

(5) Exaggerated startle response

E. Duration of the disturbance (symptoms in criteria B, C, and D) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

A full PTSD diagnosis is identified when an individual has fulfilled the entire aforementioned criteria. No PTSD refers to no display of symptoms at all (described above). Symptoms are required to be present for more than 1 month to be diagnosed as PTSD. DSM-IV describes three forms of PTSD: acute (a duration of symptoms for less than 3 months), chronic (a duration of symptoms for 3 months or more), and delayed onset (the onset of symptoms at least 6 months after the stressor).

It is of note that besides Full PTSD and No PTSD diagnosis, I shall use Partial PTSD diagnosis in this project though it is not specified in DSM-IV. The rationale for
using such diagnosis and explanation of the term Partial PTSD will be discussed in more details in Chapter 5, section 5.2.2.5.

2.3.2 ICD-10 diagnostic criteria (WHO, 1992, pp.148-149)

The disorder should not generally be diagnosed unless there is evidence that it arose within 6 months of a traumatic event of exceptional severity. A “probable” diagnosis might still be possible if the delay between the event and the onset was longer than 6 months, provided that the clinical manifestations are typical and no alternative identification of the disorder (e.g. as an anxiety or obsessive – compulsive disorder or depressive episode) is plausible. In addition to evidence of trauma, there must be a repetitive, intrusive recollection or re-enactment of the event in memories, daytime imagery, or dreams. Conspicuous emotional detachment, numbing of feeling, and avoidance of stimuli that might arouse recollection of the trauma are often present but are not essential for the diagnosis. The autonomic disturbances, mood disorder, and behavioural abnormalities all contribute to the diagnosis but are not of prime importance.

The later chronic sequelae of devastating stress, i.e., those manifest decades after the stressful experience, should be classified under F62.0 (Enduring personality changes, not attributable to brain damage and disease).

It is of note that ICD-10 (WHO, 1992) specifies that the evidence of trauma refers to "exposed to a stressful event or situation (either short or long-lasting) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone" (p. 147). It also noted that a “state of autonomic hyperarousal with hypervigilance, and enhanced startle reaction, and insomnia” can be a usual symptom of PTSD (WHO, 1992, p. 148).

2.3.3 Summary and comparison of the two diagnostic criteria
DSM-IV and ICD-10 share some common diagnostic criteria for PTSD. For example, in both systems the experience of a traumatic event is viewed necessary in the onset of PTSD. The major difference between the two systems is that the emotional numbing are not viewed necessary to diagnose PTSD in ICD-10, although numbing are considered as co-existing with the disorder. In addition, DSM-IV requires that PTSD symptoms cause significant distress or interference with social or occupational functioning, which is not required by ICD-10. I decided to adopt the DSM-IV diagnostic criteria in the present research, because they are the most widely used in the literature, thus allowing for comparability with most other studies in this area.

2.4 PTSD AND LIFE-THREATENING ILLNESS

Prior to the publication of the DSM-IV, severe medical illness, an internal induced event, was not included as a stressor that might precipitate PTSD. Instead, most studies have focused on PTSD symptoms following exposure to external threat to one's physical integrity (i.e., combat, natural disasters, accidents, criminal assaults). In 1994, "being diagnosed with a life threatening illness" (APA, 1994, p.424) was included in examples of traumatic stressors. Later, Mayou and Smith (1997) pinpointed that severe medical situations were "as intensively frightening" (p. 122) as disasters or other external events described in the PTSD literature. To date many studies have been conducted to investigate whether PTSD symptoms could occur following various medical illnesses. These life-threatening illnesses include cardiac disease (Bennett & Brooke, 1999; Dew et al., 1996; Kutz, Shabata, Solomon, Neumann, & David, 1994; Ladwig et al., 1999; Pedersen, Middel, & Larsen, 2003; Van Driel & Op den Velde, 1995), Human Immunodeficiency Virus (HIV) (Delahanty, Bogart, & Figler, 2004; Katz & Nevid, 2005; Kelly et al., 1998; Kimerling et al., 1999; Safren, Gershuny, & Hendriksen, 2003), cancer (Cordova et al., 1995; Jacobsen et al., 1998; Kaasa et al., 1993; Mundy et al., 2000;
Palmer, Kagee, Coyne, & DeMichele, 2004), and Severe Acute Respiratory Syndrome (SARS) (Yan, Dun, Li, Yan, & Liu, 2004).

In this section, I will review the literature on PTSD following life-threatening illnesses in adult patients. The main findings are outlined in terms of: a) the incidence of illness-related PTSD, b) co-morbidity accompanying PTSD, c) time course of PTSD, and d) risk factors of PTSD and co-morbidity. Methodological issues are also discussed. When identifying the incidence of illness-related PTSD, it is worth keeping in mind that the PTSD incidence in general populations was found between 5% - 6% in men, 10% - 14% in women, and 9% - 14% in individuals with at least one exposure to traumatic event in their life time (Breslau, 2002).

2.4.1 Incidence of illness-related PTSD (Synthesis of Table 2.1)

This section focuses on studies that indexed the incidence of PTSD in adults with life-threatening illnesses. Studies were identified through an initial electronic search of relevant database from World of Science, PsycINFO and MEDLINE, using 'posttraumatic and illness/disease', 'posttraumatic and cardiac', 'posttraumatic and vascular', 'posttraumatic and HIV', 'posttraumatic and cancer', and 'posttraumatic and stroke' followed by manual searches through abstracts and revealed references.

Two useful reviews on illness-related PTSD have been published. Kangas, Henry, and Bryand (2002) published a review on PTSD and cancer. Rather than repeating the data presented in that review, the present review (see Table 2.1) is limited to post-cancer PTSD studies published after 2000. Tedstone and Tarrier (2003) published a review on PTSD and illnesses other than cancer. For the same reason, Table 2.1 includes only studies published after 2002 for non-cancer related diseases. The synthesis of Table 2.1, however, also includes all the papers reviewed in these two sources.
Table 2.1 summarises the studies in terms of their design, sample, assessments, the incidence of PTSD and its symptoms if specified.
Table 2.1
The incidence of PTSD following life-threatening illness

<table>
<thead>
<tr>
<th>Life-threatening illness</th>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>The incidence of PTSD</th>
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<tr>
<td><strong>Cancer</strong></td>
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<tr>
<td>Breast Cancer</td>
<td>Mundy et al. (2000)</td>
<td>Longitudinal, postal questionnaire and in-person interview. T1: 46 months after diagnosis; T2: 3 months after last treatment; T3: 6 months after last treatment; T4: 12 months after last treatment.</td>
<td>N=37 (100% females). Age=46.75 (S.D.=7.4).</td>
<td>SCID, POMS.</td>
<td>0% of current cancer-related PTSD. 35.1% of PTSD rate over the course of patients' experience with breast cancer.</td>
</tr>
<tr>
<td>Head and Neck Cancer and Lung Cancer</td>
<td>Kangas et al. (2005a, 2005c)</td>
<td>Longitudinal, self-report questionnaires at time 1. Telephone interview in the follow up. T1: within 1 month postdiagnosis; T2: 6 months postdiagnosis.</td>
<td>N=82 (74% males). Age=60.1 (S.D. =12.2). Range=24-84.</td>
<td>SCID, ASDI, PTCI, PDEQ, EORTC QLQ-C30, MINI-MAC, BDI-II, STAI-Y, Duke-SS.</td>
<td>28% had acute stress disorder (ASD); 22% met Full criteria for PTSD. 16% had subclinical PTSD.</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>Kangas et al. (2005b)</td>
<td>A follow up of their studies of 2005b and 2005d. T3: 12 months postdiagnosis. Telephone interview.</td>
<td>Same group of people.</td>
<td>CAPS, SCID.</td>
<td>Full PTSD=14%. Subclinical PTSD= 4%.</td>
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<tr>
<th>Life-threatening illness</th>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>The incidence of PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer</strong></td>
<td>Turner et al. (2005) <em>Breast Cancer</em></td>
<td>Cross-sectional, self-report questionnaires and semi-structured Interview. Within 6 months postdiagnosis.</td>
<td>N=66 (100% females). Age=54.7 (S.D. =13.5).</td>
<td>IES, HADS, CARESF, Memorial Symptom Assessment Scale.</td>
<td>PTSD incidence not specified. IES intrusion=7.62 for younger women (&lt;55) and 4.48 for older women (&gt;55). IES avoidance=7.5 for younger women and 4.71 for older women.</td>
</tr>
<tr>
<td><strong>Cardiac disease - Myocardial Infarction (MI)</strong></td>
<td>Ginzburg (2004; 2006; 2002; 2003)</td>
<td>Prospective longitudinal self-report questionnaires. T1: within 1 week of the MI; T2: 7 months later. PTSD was assessed at T2.</td>
<td>N=116 MI patients (81% males). Age range 30-70. 72 healthy matched controls.</td>
<td>PTSD Inventory, SASRQ, TMAS, SFHS.</td>
<td>Full PTSD= 16%; 28% had subclinical PTSD.</td>
</tr>
<tr>
<td></td>
<td>Bennett et al. (2002)</td>
<td>Prospective longitudinal self-report questionnaires. T1: in hospital; T2: 3 months later.</td>
<td>N=89 (76% males). Age not specified.</td>
<td>PDS (was assessed at T2 only), IES, CAQ, DUKE-SSQ, HADS, TAS, PANAS.</td>
<td>At T2: 16% had PDS scores &gt;23. Re-experience=2.52 (S.D. = 2.90); avoidance=3.81 (S.D. =4.62); arousal = 3.95 (S.D.=3.89).</td>
</tr>
<tr>
<td></td>
<td>Pedersen et al. (2003)</td>
<td>Cross-sectional, postal questionnaire. Consecutive admissions. T1: 4-6 weeks post MI.</td>
<td>N=112 who had first MI (70% males). Age=60 (S.D. =9.7). Range=40-79. Control group N= 115.</td>
<td>PDS, Clinical variables, The Trauma Symptom Checklist, EPQ-S. Control group also filled PDS.</td>
<td>22% of patients, 7% of the controls had PTSD. For patients, intrusion = 2.46 (S.D.=2.5), avoidance=2.09 (S.D. =2.18), arousal=2.33 (S.D. =2.14).</td>
</tr>
<tr>
<td></td>
<td>Shemesh et al. (2006)</td>
<td>Longitudinal self-report questionnaires. T1: 6-9 months after MI; T2: 6 months later.</td>
<td>N=65 (90% males). Age = 58 (S.D.=9).</td>
<td>IES, PDS, SCID, BDI.</td>
<td>22% met the PTSD questionnaire screening threshold criterion at baseline. T2 was to examine the effect of education and CBT treatment on PTSD. So the incidence at T2 is not listed here.</td>
</tr>
</tbody>
</table>

(continued on next page)
Table 2.1 continued

<table>
<thead>
<tr>
<th>Life-threatening illness</th>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>The incidence of PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac disease - Cardiac Arrest (CA)</strong></td>
<td>Gamper et al. (2004)</td>
<td>Prospective, cross-sectional. Postal questionnaires. T= 45 months (range:24-66) following the cardiac arrest.</td>
<td>N=143 patients (66% males) who had CA and discharged with favourable neurological functions. Age=55. Range = 43-67.</td>
<td>DTS, a questionnaire cover eight topics of quality of life.</td>
<td>27% fulfilled the criteria for PTSD.</td>
</tr>
<tr>
<td>O'Reilly et al. (2004)</td>
<td>Cross-sectional, self-reported questionnaires and in-person interviews. T= 9.6 months following the event.</td>
<td>N=27 who had CA outside of the hospital and had successful resuscitation (81% males). Age=59.7 (S.D.=10.1). Controls: N=27 who had first-time MI but NOT CA (89% males). Age=58.2 (S.D.=9.8).</td>
<td>PDS, SCID, HADS.</td>
<td>19% CA patients and 7% MI patients had full PTSD, 15% CA and 7% MI had subclinical PTSD. CA patients: intrusion =1.4 (S.D.=1.7), avoidance = 1.8 (S.D.=2.6), arousal = 2.2 (S.D.=1.7). MI: intrusion=1.1 (S.D.=1.6), avoidance = 1.5 (S.D.=1.7), arousal = 1.7 (S.D.=1.4).</td>
<td></td>
</tr>
<tr>
<td><strong>Virus (HIV)</strong></td>
<td>Smith et al. (2002)</td>
<td>Longitudinal, self-report questionnaires. T1: Baseline; T2: 1 month later; T3: 6 months post T1. <strong>PTSD was assessed at T2.</strong></td>
<td>N=145 (57% males). Age not specified.</td>
<td>PCL-C, SLE, MHI, BPI, MOS SF-12.</td>
<td>53.8% merited a PTSD diagnosis. Re-experience=3.31 (S.D.=1.36), avoidance = 5.08 (S.D.=1.3), arousal=3.92 (S.D.=0.98).</td>
</tr>
</tbody>
</table>

(continued on next page)
### Table 2.1 continued

<table>
<thead>
<tr>
<th>Life-threatening illness</th>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>The incidence of PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severe Acute Respiratory Syndrome (SARS)</strong></td>
<td>Wu et al. (2005)</td>
<td>Longitudinal, postal questionnaires. T1: 1 months after discharge from the hospital; T2: 3 months later.</td>
<td>N=131 (44% males). Age=41.82 (range 18-84, S.D.=14.01). Response rate=28%.</td>
<td>IES-R Chinese version, HADS Chinese version, SaO₂.</td>
<td>4% and 5% at T1 and T2 respectively, had all 3 IES-R subscale scores above the cutoffs. At T1: Intrusion=1.12 (S.D.=0.73), arousal =1.05 (S.D.=0.79). At T2: Intrusion = 0.91 (S.D.=0.73), arousal= 0.85 (S.D.=0.74).</td>
</tr>
<tr>
<td><strong>Stroke and MI</strong></td>
<td>Sheldrick et al. (2006)</td>
<td>Longitudinal, self-report questionnaires and postal questionnaires. T1: within 2 weeks of admission; T2: 6 weeks after admission; T3: 3 months after.</td>
<td>N=27 subarachnoid haemorrhage (SAH) patients; N=17 MI patients. Age and gender not specified.</td>
<td>DTS; IPQ-R.</td>
<td>For SAH sample: 18.4% at T1; 35.5% at T2 and 18.5% at T3. For MI sample: 13.3% PTSD caseness at T1; 23.8% at T2 and 11.8% at T3.</td>
</tr>
</tbody>
</table>

**Abbreviations:**

- AECOM-CSQ = Albert Einstein College of Medicine Coping Styles Questionnaire
- ASDI = The Acute Stress Disorder Interview
- BDI = The Beck Depression Inventory
- BDI-II = The Beck Depression Inventory-Second Edition
- BHS = Beck Hopelessness Scale
- BPI = Brief Pain Inventory
- CAPS = Clinical Administered PTSD scale
- CAQ = Cognitive Appraisal Questionnaire
- CARES-SF = Cancer Rehabilitation Evaluation System-Short Form
- CIDI = The Composite International Diagnostic Interview-Second Version
- DTS = Davidson Trauma Scale
- Duke-SS = The Duke-UNC Functional Social Support Scale
- DUKE-SSQ = The Duke Social Support Questionnaire
- EPQ-S = Eysenck Personality Questionnaire-short version
- EORTC QLQ-C30 = The European Organization for Research and Treatment of Cancer-Core Questionnaire
- GSI = Global Severity Index
- HADS = The Hospital Anxiety and Depression Questionnaire
- IES = Impact of Event Scale
- IES-R = Impact of Event Scale-Revised
- IPQ-R = Illness Perception Questionnaire-Revised
- LSC-R = The Life Stressor Checklist-Revised
- Mini-MAC = Mini-Mental Adjustment to Cancer Scale
- MHI = The Mental Health Inventory
- MOS SF-12 = Medical Outcomes
Chapter 2

PTSD Following Stroke and Its Dispositional Predictors

Study Short-Form 12 Item; NEO-FFI = NEO-Five Factor Inventory; NIHSS = National Institute of Health Stroke Scale; PANAS = Positive and Negative Affect Schedule; PCL-C = PTSD Checklist-Civilian Version; PDEQ = The Peritraumatic Dissociative Experiences Questionnaire; PDS = Post-traumatic Diagnostic Scale; POMS = The Profile of Mood States; PTCI = The Posttraumatic Cognitions Inventory; RAVLT = Rey Auditory Verbal Learning Test; SaO2 = Blood Oxygen Saturation; SASRQ = Stanford Acute Stress Reaction Questionnaire; SCID = Structured Clinical Interview for DSM-IV; SCL-90 = Symptom Check List-90; SFHS = Short Form Health Survey; SLE = The Stressful Life Experiences Screening Long Form; SOC-S = Sense of Coherence Scale; SSQ-S = Social Support Questionnaire-Short Version; STAI-Y = The State-Trait Anxiety Inventory-Form Y; TAS = Toronto Alexithymia Scale; TEQ = Trauma Experience Questionnaire; TMAS = Taylor Manifest Anxiety Scale; WHOQOL-Bref = World Health Organization Quality of Life Assessment; Z-SDS = Zung Self-Rating Depression Scale; Z-SAS = Zung Self-Rating Anxiety Scale.
The incidence of illness-related PTSD varies not only across diseases but also within diseases. Across diseases, PTSD incidence ranged from 0% following Myocardial Infarction (MI) (Van Driel & Op den Velde, 1995) and bone marrow transplantation for breast cancer (Mundy et al., 2000) to 64% (Full PTSO) in HIV patients (Safren et al., 2003). Within diseases, for example, the incidence of HIV ranged from 30% (Full PTSO) (Kelly et al., 1998) to 64% (Full PTSO) (Safren et al., 2003). What are the reasons for the discrepancy in the incidence of illness-related PTSD across diseases and within diseases? Firstly, the different types and severity of diseases could account for the differences. For example, in terms of across diseases, the incidence of PTSD following cancer is different from that of SARS (see Table 2.2). In terms of within diseases, such as cardiac disease, the disease severity can influence the PTSD incidence (Stoll et al., 2000). Secondly, the variety in study designs and use of PTSD measures may also explain the discrepancy in PTSD incidence. For example, using a diagnostic interview - SCID with 18 patients 22 to 26 months following MI, Van Driel and Op den Velde (1995) produced the lowest incidence in MI-PTSD literature. Using similar methodology, Mundy and his colleagues (2000) reported the lowest incidence of PTSD in cancer patients. In Safren et al.'s cross-sectional study (2003), they employed a self-report questionnaire - PDS (Foa, Cashman, Jaycox, & Perry, 1997) (refer to Table 2.1 or 2.3 for the full name of the instruments) to measure PTSD in HIV patients, and reported the highest incidence of illness-related PTSD to date. This high rate may be, at least in part, an artefact of the self-report questionnaire methodology they used. Methodological issues are discussed in section 2.4.3.

Studies on cardiac illness reported higher incidence of avoidance symptoms or higher mean scores for avoidance symptoms than that of intrusion symptoms (Bennett & Brooke, 1999; Bennett, Conway, Clatworthy, Brooke, & Owen, 2001; Bennett, Owen, Koutsakis, & Bisson, 2002; Shemesh et al., 2001). However, Kimerling et al.'s (1999) study with HIV patients, which was longitudinal and used in-person interviews, identified
that intrusion was more severe than avoidance symptoms 2.8 years post-HIV diagnosis. It is possible that the diagnosis of HIV is perceived as being more life-threatening and therefore may trigger more intrusive thoughts, or MI patients may avoid exertion or exposure to stress for fear of provoking a recurrence, thus their avoidance symptoms may become more prevalent (Tedstone & Tarrier, 2003).

Semi and colleagues (Semi, Tarrier, O'Neill, Burns, & Faragher, 1998) conducted the first preliminary study on PTSD and stroke with 61 patients. They reported a 9.8% incidence of PTSD following stroke based upon self-report measures and a structured clinical interview. A more recent study on non-severe stroke patients from a more clinical perspective by Bruggimann et al. (2006) revealed that 15 (31%) out of 49 patients scored above the cut-off score of PTSD on the IES (IES>30). Details of studies on post-stroke PTSD will be discussed in section 2.5.

Conclusion

Although the PTSD incidence varied across different studies on different illnesses, it seems safe to conclude that life threatening illness can precipitate PTSD just like other traumatic stressors. Table 2.2 summarises the median of Full PTSD incidence cited in the literatures of PTSD and medical illnesses to date.

Table 2.2
Median of Full PTSD incidence following life-threatening illness

<table>
<thead>
<tr>
<th>Illnesses</th>
<th>No. of Studies</th>
<th>Range of Incidence</th>
<th>Median of Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>17</td>
<td>0% - 32%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>15</td>
<td>0% - 38%</td>
<td>16%</td>
</tr>
<tr>
<td>HIV</td>
<td>5</td>
<td>30% - 64%</td>
<td>42%</td>
</tr>
<tr>
<td>SARS</td>
<td>2</td>
<td>4.9% - 9.79%</td>
<td>6.90%</td>
</tr>
<tr>
<td>Stroke</td>
<td>4</td>
<td>9.8% - 35.5%</td>
<td>31.5%</td>
</tr>
</tbody>
</table>

Note: The baseline incidence was used with longitudinal studies.
However, the variation in incidence has raised an important point that not every individual will develop PTSD following a life threatening illness. Some factors might predispose individuals to the development of medically-related PTSD. In response to this question, researchers began to investigate risk factors of illness-related PTSD.

2.4.2 Time course and risk factors of PTSD, co-morbidity and its predictors following life-threatening illnesses (Synthesis of Table 2.3)

Table 2.3 summarises studies to date that have indexed the following topics in adults with life-threatening illnesses: (a) time course of PTSD; (b) co-morbidity with PTSD; c) predictors of PTSD and/or its symptoms, and (d) predictors of co-morbidity. For all non-cancer diseases this review starts from 1994, and for cancer from 1996. These dates were selected in part to reduce the size of the table, and because life-threatening illness was recognised as a stressor for PTSD only after 1994 (APA, 1994).
### Table 2.3

Time course, predictors of PTSD, co-morbidity and its predictors following life-threatening illnesses

<table>
<thead>
<tr>
<th>Life-threatening disease and study</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>Co-morbidity</th>
<th>Time Course</th>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer</strong></td>
<td>Prospective, postal questionnaires. T1 = 1 day presurgery.</td>
<td>N=106 (100% females). Age=50. Range=30-70.</td>
<td>IES, GHQ-28, CGI, Life-Event Inventory, Self-report questionnaire on social support.</td>
<td>38.7% had psychosocial problems according to the GHQ-28. GHQ-case score was significantly correlated with acute intrusion score.</td>
<td>-</td>
<td>1. High intrusive scores were significantly associated with: younger age and marital status (married women have higher intrusion compared to single women). 2. Those had experienced 'a serious illness/accident/hospitalisation last year' had more avoidant symptoms.</td>
<td>-</td>
</tr>
<tr>
<td>Tjemsland et al. (1996a)</td>
<td>Breast Cancer</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Breast Cancer</strong></td>
<td>6 week follow up to Tjemsland et al.'s (1996a) study. Self-report questionnaires and in-person interview. T2 = 6 weeks after surgery.</td>
<td>N=106 (100% females) early stage operable breast cancer patients.</td>
<td>IES, GHQ-28, CGI, MADRS, SESSsv.</td>
<td>24% had psychosocial problems according to GHQ-28. IES scores significantly declined at T2. Significant reduction for co-morbidity anxiety as well as for depression. Social dysfunction and somatisation did not change over time.</td>
<td>-</td>
<td>High Intrusive symptoms positively correlated with: 1. Pre-morbid health Problems; 2. Prior stressful life event one year prior to the surgery. The more health problems they had before, the less change of intrusive scores they have from pre- to post-surgery.</td>
<td>-</td>
</tr>
<tr>
<td>Tjemsland et al. (1996b)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Life-threatening disease</td>
<td>Design</td>
<td>Sample</td>
<td>Assessment</td>
<td>Co-morbidity</td>
<td>Time Course</td>
<td>Predictors of PTSD</td>
<td>Predictors of Co-morbidity</td>
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<tr>
<td><strong>Cancer</strong></td>
<td>12-month follow up to Tjemsland et al.'s (1996). Self-report questionnaires and in-person interview. T3= 12 months after surgery.</td>
<td>N=106 (100% females) early stage operable breast cancer patients.</td>
<td>IES, GHQ -28, CGI, MADRS, SESSv.</td>
<td>-</td>
<td>Significant decline in IES scores from T2 to T3.</td>
<td>Severity of PTSD symptoms was related with: 1. Pre-morbid health problems; 2. Impairment in psychosocial functioning (work, family etc); 3. Previous stressful life events; 4. High emotionality.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Breast Cancer</strong></td>
<td>Prospective, in-person interview. T1= 12 weeks postdiagnosis.</td>
<td>N=139 newly diagnosed patients with mixed GI (49% males). Age=67.</td>
<td>IES, RDCQ, HADS, EORTC QLQ-C30, MAC.</td>
<td>Anxiety, depression.</td>
<td>-</td>
<td>Females have greater avoidance symptoms than males.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Gastrointestinal Cancer (GI)</strong></td>
<td>Longitudinal study follow up to Nordin and Glimelius (1997). In-person interview. T2=3 month follow up; T3=6 month; T4=12 month.</td>
<td>N=139 newly diagnosed patients with mixed GI. Age=67.</td>
<td>IES, RDCQ, HADS, EORTC QLQ-C30, MAC.</td>
<td>Anxiety, depression, worse emotional functioning and global health.</td>
<td>No changes in mean HADS anxiety or depression over time.</td>
<td>The high ‘Fighting Sprit’ coping was associated with less anxiety and depression; ‘Hopeless/Helpless’ and ‘Anxious Preoccupation’ coping was associated with higher anxiety and depression.</td>
<td>-</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Life-threatening disease</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>Co-morbidity</th>
<th>Time Course</th>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>Cross-sectional telephone interview, T=37.3 months post-treatment. Range= 6-71 months.</td>
<td>N=82 females with early-middle stage breast cancer. Age=56.6 (S.D.=10.51), Range=37-85.</td>
<td>PCL-C, DUKE-SSQ.</td>
<td>-</td>
<td>-</td>
<td>The PCL-C total scores were significantly associated with: 1. More advance disease stage at diagnosis 2. Number of pre-cancer traumatic stressors 3. Poorer social support 4. Shorter time since treatment completion.</td>
<td>-</td>
</tr>
<tr>
<td>Breast Cancer</td>
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</tr>
<tr>
<td>Andrykowski and Cordova (1998)</td>
<td>Cross-sectional, in-person interviews. T1= 46.6 months postdiagnosis.</td>
<td>N=130 heterogeneous cancer patients (26% males). Two subgroups: (1) N= 65 depressed. Age=54 (S.D.=13.3), Range=24-81. (2) N= 65 non-depressed. Age and gender not specified.</td>
<td>IES, SCID, Posttraumatic Stress Scale-interview version, HADS, MAC, Life Events and Memories Interview.</td>
<td>-</td>
<td>-</td>
<td>Greater numbers of intrusive memories were associated with: Coping style such as: anxious preoccupation, and helplessness/hopelessness and cognitive avoidance.</td>
<td>-</td>
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</tbody>
</table>

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### Table 2.3 continued

<table>
<thead>
<tr>
<th>Life-threatening Disease</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>Co-morbidity</th>
<th>Time Course</th>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer</strong>&lt;br&gt;Brewin et al. (1998b)&lt;br&gt;6-month follow up to Brewin et al.'s (1998a). Telephone interview. T2= 6 month follow up.</td>
<td></td>
<td>N=100 heterogeneous cancer patients. Age and gender not specified. Two subgroups: (1) N= 43 depressed. (2) N= 57 non depressed.</td>
<td>IES, HADS, Life Events and Memories Interview, Autobiographical Memory Test.</td>
<td>-</td>
<td>Total IES scores, intrusion and avoidance subscale scores did not change significantly over time. Levels of anxiety and depression remained constantly over time.</td>
<td>High intrusion was associated with greater depression.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Breast Cancer</strong>&lt;br&gt;Jacobsen et al. (1998)&lt;br&gt;Cross-sectional, postal questionnaires.</td>
<td>N=43 females with middle-advanced stage breast cancer. Age= 44.39 (S.D. =5.64). Range= 32-57. T=19.4 months post-bone transplant.</td>
<td>PCL-C, SF-36 Health Survey, PSQI.</td>
<td>Co-morbid poorer mental health, poorer physical health and sleep quality.</td>
<td>-</td>
<td>The PCL-C total scores were significantly associated with: 1. Less education; 2. More advanced disease at treatment; 3. Longer stays in hospital.</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Life-threatening disease</th>
<th>Design</th>
<th>Sample</th>
<th>Assessment</th>
<th>Co-morbidity</th>
<th>Time Course</th>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>Cross-sectional, postal questionnaires. T=17 months post-diagnosis. All patients treated within the past 2 years.</td>
<td>N=178 (100% males). Age=67. Range=48-84.</td>
<td>IES, MHI-5, CARES.</td>
<td>Poor mental health.</td>
<td>-</td>
<td>1. Intrusive thoughts were negatively related with men who felt socially constrained in talking about their cancer than those who felt unconstrained. 2. Socially constrained patients were more likely to have avoidance symptoms.</td>
<td>Poor mental health was associated with high level of constraints from family or friends.</td>
</tr>
<tr>
<td>Breast Cancer</td>
<td>Cross-sectional, self-report baseline data for patients in a psychotherapy study.</td>
<td>N=125 (100% females). Age=53 (S.D.=10.7). Range=30-80.</td>
<td>IES, The short-form of the Life Events Questionnaire, PES, AES, ESNS.</td>
<td>-</td>
<td>-</td>
<td>High intrusions were associated with: 1. More stressful past life events; 2. Greater current levels of aversive emotional support.</td>
<td>-</td>
</tr>
<tr>
<td>Cancer</td>
<td>Cross-sectional, telephone interviews.</td>
<td>N=111 heterogeneous cancer patients (51% males). T=4 years post-bone marrow transplant. Range=0.55-11.5 years.</td>
<td>PCL-C, IES, BSI, MOS, SF-36.</td>
<td>Low physical role and social functioning, distress and anxiety.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Life-threatening disease</td>
<td>Design</td>
<td>Sample</td>
<td>Assessment</td>
<td>Co-morbidity</td>
<td>Time Course</td>
<td>Predictors of PTSD</td>
<td>Predictors of Co-morbidity</td>
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<tr>
<td>Cancer</td>
<td>Longitudinal, postal questionnaires. T1= 84% of sample at least 6 months post-initial diagnosis and 16% recent disease recurrence. T2=3-month follow up.</td>
<td>N=129 heterogeneous sample of married cancer patients (33% males). Age not specified.</td>
<td>IES, 8-item scale to measure physical avoidance of the patient, MHI, Perceived Spouse Avoidance Scale.</td>
<td>Co-morbid psychological distress.</td>
<td>Intrusive thought and psychological distress remained stable over time.</td>
<td>Intrusive thoughts were significantly correlated with more spouse avoidance at both T1 and T2.</td>
<td>Spouse criticism and spouse avoidance had a moderating effect on the relation between intrusive thoughts and psychological distress.</td>
</tr>
<tr>
<td>Epping-Jordan et al. (1999) Breast Cancer</td>
<td>Prospective, longitudinal, in-person or telephone interview.</td>
<td>N=80 (100% females) with newly diagnosed mixed stage breast cancer. T1=10.1 days (1-43 days) post diagnosis; T2=3 months post diagnosis; T3=6 months post diagnosis.</td>
<td>IES, LOT, MBSS, CSI, SCL-90R.</td>
<td>Anxiety and depression.</td>
<td>Intrusive thoughts declined over time. However, avoidance remained stable.</td>
<td>-</td>
<td>At both T1 and T3, higher levels of anxiety/depression were predicted by lower dispositional optimism, less problem-focused coping, and greater emotional-focused disengagement.</td>
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Table 2.3 continued

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<tbody>
<tr>
<td>Cancer</td>
<td>Longitudinal telephone interview. T1 = 29.8 months post-treatment; T2 = 12 months follow up.</td>
<td>N=46 with early-middle stage breast cancer. Age=56.4 (S.D.=9.7). Range=40-84.</td>
<td>PCL-C, DUKE-SSQ.</td>
<td>-</td>
<td>Group means for PCLC total and subscale scores were stable over time, although many patients had large (&gt;0.05 S.D.) increases or decline in subscale scores.</td>
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<td>Andrykowski et al. (2000)</td>
<td>Breast Cancer</td>
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<tr>
<td>Bleicker et al. (2000)</td>
<td>Longitudinal, self-report questionnaires. T1=2 months postbreast surgery; T2=19 month follow up.</td>
<td>T1: N=244 females with mixed stage breast cancer. Age=51.9 (S.D.=10.5). T2: N=200.</td>
<td>T1: IES, HRSRRS-Dutch version, SCL-90, SEC, SAQ-N.</td>
<td>Co-morbid depression and sleep problems with intrusion at T2.</td>
<td>Almost 60% of the patients who had high intrusion scores at T1 also scored highly at T2.</td>
<td>Trait anxiety, health complaints and sleep problems at T1 were predictive of high intrusive symptoms at T2.</td>
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<td>Breast Cancer</td>
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<td>Mundy et al. (2000)</td>
<td>Longitudinal, postal questionnaire and in-person interview. T1: 46 months after diagnosis; T2: 3 months after last treatment (LT); T3: 6 months after LT; T4: 12 months after LT.</td>
<td>N=37(100% females). Age=46.75 (S.D.=7.4).</td>
<td>SCID, POMS.</td>
<td>Major depressive disorder (19%) and generalised anxiety disorder (6%).</td>
<td>PTSD declined from T1 to T2, but remained relatively stable from T2 to T3.</td>
<td>A pre-cancer diagnosis of PTSD predicts development of PTSD following the cancer diagnosis.</td>
<td>A pre-cancer diagnosis of PTSD and previous depression predict development of depressive symptoms over the cancer diagnosis and treatment.</td>
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<tr>
<td>Cancer</td>
<td>Cross-sectional, telephone and postal questionnaires.</td>
<td>N=102 patients underwent BMT (79% females). Age=45.02 (S.D.=10.65). T= 20.42 months post-bone marrow transplant (BMT).</td>
<td>SCID-DSM-IV, PCL-C, Brief COPE, ISEL, SCS, Subjective Trauma Experiences Questionnaire.</td>
<td>-</td>
<td>-</td>
<td>The PCL-C total scores were associated with: 1. Negative appraisals of the BMT 2. Avoidant coping style 3. Low levels of social support 4. Greater social constraint.</td>
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<td>Widows et al. (2000)</td>
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<td>Heterogeneous Cancer</td>
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<tr>
<td>Black, and White (2005)</td>
<td>Cross-sectional, self-report questionnaires.</td>
<td>N=44 (50% males). Age not specified.</td>
<td>PCL-C, IES-R, Fear of recurrence Questionnaire, Fear of Relapse/Recurrence Scale, SOC-S.</td>
<td>-</td>
<td>-</td>
<td>PTSD symptoms were significantly correlated with sense of coherence and fear of recurrence.</td>
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<tr>
<td>Haematological Cancer</td>
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<tr>
<td><strong>Cancer</strong></td>
<td>Kangas et al. (2005a; 2005c)</td>
<td><strong>Head and Neck Cancer</strong></td>
<td>Longitudinal, self-report questionnaires at T1 (1 month post-diagnosis). Telephone interview at T2 (6 months post-diagnosis).</td>
<td>N=82 (74% males). Age=60.1 (S.D. =12.2). Range=24-84.</td>
<td>SCID, ASDI, PTCI, PDEQ, EORTC QLQ-C30, MINI-MAC, BDI-II, STAI-Y, Duke-SS.</td>
<td>-</td>
<td>Emotional numbing, a sense of re-living the cancer, and motor restlessness at T1 significantly predicted PTSD at T2.</td>
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<tr>
<td><strong>Lung Cancer</strong></td>
<td>Kangas et al. (2005b)</td>
<td><strong>Head and Neck Cancer</strong> and <strong>Lung Cancer</strong></td>
<td>A follow up of their studies of 2005b and 2005d. T3: 12 months post-diagnosis. Telephone interview.</td>
<td>Same group of people.</td>
<td>CAPS, SCID.</td>
<td>Anxiety (22% at T1, 33% at T2 and 20% at T3). Major depressive disorder (29% at T1, 22% at T2 and 20% at T3). Substance use disorders (2% at T1).</td>
<td>PTSD rates decline between T2 and T3. Anxiety disorder, depression and substance use disorders also dropped between T2 and T3.</td>
</tr>
<tr>
<td><strong>Breast Cancer</strong></td>
<td>Turner et al. (2005)</td>
<td><strong>Breast Cancer</strong></td>
<td>Cross-sectional, self-report questionnaires and semi-structured interview. Within 6 months post-diagnosis.</td>
<td>N=66 (100% females). Age=54.7 (S.D. =13.5). Inclusion = 90%.</td>
<td>IES, HADS, CARES-SF, Memorial Symptom Assessment Scale.</td>
<td>Depression and anxiety (56.7% younger women had caseness, while 34.5% for older women).</td>
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<tr>
<td><strong>Cardiac disease - Myocardial Infarction (MI) and Coronary Artery Bypass (CABG) Surgery</strong></td>
<td>Doerfler et al. (1994)</td>
<td>Cross-sectional, postal questionnaires. Consecutive admissions. T= 6-12 months post-incident.</td>
<td>N=27 men with MI and N=23 with CABG (100% males). Age: MI=59.1, range=34-79. CABG=62.5, range=44-76.</td>
<td>DSM-III-R criteria, Reaction Index, IES, IDD, TAI, TAS^2, SCL-90, SAS.</td>
<td>A small number of people reported depression, generalised anxiety and anger.</td>
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Table 2.3 continued

| Cardiac disease - MI | Kutz et al. (1994) | Retrospective in-person interview/questionnaires. Consecutive admissions. | N=100 (88% males). Age range 30-70. | Adaptation of PTSD Inventory, functional rehabilitation, socioeconomic factors, previous traumatic life events, subjective experience during MI. | 1. Avoidance of social encounters 2. Fear of being alone. | 1. Asian or African descent subjects had a higher incidence of PTSD than American/Europe descents; 2. Prior MI, cardiac hospitalisation and prior PTSD were associated with PTSD; 3. Anticipation of disability post MI was related to higher score in PTSD; 4. Prior life-threatening illness and MI severity were NOT significantly correlated with PTSD. |

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<tr>
<td><strong>Cardiac disease - MI</strong></td>
<td>Longitudinal, in-person interviews. T1: 1 or 2 weeks after hospital admission. T2: 22 to 26 months.</td>
<td>N=23 (61% males). Males, mean age=60. Range=37-81. Females, mean age =65. Range =53-78.</td>
<td>T1=SCID-R-PTSD, life history, social situation, trauma history, subjective perception of MI. T2=SCID-R-PTSD, current health, subjective perception of MI.</td>
<td>Anxiety and depression in the first year post MI.</td>
<td>-</td>
<td>Patients who were not aware that they were having an MI at the time showed better psychological adjustment.</td>
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<td>Van Driel et al. (1995)</td>
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<tr>
<td><strong>Cardiac disease - MI</strong> Bennett et al. (2001)</td>
<td>Longitudinal, postal questionnaires. T1: 2 or 3 days post-MI; T2: 3 months later.</td>
<td>N=70 with a first MI (74% males). Mean age=59.7 (S.D.=9.89).</td>
<td>IES, PDS (at T2 only), GMS, CAQ.</td>
<td>-</td>
<td>1. GMS and IES did not change significantly over time 2. However, less static process maybe involved by variation in individual scores.</td>
<td>1. Low scores on the GSM predicted IES intrusion at T2; 2. Negative affect at T1 predicted PDS arousal and avoidance scores; 3. Degree of fright at the time of the event predicted both PDS re-experience scores and IES intrusion at T2.</td>
<td>-</td>
</tr>
<tr>
<td>Shemesh et al. (2001)</td>
<td>Longitudinal, in-person self-report questionnaires. T1: discharge from hospitals; T2: 6 months—1 year. Follow up NOT on PTSD, on adherence and medical outcome.</td>
<td>N=102 (79% males). Mean age=61.3 (S.D.=11.2).</td>
<td>IES, SCL-90-R, adherence to medication (pill count), and a medical outcome measure (existence of serious adverse events).</td>
<td>PTSD symptoms were associated with non-adherence to medication.</td>
<td>-</td>
<td>A non-significant negative relationship was found between PTSD symptoms and serious adverse events.</td>
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<tr>
<td>Bennett et al. (2002)</td>
<td>Prospective longitudinal self-report questionnaires. T1: in hospital; T2: 3 months later.</td>
<td>N=89 (76% males). Age and Inclusion rates not specified.</td>
<td>PDS (was assessed at T2 only), IES, CAQ, DUKE-SSQ, HADS, TAS, PANAS.</td>
<td>Depression and generalised anxiety symptoms over time.</td>
<td>A reduction of intrusion and anxiety symptoms over time.</td>
<td>PTSD symptoms were significantly associated with negative affect, lack of social support, dissociation, fright and surprise at MI.</td>
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<tr>
<td><strong>Cardiac disease - MI</strong></td>
<td>Prospective longitudinal self-report questionnaires. T1: within 1 week of the MI; T2: 7 months later. PTSD was assessed at T2.</td>
<td>N=116 MI patients (81% males). Age range 30-70. Inclusion=80%; 72 healthy matched controls.</td>
<td>PTSD Inventory, SASRQ, TMAS, SFHS.</td>
<td>Compared with No PTSD group, PTSD group had: 1. more severe anxiety and depression; 2. worse mental health; 3. worse perceived emotional role and general health; 4. more somatic complaints; 5. poor level of social functioning.</td>
<td>-</td>
<td>Predictors of PTSD symptoms severity were: 1. Subjective perception of threat; 2. Perceived severity of MI; 3. Non-repressive coping style.</td>
<td>Co-morbid depression at T2 was predicted by: 1. depression at T1; 2. Stress reactions at T1; 3. Higher levels of adjustment difficulties.</td>
</tr>
<tr>
<td><strong>Pedersen et al.</strong> (2003)</td>
<td>Cross-sectional, postal questionnaire. Consecutive admissions. T1: 4-6 weeks post MI.</td>
<td>N=112 with first MI (70% males). Age=60 (S.D.=9.7). Range=40-79. Control N=115.</td>
<td>PDS, Clinical variables, The Trauma Symptom Checklist, EPQ-S. Control group also filled PDS.</td>
<td>Anxiety and depression.</td>
<td>-</td>
<td>Anxiety, depression, neuroticism was associated with PTSD. Disease severity was NOT related to diagnosis of PTSD.</td>
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<tr>
<td>Cardiac disease - MI</td>
<td>A follow up of their study in 2003. Postal questionnaire. T2: 9 months post-MI.</td>
<td>N2=102 (69% males), Age=61 (S.D.=9.5).</td>
<td>PDS, Trauma Symptom Checklist, 24-Item Health Complaints Scale, CSS.</td>
<td>-</td>
<td>1. Patients improve in somatic and cognitive; 2. Intrusion and avoidance declined with time; 3. No significant change of arousal, anxiety and depression over time were found; 4. A decrease in the number of people with PTSD; 5. However, half of the patients who had PTSD at follow up also qualified for PTSD diagnosis at baseline.</td>
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<tr>
<td><strong>Cardiac disease – (CA) Cardiac Arrest</strong> Landwig et al. (1999)</td>
<td>Cross-sectional, telephone and postal questionnaires. Consecutive discharges.</td>
<td>N=21 patients (80% males) who had cardiac arrest outside of the hospital and had successful resuscitation. Age=55.5. Range=37-66.</td>
<td>Checklist for PTSD from DSM-IV and ICD-10, HADS, IES (German version), self-estimates of overall somatic and mental condition, medical records for information on arrest, Zerssen symptom list, if could recall event.</td>
<td>1. Those with PTSD have higher scores on depression and anxiety. 2. Those with PTSD are preoccupied with more somatic complaints than those without.</td>
<td>-</td>
<td>1. People with PTSD have more negative beliefs concerning future course of the disease. 2. Sedation at MI onset significantly reduced risk of PTSD.</td>
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<tr>
<td>Cardiac disease - Cardiac Arrest</td>
<td>Prospective, cross-sectional. Postal questionnaires. T= 45 months (range:24-66) following the cardiac arrest.</td>
<td>N=143 patients (66% males) who had CA. Age=55. Range =43-67.</td>
<td>DTS, a questionnaire cover eight topics of quality of life.</td>
<td>27% patients had co-morbid depression.</td>
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<td>Younger age was a risk factor for the development of PTSD.</td>
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<tr>
<td>O’Reilly et al. (2004)</td>
<td>Cross-sectional, self-reported questionnaires and in-person interviews. T= 9.6 months following the event.</td>
<td>N=27 patients (81% males) who had CA outside of the hospital and had successful resuscitation. Age=59.7 (S.D.=10.1). Control N =27 with first-time MI but NOT CA (89% males). Age=58.2 (S.D.=9.8).</td>
<td>PDS, SCID, HADS.</td>
<td>The HADS anxiety and depression fell within the normal range.</td>
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<td><strong>Cardiac disease – Cardiac Surgery</strong>&lt;br&gt;Stoll et al. (2000)</td>
<td>Cross-sectional, postal questionnaires.</td>
<td>N=80 following cardiac surgery (80% males). Age=63. Range=55-72. Control: N=80 major maxillofacial patients, N=80 healthy controls.</td>
<td>PTSS-10, SF-36, 20 different aspects of life satisfaction on a scale of 1-20.</td>
<td>Patients with PTSD reported significantly lower scores in SF-36, mental health, social function, vitality and emotional role function than those without PTSD.</td>
<td>-</td>
<td>PTSD scores could be predicted by: 1. Severity of disease; 2. Poorer health on admission.</td>
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<tr>
<td><strong>HIV</strong>&lt;br&gt;Kelly et al. (1998)</td>
<td>Cross-sectional, in-person interviews.</td>
<td>N=61 (100% males). Median age = 35. Range = 20-57. T = 47.8 months postdiagnosis. Range =4-96 months.</td>
<td>Modified PTSD module of DIS-III-R, (DSM-III-R), EPI, DSQ, LCB, LEI, Psychiatric history. Number of AIDS-related diagnoses.</td>
<td>Major depression 52.6%; Anxiety 33%; substance use disorder 75%.</td>
<td>-</td>
<td>PTSD diagnostic status (PTSD caseness / noncaseness) was associated with previous PTSD, previous mental health difficulties and neuroticism.</td>
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<td><strong>Kimerling et al. (1999)</strong></td>
<td>Prospective, in-person interviews and questionnaires. T = 2.8 years post-diagnosis.</td>
<td>N=67 African American women HIV positive. Age=30.4. (S.D.=5.1).</td>
<td>DSM-IV, The Life Stressor Checklist, IES-R.</td>
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<td>PTSD diagnosis related to poorer immune function.</td>
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<td><strong>HIV</strong></td>
<td>Cross-sectional, self-report questionnaires</td>
<td>N=41 (100% females). Age=41.8 (S.D.=9.6).</td>
<td>PCL-C, The Life Stressor Checklist-Revised, UCLA Measures of Social Support Questionnaire.</td>
<td>-</td>
<td>-</td>
<td>Level of PTSD (No, Partial, or Full) was significantly correlated with the total number of traumatic life events, and it was negatively correlated with social support subscales for friends.</td>
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<td>Martinez et al. (2002)</td>
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<td><strong>Safren et al. (2003)</strong></td>
<td>Cross-sectional, self-report questionnaires. Time not specified.</td>
<td>N= 75 (79% males). Age not specified.</td>
<td>PDS, Death Anxiety Questionnaire, BDI, BHS, SSQ-S.</td>
<td>Death anxiety, depression.</td>
<td>-</td>
<td>The PDS total severity scores were associated with depression, death anxiety and less satisfaction with social support.</td>
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<td><strong>SARS</strong></td>
<td>Cross-sectional, self-report questionnaires. Patients who were discharged from hospital before 1/7/03.</td>
<td>N=286 (47.2% males). Age=33.43 (range:15-64, S.D.=11.85).</td>
<td>Z-SDS, Z-SAS, CIDI-II, HADS.</td>
<td>Depression (16.4%) and anxiety (10.1%).</td>
<td>-</td>
<td>Younger age had more severe PTSD following SARS. Marital status was associated with the incidence of SARS-related PTSD: divorce, separate or widowed ones suffered more severe than married or single samples.</td>
<td>Depression and anxiety were associated with: 1. Severity of the event (i.e., family members also had SARS); 2. divorce, separate or widowed marital status.</td>
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<td>Yan et al. (2004)</td>
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<td>SARS</td>
<td>Longitudinal, postal questionnaires. T1: 1 months after discharge from the hospital; T2: 3 months later.</td>
<td>N=131 (44% males). Age=41.82 (range 18-84, S.D.=14.01). Response rate=28%.</td>
<td>IES-R Chinese version, HADS Chinese version, SaO₂.</td>
<td>Depression (18% at T1, 13% at T2), and anxiety (13% at T1, 14% at T2).</td>
<td>Intrusion, hyperarousal and HADS anxiety scores declined significantly at T2.</td>
<td>Psychiatric history, being a healthcare worker and knowing someone who had SARS were associated with the severity of PTSD. Disease severity (i.e., the level of SaO₂) and high level of perceived threat were predictors to IES-R scores.</td>
<td>Severity of the disease (i.e., the level of SaO₂) and high level of perceived threat were significant predictors to HADS scores.</td>
</tr>
<tr>
<td>Vascular Disease</td>
<td>Retrospective, in-person interviews and questionnaires.</td>
<td>N=30 who had variceal haemorrhage (70% males). Age=55.2 (S.D.=10.6).</td>
<td>SCID-DSM-III-R, IES, HADS.</td>
<td>One patient had co-morbid depression. Five had co-morbid anxiety.</td>
<td>-</td>
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<tr>
<td>Stroke - Subarachnoid haemorrhage (SAH)</td>
<td>Consecutive referrals, in-person interviews.</td>
<td>N=28 who had SAH (71.4% females). Age=44. Range=26-69. Time= 6 month post SAH.</td>
<td>Clinical Judgement according to DSM-III-R.</td>
<td>Anxiety.</td>
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<th>Life-threatening disease</th>
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<th>Sample</th>
<th>Assessment</th>
<th>Co-morbidity</th>
<th>Time Course</th>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
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<tr>
<td>Stroke - SAH and MI</td>
<td>Longitudinal, self-report questionnaires and postal questionnaires. T1: within 2 weeks of admission; T2: 6 weeks after admission; T3: 3 months after admission.</td>
<td>N=27 subarachnoid haemorrhage (SAH) patients; N=17 MI patients. Age and gender not specified.</td>
<td>DTS; IPQ-R.</td>
<td>-</td>
<td>55% of those (both groups) having PTSD caseness at T2 still diagnosed with PTSD caseness at T3. DTS total score significantly decrease between T2 and T3 for both groups of patients.</td>
<td>The emotional representation, illness coherence, consequences and treatment control of illness perception at T2 significantly predict PTSD symptoms at T3.</td>
<td>-</td>
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<tr>
<td>Stroke</td>
<td>Cross-sectional, self-report questionnaires and in-person interviews. Timing of assessment not specified.</td>
<td>N=61 patients who had experienced a first-ever stroke or transient ischemic attack (TIA). Age and gender not specified.</td>
<td>IES, Penn, CAPS (N=9), Barthel ADL Index, GHQ-28, EPQ, HADS.</td>
<td>1. 39% had psychiatric caseness. 2. Patients with PTSD had more general health problems 3.15% had co-morbid anxiety 4.10% had co-morbid depression.</td>
<td>-</td>
<td>Intrusive thoughts were related to post-stroke disability. Scores on Penn was associated with pre-morbid neuroticism. PTSD was NOT related to age, gender, or time since stroke.</td>
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<tr>
<td>Stroke</td>
<td>Cross-sectional, clinical evaluation and postal questionnaires.</td>
<td>N=49 (67% males), with first-ever non-severe stroke. Age=51.4 (S.D. = 16.2).</td>
<td>IES-French Version; The Barthel ADL Index; HADS-French version; RAVLT-French Version; TEQ.</td>
<td>6% had co-morbid depression. 24% showed co-morbid non-specific anxious symptoms.</td>
<td>-</td>
<td>PTSD symptoms was significantly associated with: 1. Female gender; 2. Less education; 3. Individual's subjective appraisal of the stroke.</td>
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AES = Aversive Emotional Support; BSI = Brief Symptom Inventory; CGI = The Clinical Global Impression Scale; CSI = Coping Strategies Inventory; CSS = Crisis Support Scale; DIS-III-R = Diagnostic Interview Schedule-Version III-R; DSQ = The Defence Style Questionnaire; EPI = Eysenck Personality Inventory; ESNS = Emotional Support Network Size; IDD = Inventory to Diagnose Depression; GHQ-28 = the 28 items General Health Questionnaire; GSM = The Global Mood Scale; LCB = Locus of Control of Behaviour; LEI = Life Events Inventory; LOT = Life Orientation Test; HRSRRS = Holmes and Rahe Social Readjustment Rating Scale; ISEL = The Interpersonal Support Evaluation List-Short Form; MAC = The Mental Adjustment to Cancer Scale; MADRS = Montgomery Aasberg Depression Rating Scale; MBSS = The Miller Behavioural Style Scale; MHI-5 = Mental Health Index-5; PENN = Penn Inventory of PTSD; PES = Positive Emotional Support; PSQI = Pittsburgh Sleep Quality Index; PTSS-10 = Post-Traumatic Stress Syndrome 10-Questions Inventory; RDCQ = The Reaction to the Diagnosis of Cancer Questionnaire; SAQ-N = Self Assessment Questionnaire-Nijmegen; SAS = Social Adjustment Scale; SCS = The Social Constraint Scale; SEC = Social Experiences Checklist; SESSsv = Shortened Norwegian Version of the Bedford College Self Evaluation and Social Support; SF-36 = Medical Outcomes Study Short-Form 36 Item; TAI = Trait Anxiety Inventory; TAS² = Trait Anger Scale.
2.4.2.1 Time course of PTSD following life-threatening illness

Studies have shown inconsistent results on the time course of illness-related PTSD and its symptoms. Several studies suggested relatively stable PTSD symptoms. Brewin, Watson, McCarthy, Hyman, and Dayson (1998b) reported that intrusive and avoidance symptoms of heterogeneous cancer patients remained stable approximately 52 months post-diagnosis. Bennett and associates (2001) examined patients 2 or 3 days after their first MI using the IES, and followed them up 3 months later. They concluded that the overall mean scores of the IES did not change significantly over time. Similarly, Andrykowski, Cordova, McGrath, Sloan and Kenady (2000) reported that the group means for PCLC-C total and subscales scores were almost "identical" at the baseline and follow up (p. 75). They thus argued that illness-related PTSD symptoms can be chronic, at least for the breast cancer.

However, a few studies, after examining data for individuals, suggested that PTSD symptoms for individuals could fluctuate over time. In Andrykowski et al.'s (2000) study, when they examined PCLC-C scores for individuals, they found a substantial (but not statistically significant) growth in avoidance and intrusive symptoms among 13% of their sample in the follow up, and a substantial reduction in avoidance and arousal symptoms in a similar proportion of participants. Likewise, Bennett and associates (2001) also noted marked variation in individual IES scores over time.

Other studies reported decreases in PTSD symptoms, for example, within 3-month post diagnosis of cancer (Mundy et al., 2000; Tjemsland, Soreide, & Malt, 1996b), and 4 months after being discharged from hospitals for SARS (Wu, Chan, & Ma, 2005). In summary, the results of research on the time course of illness-related PTSD do not lead to any firm conclusions because of the inconsistency in findings.

2.4.2.2 Risk factors of developing PTSD following life-threatening illnesses
Numerous investigations seem to indicate that exposure to life-threatening illness itself is not sufficient to develop PTSD. There are other factors associated with developing such symptoms. One may wonder why life-threatening illnesses can precipitate post-traumatic stress symptoms and why following such illnesses some people develop PTSD whilst some do not. Many frameworks try to explain the possible psychosocial factors that contribute to post-traumatic stress reactions (e.g., Brewin, Dalgleish, & Joseph, 1996; Hobfoll, 1989; Rachman, 1980). I will cite, particularly, the integrative model of traumatic response (Joseph, Williams, & Yule, 1997), which is a useful framework for the present research.

In brief, the integrative model (see Figure 2.1) states that a traumatic event, in this case a life-threatening illness, presents individuals with stimuli which generate intense emotional arousal but cannot be immediately processed at the time of trauma. Iconic representations of these event stimuli are stored in memory which cannot easily be assimilated with other stored memories. These event cognitions can have two forms: information that is accessed automatically without conscious examination, and information that can be deliberately retrieved and modified. These two forms correspond to the "verbally accessible knowledge" and "situationally accessible knowledge" in Brewin et al.'s dual representation theory (1996, p. 676). Event cognitions may reflect individuals' life experience and personality and provide the basis for intrusive thoughts. In another words, intrusive thoughts can be influenced by personality and/or prior experience.
These intrusive thoughts generate further cognitive activity, namely *appraisals* and *reappraisals*, which are thoughts about the representation of the information depicted (i.e., its further meanings) and can be drawn consciously on individuals' personality and/or their earlier experience in life. Joseph et al. (1997) suggested that some stimuli, such as a life-threatening illness, can be universally perceived and judged to be dangerous and unpredictable, although it is the appraisal that is important in determining following reactions. The appraisal activities may also be influenced by coping (and coping can be modified by new appraisals). The occurrence of traumatic event cognitions and appraisal/reappraisal activities are associated with strong emotional states (e.g., fear, guilt, distress), which in turn will be appraised/reappraised, and which will also trigger coping.

Coping may include avoidance thoughts and behaviours (e.g., avoiding stimuli, thoughts and activities), which in turn affect emotional states.

As suggested by Joseph et al. (1997), the process of trauma adaptation engages several mental states rather than a static one. That is individuals who had
exposure to trauma may go through a "repetitive cycle of intrusions and appraisals and associated emotional reappraisals and coping" (p. 84) until new models in memory are generated which are "coherent but allow for new information" (p. 84).

This model suggests a mechanism of how individuals can develop trauma-related reactions following stressors. It also helps us understand that there are risk factors involved in the process, and allows us account for individual differences in severity of these trauma reactions.

In terms of empirical evidence on risk factors associated with medically-related PTSD, Tedstone and Tarrier (2003) drawing on existing literature, categorised risk factors into two broad categories: I. existing characteristics of the patients, and II. aspects of the trauma. The factors within these two categories reflect some of the components described in the Integrative Model.

I. The existing characteristics of the patients include:

1) Personality factors:
   a) Neuroticism (Chung et al., 2006; Kelly et al., 1998; Pedersen et al., 2003);
   b) Alexithymia - more difficulty in identifying feelings was reported associated with more severe PTSD symptoms following MI (Bennett & Brooke, 1999);

2) Coping style: avoidant coping style (Brewin, Watson, McCarthy, Hyman, & Dayson, 1998a; Nordin & Glimelius, 1998; Widows, Jacobsen, & Fields, 2000);

3) Previous traumatic experience (Andrykowski et al., 2000; Green et al., 2000; Kutz et al., 1994; Mundy et al., 2000; Tjemsland et al., 1996b);

4) Previous mental health difficulties (Green et al., 2000; Kelly et al., 1998; Mundy et al., 2000);
5) Previous health problems/illness was predictive in some PTSD and medical illness literature (Stoll et al., 2000; Tjemsland, Soreide, & Malt, 1998), but not in others (i.e., Kutz et al., 1994);

6) Ethnic background: In a study with 100 MI patients, Israeli researchers Kutz and colleagues noted that participants with Asian or African descent had a higher incidence of PTSD post MI than American/ Europe descent (Kutz et al., 1994);

7) Lower age was predictive in some illness-related PTSD studies (Andrykowski et al., 2000; Bennett & Brooke, 1999; Yan et al., 2004), but not in others (e.g., Katz & Nevid, 2005).

II. Aspects of the illness comprise:

1) Illness severity/stage of illnesses. Controversial evidence exists regarding this factor. Stoll et al. (2000) suggested severe coronary artery disease as a risk factor of PTSD following cardiac surgery. Jacobsen et al. (1998) reported that more advanced disease at treatment following breast cancer was associated with more severe PTSD. Some studies, however, failed to identify similar associations (Kutz et al., 1994; Pedersen et al., 2003);

2) Perception and appraisal of the illness. Ladwig et al. (1999) pinpointed that people with PTSD have more negative beliefs concerning the future course of the disease. Kutz et al. (1994) reported an association between anticipation of disability post MI and higher scores in PTSD. Bennett et al. (2001) identified that emotional reaction at the time of the infarct was a strong predictor of the intrusive thoughts at follow up stage;

3) Poor social support during or after the event (Andrykowski et al., 2000; Bennett & Brooke, 1999; Butler, Koopman, Classen, & Spiegel, 1999; Dew et al., 1996; Green et al., 2000; Katz & Nevid, 2005; Manne, 1999);
2.4.2.3 Co-morbidity with illness-related PTSD and its predictors

Table 2.3 shows that most of (N=23, 68% of 34) the studies investigating co-morbidity have identified significant associations between depression and/or anxiety and PTSD in medically ill patients. These findings correspond to the general PTSD literature suggesting that depression, anxiety and substance abuse were the most frequently reported co-morbidities (e.g., Deering, Glover, Ready, Eddleman, & Alarcon, 1996).

Researchers also noted that patients who developed PTSD following life-threatening illnesses may display increased level of somatic symptoms (e.g., Jacobsen et al., 1998; Ladwig et al., 1999). Sembi and associates (1998) reported that stroke patients with PTSD presented more psychiatric co-morbidity (somatic problems, anxiety, social dysfunction and depression, measured by the GHQ-28) than those without PTSD. Using the SF-36 to measure health-related quality of life, Jacobsen et al. (1998) found that women who experienced greater PTSD after Bone Marrow Transplantation reported poorer physical health, and greater sleep problems. However, one needs to be cautious about making a causal link here. PTSD from the illness may lead to the onset of poor health outcome, or the latter may contribute to the maintenance of PTSD. This is because the manifestations of poor health may remind patients of the traumatic aspects of their illness therefore maintain PTSD symptoms (Jacobsen et al., 1998).

Some characteristics of a life-threatening illness may account for co-morbid anxiety, i.e., the fear of recurrence of the illness. Some researchers suggested that cancer patients or people who had a haemorrhage had fears about the future. Despite good physical recovery, patients were preoccupied with thoughts about the possibility of the recurrence of the illness (Berry, 1998; Green et al., 2000). In this sense patients' anticipatory fear could precipitate anxiety following a life-threatening illness.

Previous studies have suggested four main predictors of co-morbidity accompanying illness-related PTSD:

1) Personality factors, i.e., dispositional optimism (Epping-Jordan et al., 1999);
2) Coping, i.e., hopeless/helpless coping (Nordin & Glimelius, 1998); and problem-focus coping (Epping-Jordan et al., 1999);

3) Illness severity (Wu et al., 2005; Yan et al., 2004);

4) Previous mental health problems (Kangas et al. 2005c; Mundy et al., 2000).

In sum, depression, anxiety and increased levels of somatic symptoms are the most commonly reported co-morbidity in illness-related PTSD studies. Dispositional factors (i.e., personality, coping), illness severity and pre-existing psychiatric problems have been suggested as risk factors to such co-morbidity.

2.4.3 Methodological issues in PTSD and medical illness studies

Both Tables 2.1 and 2.3 showed that many studies were cross-sectional in design. Kangas et al. (2002) and Tedstone and Tarrier (2003) warned of the use of cross-sectional methods, and highlighted the importance of prospective and longitudinal designs. One reason for the recommendation is that longitudinal designs can distinguish between adjustment disorder and Full PTSD symptomatology better than cross-sectional methods (Tedstone & Tarrier, 2003). Other reasons lie in the complexity in identifying the exact stressor in illness-related PTSD. Kangas et al. (2002) proposed that cross-sectional designs "cannot delineate the relative contributions of diagnosis, treatment, side effects, or changing prognosis" (p. 511). Moreover, longitudinal designs are able to identify the time course of illness-related PTSD symptoms (Kangas et al., 2002).

Many studies used the method of self-report questionnaires or postal questionnaires. The problem of mere reliance on self-report measures in cancer-related PTSD research has been criticised by Andrykowski et al. (2000) and Kangas et al. (2002). They emphasised that the self-report questionnaire method might fail to specify whether a cancer diagnosis actually satisfied the stressor criterion for PTSD (Andrykowski, et al., 2000), and could elevate PTSD incidence (Kangas et al., 2002). In a recent review,
Shemesh and Stuber (2006) recommended the method of face-to-face interviews, which they argued, should be conducted by a trained professional. They suggested that the face-to-face interview method would produce more reliable results than using merely self-report questionnaires. In addition, they emphasised that the assessor should not confound the disease symptoms with PTSD-related symptoms (i.e., difficulty in sleep due to pain, and not being able to remember details of the trauma because of loss of conscience during the event should not be regarded as PTSD related symptoms). The interpretation of self-report questionnaires could induce this confounding problem and also self-report questionnaires might fail to pick up the exact cause of PTSD symptoms following life-threatening illness.

The use of postal data collection was also problematic, because patients who tried to avoid thinking about the illness might not complete and return the questionnaires, therefore PTSD incidence might be underestimated (Tedstone & Tarrier, 2003).

Another methodological issue is related to the use of the IES (Horowitz, Wilner, & Alvarez, 1979) as a diagnostic tool of PTSD caseness. The IES measures intrusion and avoidance symptoms only, but not arousal symptoms. Reliance on merely IES can lead to inaccurate estimation of PTSD diagnosis.

Finally, it is possible that previous PTSD symptoms might be confounded with present medically-related PTSD symptoms. Tedstone and Tarrier (2003) suggested screening for previous PTSD, especially in high-risk populations, such as HIV patients.

2.4.4 Section summary

Table 2.1 summarises studies that have indexed the incidence of PTSD in severely ill adult patients, in terms of study design, sample, assessments, and the incidence of PTSD. PTSD incidence following life-threatening illness/disease varies not only across diseases but also within diseases. The nature of different diseases perhaps
contributes partly to the variation in incidence. Varied study designs and choices of PTSD measures may also result in different PTSD incidence.

Table 2.3 summarises studies that have reported PTSD time course, predictors of PTSD symptoms, and co-morbidity and its risk factors in adults with life-threatening illnesses. Studies showed consistently that there was a link between PTSD and co-morbid depression and anxiety, but reported mixed results on the time course of PTSD. Studies also identified a wide range of risk factors of developing medically-related PTSD symptoms and/or co-morbidity. The integrative model of traumatic response (Joseph et al., 1997) may help us understand why people can develop PTSD symptoms following life-threatening illnesses.

A number of methodological issues exist in illness-related PTSD studies. The problems include: cross-sectional study design, mere reliance on self-report questionnaires or postal methods, and the common use of the IES to detect diagnosis of PTSD caseness.

The next section focuses on detailed discussions of studies on PTSD following a stroke.

2.5 PTSD AND STROKE

Stroke, a sudden, unexpected, and immediately life-threatening illness, may trigger PTSD symptoms. Some studies reported similarities between psychological reactions to a stroke and reactions to assault, combat or road accidents (Thompson, 1991; Thompson et al., 1989). Tedstone and Tarrier (2003) pointed out that "...psychological reactions of onset of stroke may include high levels of fear, realistic anxiety about the future, and feelings of helplessness and loss of control" and that "... the potential for psychological reaction to stroke could appear similar to the potential in other traumatic incidents..." (p.410). Although researchers have noted similarities between stroke and other PTSD stressors, only two studies, before the commencement of this
PhD research, had been conducted investigating PTSD or PTSD-like syndrome in stroke or subarachnoid haemorrhage (SAH- one type of stroke) patients (Berry, 1998; Sembi et al., 1998). Two more studies have been published more recently, examining PTSD syndrome following stroke and SAH (Bruggimann et al., 2006; Sheldrick, Tarrier, Berry, & Kincey, 2006). These studies are listed in Table 2.1 and 2.3. This section addresses these studies in terms of their findings and methodology.

2.5.1 Study by Sembi et al. (1998)

Sembali and his colleagues (1998) were among the first researchers to examine PTSD symptoms in stroke patients. They recruited 61 patients who had experienced a first-ever stroke or transient ischemic attack (TIA). Individuals with severe dysphasia were excluded. They invited hospital inpatients and day patients to participate, and asked them to complete self-report questionnaires in the presence of a clinical psychologist. Outcome measures in this study were 1) the Barthel ADL Index (Mahoney & Barthel, 1965a); 2) the EPQ-S (Eysenck & Eysenck, 1991); 3) the GHQ-28 (Goldberg, 1981); 4) the HADS (Zigmond & Snaith, 1983); 5) the IES and 6) the Penn (Hammarberg, 1992). Patients who fulfilled criteria on at least one of the PTSD self-report questionnaires (measured by 5) and 6)) were subsequently interviewed using the CAPS (Blake et al., 1992).

Patients' physical functions in this study did not seem to be severely affected by stroke, as the majority reported no physical disability after stroke, and only 3% suffered from severe post-stroke physical impairment (Barthel total score < 10). Thirteen (21%) patients fulfilled criteria for PTSD on one or both of the IES and Penn. However, only nine of them participated in the clinical interview afterwards. A 9.8% of stroke-related PTSD incidence was reported based upon the structured clinical interview.

Intrusive and avoidance symptoms of stroke-related PTSD were found to be highly correlated with the GHQ-28 total scores. Sembali et al.'s (1998) study revealed that
intrusive thoughts were associated with severity of post-stroke physical disability. Previous traumatic life events, gender or age were not found predictive of stroke-related PTSD occurrence.

In terms of co-morbidity, 39% of their sample reported psychiatric caseness using a cut-off score of 5 in the GHQ-28. Patients scored most highly on social dysfunction, then anxiety, followed by somatic symptoms and finally depression. Using HADS, depression and anxiety were also identified as psychiatric co-morbidity with stroke-related PTSD.

It is of note that the PTSD incidence in Sembi et al.'s (1998) study might be underestimated due to the loss of 4 of 13 screen-positive patients at the interview stage. Their study did not investigate the time course of PTSD following stroke.

2.5.2 Study by Berry (1998)

Berry (1998) published a short report on PTSD following SAH, one type of stroke. He recruited 28 patients who were referred to clinical neuropsychology with anxiety following SAH. No patient had a previous history of psychiatric problems, and all had made a satisfactory physical recovery. Patients were interviewed using the DSM III-R criteria (APA, 1987) for PTSD and also using the guidelines for PTSD among medical patients (Shalev, Schreiber, & Galai, 1993). Nine out of 28 patients (32%) met the diagnostic criteria of both measures. Patients with diagnosis of PTSD reported intrusive thoughts, nightmares and flashbacks about the SAH. They also presented behavioural avoidance (i.e., the situation or the place where the haemorrhage had occurred) or avoidance of activities (i.e., physical exertion). An increased physiological arousal was also found in patients. Despite a good physical recovery, they were obsessed with the thought that the haemorrhage might reoccur.

Berry's study (1998) identified PTSD symptoms following a specific type of stroke. However, he did not examine the time course of stroke-related PTSD, its risk
factors or related co-morbidity. Apart from small sample size, his study might have a selection bias towards those with a greater degree of psychological morbidity, as the sample was recruited from referrals to clinical psychology service.

2.5.3 Study by Bruggimann et al. (2006)

More recently, PTSD symptoms have been reported in non-severe stroke patients. Bruggimann et al. (2006) recruited 49 patients with non-severe stroke measured by National Institute of Health Stroke Scale (NIHSS <6). Patients who had severe neurologic deficit and/or previous psychiatric illness were excluded. Self-report questionnaires were posted to patients for completion, including French Version of the IES (Hansenne, Charles, Pholien, & Panzer, 1993); the Barthel ADL Index; French Version of HADS (Lepine, Godchau, Brun, & Lemperiere, 1985); the TEQ (Widows et al., 2000), which retrospectively asked patients' perception about their stroke (i.e., whether they felt helpless, any concern about death during hospitalisation and so on).

Bruggimann et al. (2006) reported that 15 (31%) of their sample scored higher than the cut-off score of the IES; 11 of their total sample (22%) had significant intrusion symptoms and the same proportion reported significant avoidance symptoms. They also investigated risk factors of stroke-related PTSD and found that females scored higher on the IES total, and that an individual's subjective appraisal of the stroke (e.g., "helplessness", "hopelessness", "loss of control" or "concerns about death") was significantly associated with PTSD symptoms.

Bruggimann et al.'s work (2006) further confirmed that having a stroke could be traumatic enough to precipitate PTSD symptoms. It also highlighted the importance of individuals' subjective perception in developing stroke-related PTSD. However, several methodological problems existed in this study. First, the use of postal questionnaire method might artificially reduce the incidence of post-stroke PTSD, as noted by Tedstone and Tarrier (2003). Second was the use of and reliance on the IES, which has already
been criticised by many researchers (Kangas et al., 2002; Tedstone & Tarrier, 2003). Using the IES to diagnose PTSD could be problematic because it does not measure arousal symptoms.

2.5.4 Study by Sheldrick et al. (2006)

This study focused on the association between illness perceptions and PTSD symptoms following MI and SAH. This study was longitudinal with three time points - T1: within 2 weeks of admission in hospitals; T2: 6 weeks after admission; T3: 3 months after admission. The SAH sample included 28 in-hospital patients who were medically stable (i.e. not under constant medical monitoring). Patients were excluded if they were having mental health problems at the time of the study or had a previous history of severe mental health problems. Patients were also excluded if they had neurological deficits, dysphasia or hemiplegia. The study measurement included: the DTS (Davidson, 1996) and the IPQ-R (Moss-Morris et al., 2002). The assessment questionnaires were completed by participants at T1, and were sent out by post for T2 and T3. Sheldrick et al. (2006) reported 18.4% of PTSD incidence for SAH sample at T1; 35.5% at T2 and 18.5% at T3. They also reported a significant decrease in DTS total scores between T2 and T3 for both SAH and MI samples. The emotional representation, illness coherence, consequences and treatment control of illness perception at T2 significantly predicted PTSD at T3.

The major methodological problem of Sheldrick et al.'s study (2006) is that they assumed symptomatic caseness at 2 weeks after patients' admission to be indicative of PTSD. According to DSM-IV (APA, 1994), PTSD symptoms are required to persist for at least 1 month, therefore a diagnosis of PTSD can only be made at least 1 month after the exposure to trauma. Their assumption could yield an inaccurate incidence of PTSD at T1. In addition, the sample size for SAH sample was small.
2.5.5 Section summary

All aforementioned studies have confirmed that a stroke, like any other traumatic stressors, can trigger PTSD symptoms in its survivors, though the PTSD incidence can vary. Patients with PTSD have reported psychiatric co-morbidity including anxiety and depression. Female gender, less education, and individuals' subjective perception of stroke were associated with post-stroke PTSD symptoms.

All studies apart from Sheldrick et al.'s one, were cross-sectional in design. Therefore, they were unable to detect the time course of stroke-related PTSD symptoms. Furthermore, the sample size in all studies was relatively small. Prior to my PhD research, no study had examined predictors of psychiatric co-morbidity with post-stroke PTSD. Bearing these limitations in mind, it was decided to conduct a longitudinal study with a larger sample size than previously employed, which could enable me to examine the time course of PTSD. The author of this thesis also investigated psychiatric co-morbidity with PTSD and identified related predictors in stroke patients.

Previous studies have identified a variety of risk factors for PTSD and co-morbidity in medically ill patients. The author of this thesis shall focus on the dispositional factors of personality (alexithymia) and coping (health locus of control) in predicting post-stroke PTSD symptomology and psychiatric co-morbidity after controlling for the level of post-stroke physical disability. The following section focuses on the relationship between personality (alexithymia), PTSD and psychiatric co-morbidity.

2.6 PERSONALITY (ALEXITHYMIA) AS A PREDICTOR OF ILLNESS-RELATED PTSD AND PSYCHIATRIC MORBIDITY

The focus of this section is on the theory of alexithymia and the literature on the association between alexithymia, PTSD and psychiatric morbidity.

According to Scheier and Bridges (1995), personality predispositions represent "cognitive, affective, or behavioural tendencies on the part of a person that are relatively
stable across time and context" (p. 255). This thesis takes Scheier and Bridges' view of personality, despite of the fact that different theories on personality may take a different view.

Due to space limitation, it is beyond the scope of this thesis to review all the literature available on the relationship between personality traits and outcomes. However, taking neuroticism as an example, on the whole, the literature suggests that neuroticism tends to be associated with distress. For example, people with high neuroticism scores have been suggested to be predisposed to negative affect and tend to negatively evaluate their health as measured by standard quality of life questionnaires (Hyland, Bott, Singh, & Kenyon, 1994). Compared with non-neurotic people, they were also more likely to choose ineffective coping resources to deal with stressful encounters (McCrae & Costa, 1986). Taking extraversion as another example, extraversion tends to be associated with positive outcomes in that extraverts tend to use positive thinking to deal with stress (McCare & Costa, 1986) and experience benefits from adversity. Tedeschi and Calhoun (1996) found that among the university students who experienced recent major stressful life events, the extraverts showed the highest correlation with total benefits from adversity, particularly in the domain of improved relationships with others.

Dispositional optimism also tends to be associated with positive outcomes. For example, Scheier, Weintraub and Carver (1986) reported that optimistic individuals tended to focus on the positive side of a stressful event in that they considered it as a chance for growth. The optimists among the head and neck cancer patients were also found to report better role and cognitive functioning, less pain and better global quality of life than pessimists (Allison, Guichard, & Gilain, 2000).

Focusing on alexithymia, this has been reported to be significantly associated with PTSD severity following medical illness (Bennett & Brooke, 1999; Fukunishi & Tsuruta, 2001). The following section aims to review the theory of alexithymia construct and summarise the empirical findings on the relationship between alexithymia, PTSD and
psychiatric morbidity.

2.6.1 Theory of alexithymia construct

The term alexithymia, created by Sifneos (1972), from the Greek 'a', for lack; 'lexis' for word and 'thymos' for emotion (i.e., lack of words for emotions), refers to "a cognitive-affective disturbance that affects the way individuals experience and express their emotions" (Taylor, 1984, p. 725). According to Taylor (2000), alexithymia is a "multifaceted personality construct" (p. 134), and was observed initially among patients with psychosomatic disorders. This construct comprises of the following salient features: 1) difficulty in identifying feelings, and distinguishing between feelings and the bodily sensations of emotional arousal; 2) difficulty in describing feelings to other people; 3) lack of imagination and a paucity of fantasies/daydreaming; and 4) a stimulus-bound, externally oriented thinking - the thought content is tied to reality (Nemiah, Freyberger, & Sifneos, 1976; Taylor & Price, 1994).

It is of note that alexithymia is not an inability to experience one's own feelings. As suggested by Taylor and Bagby (2000), alexithymic individuals are able to experience emotions, however, their emotions are "poorly differentiated and not well represented mentally and thus, the individual cannot understand or explain where a particular feeling comes from" (p. 525). Emotional reactions of alexithymic individuals' are somatic and physical (focusing on the physiological aspects of affects), and most often alexithymic individuals cannot recognise or name a specific emotion such as sadness or anger (Krystal, 1987).

The alexithymia construct has received increasing theoretical and empirical investigations since its introduction. However, as alexithymia is difficult to operationalise, most of the measurements utilised in early studies lacked reliability and validity, and findings were tentative (Taylor, Bagby, & Parker, 1997). The development of the Toronto Alexithymia Scale (TAS) and the Twenty-Item Toronto Alexithymia Scale (TAS-20)
provided reliable measuring instruments and both scales have proven to be reliable and valid measures of the construct (Bagby, Parker, & Taylor, 1994; Parker, Taylor, & Bagby, 2003). The TAS-20 is improved over the TAS in that it excluded items comprising the daydreaming factor which was used to capture the capacity for imaginal activities in the TAS (Bagby et al., 1994). Researchers suggested that the self-reporting of daydreaming might be biased by a social desirability tendency (Taylor, Ryan, & Bagby, 1985). In addition, externally-oriented cognitive styles may reflect, at least partially, the lack of inner fantasy (Bagby et al., 1994). The TAS-20, thus has a three-factor structure which has been theoretically and empirically demonstrated to be congruent with the alexithymia construct (Bagby et al., 1994; Bagby, Taylor, & Parker, 1994). The three factors of the TAS-20 are: 1) difficulty in identifying feelings from bodily sensations; 2) difficulty in describing feelings to others, and 3) an externally oriented style of thinking (Bagby et al., 1994). The TAS-20 will be discussed in more details in the assessment section of chapter 5.

Alexithymia has been conceptualised as a personality construct and viewed as a possible personality risk factor for a number of psychiatric and psychosomatic disorders (e.g., Bourke, Taylor, Parker, & Bagby, 1992; Haviland, Hendryx, Cummings, Shaw, & Macmurray, 1991; Taylor, Bagby, & Parker, 1991). However, some researchers have argued that alexithymia might be a state reaction. For example, after observing that patients with severe illnesses exhibited temporary alexithymic characteristics, Freyberger (1977) made the distinction between primary and secondary alexithymia. Primary alexithymia was attributed to genetic or biological origin (Nemiah et al., 1976), and secondary alexithymia could be a state dependent reaction (Freyberger, 1977). On the other hand, evidence exists that alexithymia might be stable cross time. For example, in a longitudinal study, Schmidt, Jiwany and Treasure (1993), using the TAS, examined alexithymia characteristics in a group of bulimic individuals, who were assessed pre and post a 10-week drug treatment. They reported that the levels of alexithymia did not
significantly change over time. Seventy-three percent of patients who had been alexithymic at T1 were still alexithymic at T2, and 88% of patients who were non-alexithymic at T1 remained in the same category at T2. They suggested that alexithymia could be a stable personality trait, at least among patients with bulimia nervosa. Similarly, aiming at investigating whether alexithymia was a constant trait or a state reaction, Salminent, Saarijärvi, Äärelä, and Tamminen (1994) examined alexithymia (measured by the TAS), depression and anxiety in a group of psychiatric outpatients. They found that although all patients exhibited a significant decrease in psychological distress after a 1-year period, there was no significant change in the alexithymia scores. Thus, they suggested that alexithymia is a stable personality trait rather than a state reaction. In this thesis, the view that alexithymia as a personality trait is adopted.

2.6.2 Alexithymia and PTSD symptoms

Investigations of alexithymia and PTSD have produced mixed results which led researchers to arrive at different conclusions with regard to the nature of the alexithymia construct.

Firstly, alexithymia has been viewed as a personality predictor for PTSD. For example, Fukunishi and colleagues (2001) administered the Alexithymia Scale for Children (Fukunishi, Yoshida, & Wogan, 1998) and the Posttraumatic Stress Response Checklist (PSRC) to 33 mothers whose children had refractory haematological disease to assess psychosocial aspects in children. Significant correlations were found between the total score of alexithymia measure and scores of PSRC, especially in the items of avoidance symptoms. They suggested that the alexithymic characteristics might predict the manifestation of avoidance and emotional numbing in their sample of children. Unfortunately, the small sample size limited the generalisability of their findings. In a more recent study McCaslin et al. (2006) interviewed and assessed 166 urban police officers for alexithymic characteristics and duty-related PTSD symptoms, and followed 54
of them up after the 9/11 terrorist attacks. They reported that the pre-9/11 alexithymia total score (measured by the TAS-20) was predictive of 9/11-attack related PTSD symptoms, even after controlling for pre-9/11 duty-related PTSD severity. They thus concluded that alexithymia could be a pre-existing personality trait, and could serve as a risk factor for PTSD following later traumas. Unfortunately, they did not assess alexithymia after the 9/11 terrorist attacks, thus they could not tell whether alexithymia had remained stable over time or not.

Secondly, some researchers have argued that alexithymia is a state reaction to traumatic events. For example, Hyer, Woods, Summers, Boudewyns and Harrison (1990) compared the alexithymic characteristics [measured by the MMPI Alexithymia Scale (Kleiger & Kinsman, 1980)] among 76 veterans with PTSD, an alcohol abuse group (N=76) and a general psychiatric group (N=75). They noted that both the prevalence and severity of alexithymia was significantly higher in the PTSD group than in the two control groups. They thus argued that alexithymia could be a stress-induced reaction, and that higher alexithymia scores might reflect elevations in more general psychopathology. Zeitlin and colleagues (Zeitlin, McNally, & Cassiday, 1993) compared alexithymia characteristics (measured by the TAS) among 12 rape victims with PTSD, 12 rape victims without PTSD, and 12 non-traumatised participants. They found positive associations between severity of exposure to trauma and alexithymia in rape victims. Those who had suffered multiple sexual assaults exhibited higher alexithymia scores compared with those who had experienced a single assault. They thus suggested that alexithymia could result from repeated exposure to trauma.

Finally alexithymia is seen as an integral component of PTSD. Badura (2003) administered the Revised Toronto Alexithymia Scale (TAS-R) (Taylor, Bagby, & Parker, 1992) and the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (MPTSD) (Keane, Malloy, & Fairbank, 1984) to a sample of 247 male veterans. Using a principal component analysis on the PTSD subscale scores and the TAS-R total score,
they found a lack of independence between PTSD and alexithymia, because all variables loaded on one factor best labelled PTSD. Further, among other PTSD subscale scores, the avoidance and numbing subscale produced the highest correlation coefficient with alexithymia. They argued that alexithymia could be viewed as a component of PTSD: avoidance and numbing.

In summary, the relationship between alexithymia and PTSD can be approached from at least three perspectives: 1) As a stable personality trait, alexithymia may have predictive power for PTSD symptoms; 2) It is possible that alexithymia is a traumatic event induced reaction; and 3) It is also likely that alexithymia may be an integral component of PTSD. While acknowledging all these possible perspective, in this thesis, the view that alexithymia as a personality trait is adopted.

There is only a limited number of investigations on the relationship between alexithymia and illness-related PTSD. The cross-sectional data of Bennett and Brooke (1999) suggested that more difficulty in identifying feelings (measured by the TAS-20) was significantly associated with the severity of PTSD among MI patients. Fukunishi and Tsuruta (2001) examined children with refractory haematological disease and reported that one factor of the Alexithymia Scale for Children – difficulty in describing feelings - was significantly and positively related to the avoidance and emotional numbing among posttraumatic stress reactions.

None of the studies so far carried out have looked at stroke patients. Further, most research investigated the global difference on the TAS-20 total score, with few actually examining the dimensions/factors of the TAS-20, and their associations with PTSD. Thus, the relationship between alexithymia, particularly its dimensions, and stroke-related PTSD symptoms remained open to investigations. The link between specific dimensions of alexithymia and stroke-related PTSD severity will be examined in this thesis.
2.6.3 Alexithymia and psychiatric morbidity

Alexithymia and depression were found to be strongly correlated among clinically depressed individuals (e.g., Loas et al., 1998; Parker, Bagby, & Taylor, 1991; Ramirez et al., 2001). One recent study investigated alexithymia (measured by the TAS-20) and depression (measured by Beck Depression Inventory-II) among 230 outpatients receiving chronic haemodialysis (HD) therapy (Kojima et al., 2007). The BDI-II was re-administered to patients after a 6-month interval. Kojima et al. (2007) grouped their sample into alexithymics and non-alexithymics and found that both baseline depression and deterioration of depression at follow up were significantly associated with being alexithymics. They suggested that alexithymia might be associated with the presence and the prognosis of depression among HD patients.

One recent study by Mantani et al. (2007) measured alexithymia, anxiety and depression in 46 postsurgical women with breast cancer and their husbands. Participants were assessed by completing the Japanese version of the TAS-20, the Zung- SAS (Zung, 1965) and the Zung- SDS (Zung, 1971). Their results showed that high degrees of alexithymia among patients and husbands were correlated with high degrees of anxiety. Although Mantani et al.’s study (2007) was limited by its small sample size, it gave important insights into the association of alexithymia and anxiety.

In sum, the studies reviewed above shed some insights into the association between alexithymia, anxiety and depression, which are the most commonly reported psychiatric co-morbidity with PTSD. These studies, however, were unable to inform us which dimension(s) of alexithymia might be related to the severity of psychiatric difficulty (i.e., depression and/or anxiety). One of the research questions of this thesis is to address this gap of knowledge in that it will examine to what extent different dimensions of alexithymia are associated with PTSD symptoms and psychiatric co-morbidity.
2.7 COPING (HEALTH LOCUS OF CONTROL) AS A PREDICTOR OF ILLNESS-RELATED PTSD AND PSYCHIATRIC MORBIDITY

I now turn to the relationship between coping, as a possible risk factor, and PTSD and psychiatric difficulty. Much research has been done to show that when people confront stressful situations (in this case, stroke), they appraise, interpret and indeed cope with them using different coping styles (Lazarus & Folkman, 1984). In other words, people do not simply react passively to stressful situations. The type of coping styles that an individual adopts can moderate the effects of distress (Chung, Preveza, Papandreou, & Prevezas, 2006a).

Like personality traits, coping styles can be dispositional in nature, in that they predispose to behaviour over time and different situations, despite the fact that some researchers would view coping as a situational variable. In this thesis I shall view the concept of coping as a dispositional factor that is relatively stable over time and across situations. I shall focus on the notion of health locus of control as a way of coping, although its consistency may occur only over a limited number of situations (i.e., across health/illness situations but not across non-health situations).

Similarly to the approach I have taken on personality and stress, I cannot review all the literature available on the relationship between coping and outcomes. Some examples follow: Researchers found that the use of multiple and active coping styles such as cognitive reappraisal was particularly conducive to positive change among cancer patients (Collins, Taylor, & Skokan, 1990). In a longitudinal study with patients who had heart transplantation 1 year before, Dew and colleagues (1996) found that patients who used avoidance coping strategies reported more severe PTSD related to the transplant experience. For PTSD patients, it is important to investigate their coping styles, because understanding the association between such strategies and health outcomes can give us practical information which can be used for designing appropriate intervention programs for these patients (e.g., Chung et al., 2006a).
Some psychologists suggested that beliefs about oneself and control, specifically locus of control, was an important factor in coping with stress, (i.e., Sarafino, 1997). Studies on life-threatening illness stated that patients might benefit from perceptions of control over their own health problems or disability (e.g., Bundek, Marks, & Richardson, 1993; Seeman & Evans, 1962). Individuals who perceived a lack of control over their difficulties tended to display anxiety and depression (e.g., Archer, 1979; Benassi & Sweeney, 1988; Lefcourt, 1980; Quinn & Norris, 1986). Patients who had high orientation towards internality health locus of control reported better subjective well-being than those who had high tendency towards powerful others locus of control (a form of external locus of control) (e.g., Simoni & Ng, 2002).

The focus of the following section will be on the theory of locus of control and literatures on the association between (health) locus of control, PTSD and psychiatric difficulty. It will end with a brief review of the interaction of personality and coping on health outcomes.

2.7.1 Theory of locus of control

Locus of control refers to "a relatively stable set of beliefs, held by an individual, about the likely causal relationships between their actions, and those of others, and the outcomes of events and situations" (Walker, 2001, p. 42). Developed by Rotter (1966), the concept of locus of control derived from social learning theory which attempted to integrate reinforcement theory and cognitive theories. The development of locus of control was also ascribed to attribution theory (Heider, 1944), in which Heider proposed that people needed to identify whether environmental events were controllable or not in order to determine how they react to such events or situations.

The locus of control construct identifies an individual's belief as to "whether control over valued reinforcements is internal or external to the person" (Wallston, 1997, p151). According to Rotter (1966), locus of control was postulated as a unidimensional
construct. That is individuals' beliefs differed along a continuum where the internality was at one end and externality was at the opposite end. People at one end of the continuum were categorised as 'internals' and those at the other end were categorised as 'externals' (Wallston, 1997). Rotter established the Internal-External Locus of Control (I-E) Scale, and stipulated external locus of control orientation as "perceptions that an event is contingent upon luck, fate, chance, powerful others or unpredictable forces", while internal locus of control orientation as "beliefs that the event is contingent upon one's own behaviour or relatively permanent characteristics" (Rotter, 1966, p.1).

It is of note that although many researchers perceived locus of control as a personality trait (e.g., Burger, 1984; Sarafino, 1997), some have argued that locus of control beliefs could be better conceptualised as dispositional belief set, in that it could "influence individuals' behaviours across a wide range of situation and a rather specific belief that may apply to a limited number of situations" (e.g., health locus of control) (Phares, 1976, p. 25). Lefcourt (1982) also argued that locus of control should not be conceptualised as a personality trait, that is people should not be categorised as either internals or externals, rather they might be named "hold internal and external control expectancies about different aspects of their lives" (p. 187).

One question about the locus of control construct was whether various external forces could be combined or whether a distinction was required between, for example, chance and powerful others (Walker, 2001). Levenson (1973; 1974) speculated a difference between behaviours of individuals who believed the world was under the control of powerful others and of those who believed the environment was due to chance. She published a three-dimensional locus of control scale measuring beliefs in internal, powerful others and chance (the IPC scale). In contrast to the unidimensionality of the I-E scale, the IPC, as a multidimensional scale, allowed an individual to be simultaneously classified as both internally and externally orientated in locus of control beliefs (Levenson, 1973; 1974).
The theory of locus of control has been applied to health and illness area as well as many other domains (i.e., achievement-related behaviour, social influence and so on). As an attempt to extend locus of control theory into health, Wallston, Wallston, Kaplan and Maides (1976) developed a unidimensional measure named Health Locus of Control (HLC) scale to measure individuals’ belief that their health is or is not determined by their behaviour. The HLC scale yields a single score with the higher score referring to more external locus of control orientation. To improve understanding and prediction of health behaviours, many researchers (e.g., Levenson, 1974) have argued in favour of separating external belief in fate and chance from external belief in powerful others. Paralleling Levenson’s (1974) IPC, Wallston, Wallston and DeVellis (1978) published the Multidimensional Health of Locus of Control (MHLC) scale to measure locus of control in health specific behaviours. They remarked that the MHLC may be more useful than the original unidimensional scale (the HLC), because scores can be obtained on three separate dimensions, and the MHLC is suitable for research designs with repeated administrations – that is there are a equivalent forms available (MHLC Form A and Form B, see Chapter 5, section 5.2.2.4 for more detailed descriptions of the MHLC).

Health locus of control beliefs are comparatively less stable than more generalised locus of control beliefs, because they could be adjusted by important health-related experiences (Wallston, 1997). Wallston et al. (1978) further noted that researchers should not expect the scores of the MHLC scale alone to explain much of the obtained variance in health behaviours. Only in interaction with one or more contributing factors would the MHLC scores “play a significant role in the explanation of health behaviour” (p. 55). According to them, examples of other contributing factors include perceived severity of health problems, demographic factors (e.g., race and social class), and social support.

2.7.2 Locus of control and PTSD symptoms
Many studies have examined the association between locus of control and PTSD severity and its symptoms. On the whole, external locus of control orientation is associated with poor outcomes while internal locus of control can be a protector. For example, Casella and Motta (1990) compared Vietnam veterans with and without PTSD using the Nowicki-Strickland Internal-External Control Scale (Nowicki & Duke, 1974). They reported that veterans without PTSD had higher internal locus of control orientation than those with PTSD, even with the same level of combat exposure. Solomon and Mikulincer (1990), in their longitudinal study, investigated the relationship between locus of control and severity of combat-related PTSD. Using the PTSD Inventory (Solomon et al., 1993) and a shortened version of Rotter's (1966) I-E scale, they assessed 382 soldiers who suffered a combat stress reaction (CSR) 1 year after the combat and followed up 225 of them 1 year later. Their results showed that external locus of control was correlated with PTSD severity at both T1 and T2. More investigations on PTSD following combat have noted similar findings, namely that externality locus of control was significantly associated with severe post-traumatic stress reactions (e.g., Gilmartin & Southwick, 2004; Kuterovac-Jagodic, 2003; Orr et al., 1990). A similar tendency has also been reported in studies on traumatic responses to other stressors, such as accidents (Brown, Mulhern, & Joseph, 2002; Regehr, Hill, & Glancy, 2000), and bully victim problems (Mynard, Joseph, & Alexander, 2000).

Studies on locus of control and medically-related PTSD have confirmed the findings of the aforementioned studies. For example, in a longitudinal study, Soet, Brack and Dilorio (2003) examined psychological trauma experience in childbirth and possible causal factors in the development of subsequent PTSD symptoms. 103 Women filled in a battery of questionnaires before labour, and were interviewed through telephone 4 weeks after delivery. PTSD symptom was measured by Traumatic Event Scale (TES) (Wijma, Soderquist, & Wijma, 1997). Women's locus of control relating to pregnancy was attested by Pregnancy Attitude Index (PAI) (O'Connell, 1983). They reported that low internal...
locus of control was predictive of development of PTSD symptoms following child birth. Chung and colleagues (Chung, Preveza, Papandreou, & Prevezas, 2006b) investigated the role of health locus of control in PTSD symptoms following spinal cord injury (SCI-PTSD). Sixty-two SCI patients and 54 health controls were recruited and assessed using the Posttraumatic Stress Disorder Checklist (PCL) (only the patients filled out this measure), the GHQ-28 and the MHLC. Their data revealed that SCI patients tended to have higher orientation in external locus of control (powerful others and chance locus of control) than the comparison group. Further, Chung et al. (2006b) suggested that the more internal locus of control coping the patients endorsed, the less likely they were to display PTSD intrusion and avoidance symptoms. However, the more participants believed that their health was determined by powerful others, the more intrusion symptoms and general health problems they displayed.

In sum, the studies reviewed, though small in numbers, further conclude that an external health locus of control orientation might increase an individual’s susceptibility to medically-related PTSD symptoms and general health problems, while an internal health locus of control orientation might be a protector.

2.7.3 Locus of control and psychiatric morbidity

Many investigations have been conducted on locus of control and psychiatric disorders, especially depression and anxiety. This has been exemplified by the following studies. Although there was some debate about the complex relationship between locus of control and depression (Leggett & Archer, 1979), the evidence in general suggested that greater externality was associated with greater depression and anxiety (Archer, 1979; Benassi & Sweeney, 1988; Lefcourt, 1980; Quinn & Norris, 1986). More recently, Thomas and Lincoln (2006) recruited 123 depressed stroke patients at 1 month post-stroke and measured their depression and locus of control orientation, and followed them up 3 and 6 months later. Depression was measured by the BDI (Becker, Ward,
Mendelson, Mock, & Erbaugh, 1961), and locus of control was measured by the Recovery Locus of Control Scale (Patridge & Johnston, 1989). The results showed that patients with a higher external locus of control orientation at baseline were more likely to remain depressed at follow-up. Although the study sample was biased in that all patients were depressed at recruitment, its finding was consistent with most previous studies.

In sum, the overall findings suggest that external locus of control tends to be associated with poor mental health outcomes, and might increase individuals' susceptibility to PTSD symptoms.

2.7.4 Interaction of personality and coping

Different individuals cope with stressors in different ways. An interactive model has been suggested stating that personality factors and coping style can interact with each other in managing distress (Hewitt & Flett, 1996; Zeidner & Saklofske, 1996). For example, individuals with high neuroticism scores were reported to have a tendency to use ineffective coping resources to deal with stress (McCrae & Costa, 1986). In a study of Intensive Care Unit (ICU) patients, Brody and Erlichman (1998) suggested that patients who were optimists were more likely to engage in situations that might be stressful rather than avoiding these situations. More recently, Chung and his colleagues (Chung, Dennis, Easthope, Werrett, & Farmer, 2005) developed a multiple-indicator model to describe the relationship among PTSD, general health problems, personality factors and coping among community residents who had experienced aircraft disasters and train crashes. They found that personality factors interacted with coping styles in maintaining or creating PTSD and psychiatric co-morbidity. This theoretical model and the aforementioned empirical findings could set the basis for a testable hypothesis that alexithymia and health of locus of control coping would interact to predict the severity of PTSD following stroke.
2.7.5 Summary (Section 2.6 and 2.7)

Section 2.6 and 2.7 discussed the relationship between personality (alexithymia), coping (health locus of control), post-traumatic stress reactions and psychiatric morbidity. It seems that alexithymic characteristics and a heightened tendency toward external locus of control can be associated with poor outcomes, whereas a high internal locus of control orientation can protect individuals to develop poor outcomes. However, limited studies have looked at the association between dimensions of alexithymia, health locus of control, PTSD and psychiatric co-morbidity among medically ill patients. In addition, in the light of the interactive model described above, one could speculate that alexithymia and health locus of control coping may interact to affect health outcomes.

2.8 SUMMARY OF THIS CHAPTER

This chapter summarises the history and development of the PTSD construct, introduces two diagnostic criteria of PTSD (DSM-IV and ICD-10), examines previous studies on PTSD following life-threatening illnesses including stroke, and finally introduces alexithymia as a personality variable, and health locus of control as a coping variable as possible risk factors to illness-related PTSD and psychiatric co-morbidity. The following chapter reviews the literature and presents the theoretical background for another part of this PhD project: the cross-cultural study.
CHAPTER 3

PTSD AND CROSS CULTURAL ISSUES

3.1 INTRODUCTION

The increased mobility between people from different cultures and countries, in MacLachlan's (1997) terms - the "indisputable process of internationalisation" (p. 29), requires us to understand and accept different views of important issues, one of which is health. In 1982, the World Health Organization (WHO) emphasised that "...if actions are to be effective in the prevention of diseases and in the promotion of health and well being, they must be based on an understanding of culture, tradition, beliefs and patterns of family interaction" (WHO, 1982, p. 4). More recently, Samson (1999) noted that the elementary issues of health and illness could be better understood by taking an interdisciplinary prospective, rather than by relying on a single academic discipline. Indeed the recent decades have seen a growing popularity of interdisciplinary and multidisciplinary fields of study in culture and health.

This chapter addresses, reviews and discusses the following issues:

- Cross-cultural research and psychology
- The methodological issues in cross-cultural studies
- PTSD and culture
- Theoretical background for comparing the British and the Chinese culture

3.2 CROSS-CULTURAL RESEARCH AND PSYCHOLOGY

The focus of this section will be on the differences between culture, race and ethnicity. I will briefly introduce cross-cultural research and psychology, including the
types of such research and the application of cross-cultural psychology research to health-related area.

3.2.1 The distinction between culture, race and ethnicity

One may wonder what the differences are between culture, race and ethnicity, as many researchers used these words interchangeably in their 'cross-cultural' studies (MacLachlan, 1997; Matsumoto & Juang, 2004). While race and ethnicity are associated with culture, they also distinct from culture. This section discusses the differences between these terms.

The term culture is widely used because it touches on many aspects of life, and its precise meaning varies in different circumstances (Matsumoto & Juang, 2004). Culture can be discussed in terms of some general categories such as structural category (this emphasises the societal or governmental elements of a culture), or historical category (this refers to the heritage and tradition among a group of people from a particular culture) (Berry, Poortinga, Segall, & Dasen, 2002; Kroeber & Kluckholn, 1952). One of the categories is psychological which highlights a range of psychological features associated with culture, including both implied (e.g., attitudes) and observable (e.g., habits) cultural phenomena (Berry et al., 2002).

In the present research I chose to adopt Matsumoto and Juang's (2004) definition of culture.

Culture is a dynamic system of rules, explicit and implicit, established by groups in order to ensure their survival, involving attitudes, values, beliefs, norms, and behaviours, shared by a group but harboured differently by each specific unit within the group, communicated across generations, relatively stable but with the potential to change across time. (p.10)

Race is defined differently from culture (Matsumoto & Juang, 2004). MacLachlan (1997) stated that race is a biological term and refers to physical features
which can be inherited, such as skin colour, hair, and facial features. People of the same race do not necessarily share the same culture (Matsumoto & Juang, 2004; Zuckerman, 1990). For example, it is most possible that 'Black people' in Africa and 'Black people' in America have very different values, attitudes or beliefs associated with culture. Therefore, the reliance on race as comparison groups (e.g., Blacks vs. Whites) is inappropriate in cross-cultural research.

The essential meaning of ethnicity, as noted by MacLachlan (1997) refers to "...a psychological sense of belonging which will often be cemented by similar physical appearance or social similarities" (p.3). Examples of ethnic groups, such as African Americans, Native Americans and Asians have been widely used to refer to different groups of peoples in America (Matsumoto & Juang, 2004). Studies which focus on ethnicity only, for example reporting ethnic differences in emotions, intelligence and the like, cannot explain exactly what factors related to ethnicity may account for psychological differences among different groups, (Matsumoto & Juang, 2004). Indeed ethnic groups are not "full-scale" or "independent" cultural groups, in that they operate with the culture from their own heritage, interacting with the culture of the mainstream society (Berry, 1997, p. 100).

Many cross-cultural researchers investigated culture by race or ethnicity possibly because the latter categories are easier to measure (Matsumoto & Juang; 2004). However, I need to emphasise that their findings should not be categorically dismissed or ignored. As noted by Matsumoto and Juang (2004), such studies still provide researchers with "valuable information about possible cultural difference because cultural differences do underline countries" (p.35).
In the present study, I selected Chinese culture as comparison to Western culture (with a British sample). Although the word Chinese can be referred to as nationality, it also represents a unique set of attitudes, values, beliefs, and behaviours which are very different from those of the Western culture (see detailed discussion in section 3.5). I need to inform the readers however, that the samples of these two cultures in this PhD study came from populations in Beijing, China and Plymouth, the U.K. It is possible that the samples are only to a limited degree representative of these two cultures. For example, the Chinese sample might represent a population of urban Chinese culture, but not the culture in rural areas.

3.2.2 Cross-cultural research and psychology

Although interest in the relationship between psychology and culture began to emerge after the Second World War, only recently have researchers started to realise the importance of conducting psychological studies with participants of more than one cultural background (Berry et al., 2002). Cross-cultural research in psychology was defined by Brislin, Lonner and Thorndike (1973) as “the empirical study of members of various culture groups who have had different experiences that lead to predictable and significant differences in behaviour” (p. 5). The cross-cultural approach is concerned not

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1 The terms West or Western in this study, refer to some cultures which share some common characteristics. Researchers have suggested that countries of Western culture include the United States of America, much of Europe, Australia, New Zealand (Berry et al., 2002; Li, 2003; MacLachlan, 1997). As a contrast to Western culture, sometimes the terms 'Eastern' or 'Oriental' culture are used in this study, which refer to most cultures in Eastern Asia (e.g., China, Japan, Korea).

2 In fact, the term nationality is sometimes used by cross-cultural researchers to refer to culture, because most often different countries/nations can be said to be associated with different cultures (Matsumoto & Juang, 2004). However, one needs to be cautious about the possibility of multi-cultures within the same nation.
only with diversity and differences, but also with uniformity and similarities (e.g., universal behaviours across cultures) (Matsumoto & Juang, 2004).

Cross-cultural psychology research can be explorative and hypothesis testing in nature (Berry et al., 2002). Matsumoto and Juang (2004) They described five types of cross-cultural research:

- **Cross-cultural comparison studies** – are the most prevalent type of cross-cultural research, which compare two or more cultures on some psychological variables. They often hypothesise that one culture will score significantly higher on certain variables than the others.

- **Unpacking studies** – this kind of studies not only compare but also examine why cultural differences occur. They try to explain the differences found by measuring some variables that are believed to account for the differences. For example, in a study of visual illusions among cultures, researchers not only examined the differences on target variables (i.e., the perception of the length of line segments), but also measured training in drawing (Jahoda & Stacey, 1970) and effects of attention (Davis & Carlson, 1970) to try to explain the differences found in visual illusions.

- **Ecological-level studies** – this type of studies differs from the aforementioned two in that they use countries as the unit of analysis instead of individual participants. An example of such studies is Smith, Tropenaars and Dugan’s study (1995) on locus of control beliefs across 43 countries.

- **Cross-cultural validation studies** – these studies examine the equivalence of psychological measures which were originally developed in one culture, for use in other cultures.

- **Ethnographies** – in this kind of studies, researchers visit and live together with the local people of their research interest and conduct observation and fieldwork there.
The field of cross-cultural health psychology, originally, is to study how cultural factors may influence aspects of health and illness (Berry, 1997). For example, Henry and Stephens (1977) examined heart disease rates across eight different cultural groups (e.g., European Americans, Japanese, Caucasian Benedictine monks, Trappist monks) and reported that European Americans had the highest rate of heart attacks while Trappist monks had the lowest rate of heart disease. They suggested that two factors might be associated with the different rates of heart attacks across these cultural groups. The first factor might be involvement in unpleasant life events, and the other might be social cohesion and the degree of social support given by others when unpleasant life events happen. This study was not conclusive in that some other variables might also affect the comparisons between these cultural groups (e.g., level of industrialisation). Nonetheless, these findings informed us that sociocultural factors might impact the development of a health problem.

More recently, cross-cultural health psychology research has extended into studying the health of individuals and groups as they have been exposed to new cultural circumstances resulting from immigration (Berry, 1997). One example is Jovchelovitch and Gervais's (1999) study on social representations of health and illness among the Chinese community in England. They found that permanent Chinese immigrants tended to retain their cultural identity and health beliefs even after settling into a Western culture for a long time.

In closing, the concept of culture is broad and complex. Although it has been commonly and interchangeably used with race and ethnicity in cross-cultural research, culture has marked differences from the former two terms. In this thesis, the two comparative samples are selected based on their cultural differences [Western (i.e., British) vs. Chinese].

The following section addresses the methodological issues in cross-cultural research on PTSD and other psychology topics.
3.3 METHODOLOGICAL ISSUES IN CROSS-CULTURAL STUDIES IN PSYCHOLOGY

This section will describe and evaluate methodological aspects of the cross-cultural research process starting with the choice to use culture, race or ethnicity, followed by other methodological issues such as designing, sampling, and equivalence.

3.3.1 Designing cross-cultural studies

Some prominent cross-cultural researchers (Berry et al., 2002; Matsumoto & Juang, 2004) have seriously challenged the fact that people select culture in their 'cultural comparison' studies based on convenience (i.e., using race or ethnicity as a comparison category). They strongly suggested that people's choice of cultural comparison should be based on theoretical or practical questions. That is, it "should be dictated by a theoretically interesting contrast between the cultures concerned rather than by mere opportunity... Cultures should be selected which differ on the postulated independent variable that is the focus of research" (Berry et al., 2002, p. 299).

Further, prior to the design of cross-cultural studies, researchers are recommended to conduct a check on whether the supposed differences on the independent variables are present between the cultures concerned (Berry et al., 2002).

In addition, some researchers argued for the design and conduction of unpackaging studies (see Section 3.2.3 for types of cross-cultural studies). For example, Marsella, Friedman, and Spain (1996b) in their review of ethnocultural aspects of PTSD suggested that researchers should explore the "variations and patterns with a cultural tradition and heritage, and not simply use general racial category" (p.117). This is

3 The term 'ethnocultural' was created by Marsella, Kinzie and Gordon (1973) to refer to studies based on race, ethnicity or culture. Studies on ethnocultural aspects of PTSD were not necessarily comparison studies. Some focused on and investigated PTSD in certain ethnocultural groups (e.g., African Americans) (Marsella et al., 1996b).
because studies using broad categories of ethnocultural groups cannot inform the audience what factors underline the racial/ethnicity groups are related to the difference in PTSD outcomes. Similarly, Keane, Kaloupek, and Weathers (1996) suggested that cross-cultural researchers use specific factors (e.g., health or religious beliefs) which underlie the race/ethnicity variable, to study the observed differences between groups.

3.3.2 Sampling

This issue is to do with the extent to which the sample represents the particular culture being studied. It would be problematic to accept the assumption of homogeneity among a large group of people within the same culture, therefore researchers need to be cautious about generalising their findings to large cultural populations (Berry et al., 2002; Keane et al., 1996; Matsumoto & Juang, 2004). Indeed, as described by Berry et al. (2002), "the use of smaller, more precisely defined, culture-bearing unit will lead to more precision" in methodology (p. 301). Further, to help increase replicability of a finding across different samples within the same culture, researchers should collect data from different sites within the same cultural group, if this is practically possible (Matsumoto & Juang, 2004).

Marsella et al. (1996b) stated that one of the research strategies in conducting PTSD studies across cultures was to include matched samples from different ethnocultural groups. However, cross-cultural psychologists raised strong warnings against the use of matched samples in cultural comparison studies (Berry et al., 2002; Draguns, 1981). They argued that matching on one variable almost inevitably will lead to mismatching on other variables. For example, suppose a researcher would like samples of British and Chinese matched on education. Educated Chinese tend to have higher income and be more 'Westernised' than the average Chinese. They may be less likely to value traditional customs.
3.3.3 Equivalence

The forms of equivalence can include conceptual equivalence, structural equivalence, linguistic (language) equivalence and equivalence of the setting and procedures used to collect data in different cultures (Matsumoto & Juang, 2004).

Conceptual equivalence indicates that the concept being measured (in this case, posttraumatic stress) has to be applicable across the cultures being compared in the same study (Berry et al., 2002; Matsumoto & Juang, 2004). If a concept cannot be recognised or lacks applicability cross-culturally, then comparison can be meaningless. Take the case of depression for example, although some researchers argued that cultural-specific symptoms related to depression can occur, most investigators (e.g., Tanaka-Matsumi, 1997 p. 455) believe that a "common core" of symptoms of depression (e.g., tension, lack of energy, feeling useless) might exist and could be recognised across cultures. Depression therefore can be viewed as a universal disorder, and its concept is applicable in human beings across cultures. Detailed discussion on the applicability of PTSD across cultures is left to section 3.4.2.

Structural equivalence is associated with the "measurement level at which scores obtained in different cultural groups can be compared" (Van de Vijver & Leung, 1997, p. 7). Suppose researchers are interested in comparing the level of intelligence between two cultures, and ask local people in these cultures to describe what they think are the indication of intelligence. These indications may share little similarities across these cultures. For example, some cultures may think the sign of intelligence is good appraisal by important others (e.g., parents, teachers) while some may view creativity and analytical skills to be indicative of intelligence. Based on the different indications, the instruments developed to measure intelligence will contain different stimuli, thus the scores obtained from such instruments are not comparable across these two cultures. In addition, say, if a group of non-Western individuals are assessed on the level of intelligence using a measurement based on the Western indications, which may differ to
a great extent from their own, that population can be disadvantaged in their scores, thus the results of such comparison are not reliable.

As cross-cultural research most often involves studies in more than one language (usually English and other language(s)), researchers need to check carefully on linguistic equivalence when verbal stimuli or instructions are used (Brislin, 1976). As suggested by Berry et al. (2002), an instrument developed within one culture may include some features of that culture, and these features needs to be eliminated in cross-cultural comparisons. For example, when researchers use an assessment developed within a Western culture in a comparison study involving a non-Western culture, they should consider the cultural relevance of such assessment. Sometimes it is necessary to modify the original version of the assessment by using idioms and indigenous concepts of the non-Western culture. This modified version may be more appropriate than the original one for the non-Western participants to understand (Keane et al., 1996). In order to achieve linguistic equivalence, researchers (Keane et al., 1996; Matsumoto & Juang, 2004) have suggested a back-translation method. Using this method, researchers translate an instrument from the original language to the target language and then back-translate it to see if the original meaning of the instrument is retained. This procedure requires translators to be fluent in both the original language and the target language (Berry et al., 2002), and to have good knowledge of the cultures in a comparison study, as well as the theory behind the instrument (Keane et al., 1996; Matsumoto & Juang, 2004). The translation equivalence is usually satisfactory when after the back translation, "the original wording is reproduced more or less precisely" (Berry et al., 2002, p. 306).

The issue of equivalence also applies to the research setting and procedures used to collect data from participants with different cultural backgrounds. Different procedures of research (e.g., laboratory, field, questionnaire or observations) may have different meanings across cultures (Matsumoto & Juang, 2004). Researchers need to
identify these differences and ensure that procedures and setting are equivalent across different cultures in their cultural comparison investigations.

3.3.4 Section summary

Cross-cultural psychologists have been advised to use appropriate methodology in their studies. For example, they should conduct cultural comparison studies on the basis of contrasting theories or practical questions rather than on the basis of mere opportunities (Berry et al., 2002; Matsumoto & Juang, 2004). They should be aware of the fact that multi-cultures may exist among people within the same culture and are advised to use “smaller, more precisely defined, culture-bearing unit” when possible (Berry et al., 2002, p. 301). They should also establish conceptual equivalence, structural equivalence as well as equivalence in language and data collection procedures.

The following section will review literature on PTSD and culture, and discuss the applicability of the PTSD concept in non-Western cultures, especially in Chinese culture.

3.4 PTSD AND CULTURE

According to Marsella et al. (1996b), a "universal neurobiological response to traumatic events most likely exist" in human beings across cultures. Nevertheless, there are still ethnocultural variations "in the expressive and phenomenological dimensions of the PTSD experience" (p. 107), as well as in co-morbidity patterns (Keane et al., 1996; Marsella et al., 1996b; Perilla, Norris, & Lavizzo, 2002). In this section, I will review literature on ethnocultural research on PTSD, focusing on the cultural/ethnocultural-comparison studies, and discuss the equivalence of the PTSD concept in Chinese culture.

3.4.1 What do we know about cultural/ethnocultural comparison research on PTSD: incidence; co-morbidity and predictors of PTSD symptoms?
The majority of cultural/ethnocultural comparison studies of PTSD has focused on certain groups (e.g., Afro-Americans, American Indians, Asian Americans, Cambodians, Hispanics), and certain traumatised populations (e.g., war veterans, refugees, torture victims, victims of natural and man-made disasters) (Marsella, Friedman, Gerrity, & Scurfield, 1996a). In addition, the majority of the comparisons were based NOT on culture but on race or ethnicity.

What follows is a review of cultural/ethnocultural comparison research in terms of incidence of PTSD, psychiatric co-morbidity and predictors of PTSD. With regard to PTSD incidence, studies have produced mixed results. Some studies showed that non-White, non-Western traumatised samples had similar PTSD incidence compared with the White/Western samples. Carlson and Rosser-Hogan (1994) interviewed 50 Cambodian refugees living in the U.S. on their traumatic experiences and current symptoms of posttraumatic stress, depression, and anxiety. PTSD symptoms were measured via the PTSD Checklist based on DSM-III-R criteria. They suggested that the PTSD prevalence and the basic symptom profile of their Cambodian refugee sample were similar to that observed in U.S. trauma survivors. More recently, Adams and Bocarino (2005) collected data after the 9-11 terrorist attack on a random sample of 2368 New York city residents. The sample was categorised as Hispanics, Non-Hispanic White, and Non-Hispanic African Americans, and they were telephone interviewed using the DSM-IV diagnostic criteria of PTSD. They reported no post-terrorist attack racial/ethnicity differences for the severity of PTSD symptoms. Phillips, Rosen, Zoellner and Feeny (2006) compared posttrauma reactions among victims of abuse in a non-Western culture and a Western culture using the Post-traumatic Diagnostic Scale (PDS) (Foa et al., 1997). Their results showed that despite political or cultural differences, the PTSD prevalence was similar between Malaysian women and American women with partner abuse experiences.

Some studies, however, suggest a higher incidence of PTSD in non-White/Western populations. For example, in a study comparing Hispanic, Black and
White Vietnam veterans, Schlenger et al. (1992) stated that the Hispanic sample had the highest PTSD prevalence, followed by the Black and the White. Kutz et al. (1994) investigated PTSD post MI among 100 patients using an adaptation of the PTSD Inventory based on DSM-III criteria, and reported that those with Asian or African descent had a higher incidence of PTSD than American/Europe descent participants. In a more recent survey on PTSD symptoms in the police in America, Pole et al. (2001) compared 655 White, Black, and Hispanic urban police officers using the Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor, 1998). They suggested that Hispanic-American officers had more severe PTSD than European-Americans and African-Americans.

Although the foregoing studies did give some insight into the comparison of PTSD prevalence in different cultural/ethnocultural groups, they provide little knowledge about the relationship between cultural factors and the outcome. The above review shows that no cross-cultural studies have thus far compared PTSD incidence among people of Chinese culture with other cultures.

Cultural/ethnocultural comparison studies in terms of the psychiatric co-morbidity with PTSD support the strong relationship between trauma, PTSD, related anxiety and depressive disorders, for example, following war (Steel et al., 2004), earthquakes (Me, 1993) and sexual abuse (Barker-Collo, 1999). Once again, these studies revealed inconsistent results on the severity of psychiatric co-morbidity across cultural/ethnocultural groups. Non-Western traumatised samples (i.e., Chileans, Native Canadians) were found have more severe psychiatric co-morbidity following trauma compared with Westerners (i.e., Americans, Caucasian Canadians) (Barker-Collo, 1999; Me, 1993). On the other hand, Vietnamese refugees who had settled in Australia seemed to have less severe psychiatric co-morbidity with PTSD than Australians (Steel et al., 2004). Nevertheless, cross-cultural comparison studies on psychiatric co-morbidity with PTSD are somewhat limited. In particular, no researchers have compared Western
culture with Chinese culture in terms of co-morbidity with PTSD.

Drawing from the cultural-comparison studies comparing Chinese with Western people in terms of depressive and anxiety symptoms, which are the most common psychiatric co-morbidity with PTSD, some argued that the Chinese might have higher scores in depressive symptoms. For example, during the process of validating the Chinese version of the Minnesota Multiphasic Personality Inventory (MMPI), Song (1981) reported a higher baseline for the Depression Scale score among normal Chinese than the standardised samples of the MMPI. However, one needs to be cautious about interpreting Song's (1981) results. A general trend has been observed in the other MMPI translations that the norms for Depression scale tended to be higher than in the original version (Butcher & Clark, 1979).

In contrast to Song's (1981) results, one cross-national epidemiological survey found that Taiwan Chinese had the lowest lifetime (1.5%) rates of major depressive disorder in comparison with Western countries such as America, Canada and France (Weissman et al., 1996). In fact, researchers have postulated that the strong sense of interdependence with family (this will be elaborated in more detail in section 3.5.1) might prevent the Chinese from either getting depressed or developing long-term depression (Cheng, 1989; Xu, 1997). However, they also speculated that the strong family ties of the Chinese might sometimes have a negative impact on individuals' psychological wellbeing. For example, the Chinese would be prone to depression and anxiety when becoming unable to support their families, which would often generate a feeling of shame or useless, or excessive worrying (Cheng, 1989).

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4 It is of note that the studies comparing Chinese with Westerners introduced in this chapter were based on data of Chinese participants from mainland China, Taiwan, Hong Kong or overseas. While admitting that there may be historical and socio-political differences between these regions, some researchers suggested that these groups of Chinese still share some culture similarities, at least in a broad sense (e.g., they tend to be influenced by Confucian and Buddhist teaching, share some features of collectivism) (Bond, 1996; Xu, 1997; Xu et al., 1998).
With regard to anxiety, studies seem to suggest inconsistent results as well. Some researchers stated that the Chinese might have higher anxiety prevalence in comparison with Westerners. For example, Cheung and Lee (1984) administered three measurements of anxiety to 1406 Hong Kong Chinese secondary school students - Taylor Manifest Anxiety Scale, Achievement Anxiety Test and the S-R Inventory of Anxiousness. They reported that the mean scores of all three measurements of Hong Kong Chinese students were higher than those of American secondary school students.

By contrast, aiming to investigate psychological maladjustment and its relation to academic achievement (assessed by a test of mathematics), Crystal et al. (1994) studied a sample of 1,386 American and 1,633 Taiwan Chinese eleventh-grade students. Their results showed that compared with the American students, the Chinese students reported less stress and academic-related anxiety, but they did report higher frequencies of depressed mood. It has to be noted that the foregoing cross-cultural studies on anxiety are based on school students rather than the general population. Nonetheless they provide some insight into the comparison of anxiety in individuals in the Chinese culture and Western culture.

Turning to the review of cross-cultural/ethnocultural PTSD research in terms of predictors, Marsella and colleagues remarked that there are "certain philosophical or social interaction patterns, or personal dispositions and personality orientations that may be predictors of PTSD among certain ethnocultural groups" (Marsella et al., 1996b, p.121). Interestingly, cross-cultural/ethnocultural research shows that the relationship between dispositional factors and outcome of PTSD is very much under investigated.

Some cultural/ethnocultural comparison studies did investigate factors that might contribute to the differences in PTSD symptomatology. However, these factors were not dispositional ones, but were related to trauma exposure. For example, Beals et al. (2002) compared PTSD prevalence between American Indian and White Vietnam veterans in the United States, using Structured Clinical Interviews. They suggested that
exposure to combat could contribute to the discrepancy in PTSD observed between these two ethnocultural groups. Data on PTSD following interpersonal violence (i.e., nonsexual life events, violent sexual experiences) showed that the degree of exposure to violence, rather than ethnicity was mostly related to posttraumatic symptoms in a sample of 222 Mexican American, African American and European American undergraduate students (McGruder-Johnson, Davidson, Gleaves, Stock, & Finch, 2000). Other risk factors of PTSD reported in cultural/ethnocultural comparison studies included female gender - comparing Mexican and African American disaster victims (Norris, Perilla, Ibanez, & Murphy, 2001), and younger age – comparing American and Russian women following induced abortion (Rue, Coleman, Rue, & Reardon, 2004).

To conclude, the foregoing cultural/ethnocultural comparison research on PTSD gave some insight into the differences between different groups of people in prevalence of PTSD, but limited insight into psychiatric co-morbidity and risk factors, particularly dispositional factors. Most studies used race/ethnicity as a selective criterion instead of culture. The comparisons have been focusing on such ethnocultural groups as African Americans, Hispanics, and European Americans. The most often researched traumatic events were combat, being refugee and natural disasters.

3.4.2 Can PTSD symptoms be recognised across cultures? Is the concept of post-traumatic stress applicable in non-Western cultures, specifically in Chinese culture?

Although most research examining PTSD as a diagnostic category was conducted in Western nations, many studies have showed that PTSD diagnosis and its symptoms can be recognised across cultural boundaries in non-Western cultures, for example in Cambodian refugees (Carlson & Rosser-Hogan, 1994), in Malaysian women suffering from partner abuse (2006) and in Mexican and African American disaster victims (Norris et al., 2001). Recently, PTSD has also been diagnosed in the context of
Chinese culture. Zhao et al. (2001) conducted a survey with 205 junior school students after an earthquake in He Bei Province in China. Using a self-constructed questionnaire based on the diagnostic criteria of DSM-IV, they reported that 9.4% of their samples met PTSD diagnostic criteria. Following an earthquake in Yun Nan, Cao and his associates (Cao et al., 2003) interviewed 1294 Chinese survivors with a back translated Chinese version of the Mental Health Diagnostic Interview Schedule (DIS)-posttraumatic stress disorder section. They identified a rate of 8.9% PTSD incidence among their sample. Using a validated Chinese version of the Impact of Event Scale –Revised (IES-R) (Wu & Chan, 2003), Wu et al. (2005), in a longitudinal postal questionnaire survey, studied the psychological sequelae related to Severe Acute Respiratory Syndrome (SARS) at 1 month (T1) and 3 months (T2) after discharge from hospitals. They reported that 4% of 131 patients at T1 had all three IES-R subscale scores above the cutoffs, and the figure was 5% at T2. Although using different assessments to measure PTSD following different traumatic events, these large-scale studies have demonstrated posttraumatic diagnosis and its symptoms to be present in Chinese culture.

Although PTSD incidence in previous studies has varied considerably from one setting to another, a core of common symptoms seemed to appear in all sites. That is, human experiences in response to trauma may be universal. The exposure to trauma may trigger similar responses in individuals across cultures; they may have intrusive memories about the traumatic event, may display avoidance behaviours, and/or feel hypervigilant. As some researchers noted, a "universal neurobiological response to traumatic events most likely exists" in human beings across cultures, especially in intrusion and arousal symptoms (Marsella et al., 1996b, p. 107). They thus argued that PTSD might be understood as a universal disorder and its diagnosis could be clinically meaningful even in the face of what seem to be ethnocultural differences. Indeed, an recent empirical study investigating posttraumatic stress symptoms between U.S. and Russian adolescents showed that the psychological responses to trauma are similar, and
the PTSD concept is applicable in both these two cultures (Ruchkin et al., 2005). Although one needs to be cautious before generalising the findings to other cultures, at least to some extent this supports the notion that PTSD can be understood as a universal disorder. However, as mentioned previously, culture may influence people's vulnerability to trauma, "place differential emphasis on particular symptoms... and shape the general tone of emotional life to which a person should aspire" (Manson et al., 1996, p. 267).

The following section will focus on the discussion of cultural variations in the independent variables (predictors, i.e., alexithymia and health locus of control) chosen for this PhD study. However, it will start with a general introduction to the cultural differences between the British (the Western) and Chinese culture.

3.5 Theoretical Background for Comparing British and Chinese Culture

As previously indicated, cross-cultural investigators have been strongly recommended to conduct a check on whether the presumed differences on the independent variables are present prior to the design of their cultural comparison studies (Berry et al., 2002). As a reminder, alexithymia and health locus of control are the independent variables that I have selected for my study in predicting the severity of post-stroke PTSD and psychiatric co-morbidity. To check whether the differences in these independent variables are indeed present between the Western culture and Chinese culture, I refer to some theoretical framework as well as empirical evidence existing in literature.

3.5.1 General background introduction – cultural differences between the British (the West) and the Chinese

Chinese culture is selected as a comparison group to Western culture (with a British sample), because numerous conceptual and empirical studies have shown that these two cultures differ to a great extent in sets of attitudes, values, beliefs, and
behaviours (e.g., Bond, 1991; Bond, 1996; Chen, 2001; Hoeman, Ku, & Ohl, 1996; Hsu, 1953; Li, 2003; Morris & Peng, 1994). While a full discussion of all the differences is beyond the scope of this chapter, the core and most relevant differences are outlined here, namely: individualism and collectivism; emotion and emotional communication; social cognition; and somatisation.

- **Individualism and Collectivism (I-C):** I-C refers to the “degree to which a culture encourages, fosters, and facilitates the needs, wishes, desires, and values of an autonomous and unique self over those of a group.” (Matsumoto & Juang, 2004, p.48). Besides the primary concern for oneself as opposed to a concern for one’s group(s) (Berry et al. 2002), other features of I-C include self-reliance, competition and emotional distance from in-groups (for individualism), and interdependence, and family integrity (for collectivism) (Triandis, 1995). I-C is a comprehensive construct and has been used to explain a great deal of psychological differences across cultures. It is of note that I-C are not opposite to each other on a single dimension, and they “can coexist and are simply emphasised more or less in each culture, depending on the situation” (Triandis, 1993, p.162).

Chinese culture, as a typical sample of collectivism, has been theorised to have a situation-centred way of life which emphasises interdependence between families (e.g., parents and children), whereas American and British cultures, probably most representative of individualism, are more individual-centred (e.g., Berry et al., 2002; Hui & Triandis, 1986). Kagiltcibasi (1990; 1996) viewed that in collectivistic culture (i.e., Chinese) family members depend on each other in case of sickness. The orientation to family support for old parents was claimed to be almost as strong as religious beliefs for Chinese (Chen, 2001). By contrast, in individualistic environments, members of a family tend to live
separately and do not necessarily rely on each other in case of sickness. Each individual is responsible for taking care of himself/herself (or his/her immediate family), and to have his/her own independence in life (Hui & Triandis, 1986; Xu, 1997).

**Emotion and its communication.** Some researchers suggested that emotions may be less relevant in China than they are in the Western world (Kleinman, 1986; Potter, 1988). Western culture views that personal emotion is a critical component of social experience and can provide the basis to form or dissolve social relationships. On the other hand, the Chinese seem to believe that emotions are not important and are not needed to create social relationships. It is of note that the Chinese can identify the existence of their emotions, but most often describing emotions is ignored (Potter, 1988). Xu (1997) hypothesised that the way in which Westerners express and describe their emotions is more explicit or extreme than Easterners. In addition, while Western culture assumes that emotional life is almost always linked with individuals' inner feelings, Chinese tend to believe that emotion life may be situational and linked with external sources (Potter, 1988). As a Chinese informant in Potter's study explained that "We Chinese show our emotions with our work, actions, not words" (p. 194).

In addition, the Chinese have a high tendency to share their feelings and be involved in emotion communications with "the in-siders" (e.g., family members, relatives and friends). However, they rarely express or discuss their emotions with strangers ("the outsiders") (Gao, Ting-Toomey, & Gudykunst, 1996).

One example of the different ways and degrees in ability to express, describe and get in touch with one's own emotions is the construct of alexithymia.
Empirical evidence suggested that Chinese populations tend to have more difficulty in identifying feelings from somatic sensations, and more difficulty in describing feelings than Westerners (e.g., Dion, 1996; Le, Berenbaum, & Raghavan, 2002). Detailed exploration on cross-cultural studies of alexithymia construct can be found in section 3.5.2.1.

**Social cognition** has also been suggested to be embedded in cultures (Berry et al., 2002; Matsumoto & Juang, 2004). Most cross-cultural research on social cognition has been concerned with the process of attribution, which refers to "the way in which individuals think about the cause of their own, or other people's behaviours" (Berry et al., 2002, p. 72). It can be said that studies on attribution can be linked with research on locus of control. Morris and Peng (1994) suggested that the Chinese tend to view behaviour as situational caused (externally caused), whereas Americans view it as dispositionally caused (internally caused). Choi, Nisbett and Norenzayan (1999) stated that Westerners tended to make dispositional attributions to understand human behaviours, whereas East Asians preferred situational (contextual) attributions. Some empirical studies suggested that the Chinese were more externally oriented in locus of control, whilst Westerners in general were more internally oriented. For example, Hsieh, Shybut and Lotsof (1969) reported that Hong Kong Chinese high school students were more externally oriented in locus of control [measured by Rotter's Internal-External Locus of Control (I-E) scale] than their Anglo-American counterparts. Detailed discussion on cross-cultural studies of locus of control can be found in section 3.5.2.2.

**Somatisation** - Many studies have suggested that Chinese people tend to somatise their psychological problems. For example, Kleinman and his associates (1982; 1985) investigated a group of psychiatric outpatients in Hunan, China. They observed that many of these patients complained of pain
associated with muscles and dizziness. Using the Chinese language version of
the Schedule of Affective Disorders, Kleinman found that 87 out of 100 patients
met the DSM-III criteria for major depression. They thus suggested that for the
Chinese, focusing on somatic complaints might be a way to express depressive
disorders. In another study in Hong Kong, mildly distressed individuals (e.g.,
university students) most often presented their complaints in a somatic way
compared depressive symptomatology among Chinese psychiatric outpatients
(university students who had been asking for interventions at university
counselling centres and clinics) with a gender-and-age matched non-patient
group (Chinese university students). Both groups were administered the
Chinese Depression Scale. They reported that controlling for overall degree of
depression, the outpatients but not non-patients, tended to complain more of
somatic symptoms than other types of depressive symptoms (e.g., affective,
positive). In the second study of this paper, they compared depressive
symptomatology among Chinese (a different group from study 1), Chinese
American and Caucasian American students. They found that the Chinese
students, however, reported significantly fewer somatic symptoms than the
American students (including both Chinese American and Caucasian Americans
groups). Thus they argued that the greater tendency toward presenting somatic
problems within the Chinese “may be specific to the clinical population in China
rather than to the Chinese population at large” (Yen et al., 2000, p. 998).

In fact, some researchers (Cheung, 1985; Xu, 1997) argued that the Chinese
would admit to or express, rather than somatise, their psychological or
emotional problems when being asked directly about their problems. More
recently, Chang (2007) administered the Chinese Beck Depression Inventory to
1039 Chinese college students in Taiwan, and found that those with a probable diagnosis of depression tended to emphasise less on somatic symptoms than non-depressed students. Their findings run contrary to the common assumption that Chinese people tend to express depression in somatic terms. Western influences on Chinese society and on the detection and identification of depression are likely to have modified the expression of depressive illness quite sharply since the early 1980s. This may help explain why Chang (Chang, 2007) had different observations as compared with Kleinman (1982) and Cheung (1989). Indeed, Bond (1996), in his book reviewing Chinese psychology, emphasised that "from a Western perspective, the Chinese pattern of reaction to stress might be thought of 'somatising' the emotion. Alternatively, the Western pattern could be thought of as 'psychologising' the emotion..." (p.172).

In sum, both conceptual work and empirical evidence have suggested that Chinese and Western cultures differ in many ways. I discussed four areas that are most related to this cross-cultural study: individualism and collectivism (I-C), emotion and emotion communication, social cognition, and somatisation. This sets the basis for the theoretical background for the cultural comparison part of this thesis.

3.5.2 Cultural differences of the independent (predicting) variables

3.5.2.1 Personality variable – alexithymia trait

Studies indicated that cultural differences might exist regarding the alexithymia trait in Western population and Chinese population. For example, Dion (1996) administered the Twenty-Item Toronto Alexithymia Scale (TAS-20) to 950 university undergraduate students in Toronto. He divided the sample into three ethnolinguistic groups: native English speaking, native European speaking and native Chinese speaking. His data suggested that native Chinese language speakers had higher scores on the
overall TAS-20 and its three underlying dimensions than native English and native European language speakers. Arguing that the ethnolinguistic variables of types of native languages could be viewed as an alternative for ethnicity, Dion's (1996) results implied that cultural influence might have an impact on Chinese individuals to be less "psychologically minded" than those from Western cultures. The results of this study provided some useful information about possible cultural differences in alexithymia, nevertheless the interpretation of the results need to be treated with caution because it measured ethnolinguistic variables rather than culture. More recently, Le et al. (2002) studied culture and alexithymia in a sample of 104 European American and 102 Asian American (of which 41 were Chinese) college students in the United States. The Asian group reported higher scores in each of the subscales of the TAS-20. Their work suggested that culture may have a possible effect on alexithymia, in that Asian (including Chinese) populations tend to have more difficulty in identifying feelings and more difficulty in describing feelings, as well as being more externally oriented in thinking.

Based on the research evidence, it seems logical to postulate that compared with the British stroke patients, Chinese patients will have more difficulty in identifying feelings, in describing feelings and will be more externally oriented in their thinking.

3.5.2.2 Coping variable - locus of control

Locus of control, as a relatively stable set of beliefs (Lefcourt, 1983; Walker, 2001), can be influenced by culture. Studies have shown differences in locus of control between Chinese and Western cultures. For example, based on Rotter's I-E scale, Hsieh et al. (1969) found that Hong Kong Chinese students had higher orientation towards external locus of control than American-born Chinese students, who were in turn more external than Anglo-American students. Lao (1977) assessed 517 Chinese college students in Taiwan and 413 American college students with the IPC scale (Levenson, 1974). They found that in both cultures, males in general were more likely to feel that
their lives were controllable than females. They also reported that American females had a higher tendency towards internality of locus of control than Chinese females. They suggested that individuals in Western culture, where there is a higher dependency on the self, would be expected to be more internally oriented in locus of control than individuals in the Chinese culture. A more recent study compared locus of control beliefs (measured by Rotter's I-E scale) between 54 college students in New Zealand and 65 Hong Kong Chinese students (Hamid, 1994). Its results showed that Chinese students were more external in their locus of control orientation than were the New Zealand students. In fact, Leung (1996) conceptualised that Chinese people, influenced by Confucian and Buddhist teaching, tend to attribute the cause for life events, especially negative events to external chances (i.e., fate, luck, or predetermined destiny).

A few studies, however, showed different results. Some studies suggested that the external locus of control orientation in Chinese might depend on the specific context. For example, Chan (1989) compared his data on locus of control from a group of Hong Kong undergraduates' with those obtained by Parson and Schneider (1974), in which the internality and externality were categorised into several dimensions (e.g., luck-fate, academics, respect). He reported that the Chinese students were more external only on the luck-fate dimension, but were actually more internal in term of academics and respect than the Western samples (e.g., Americans, French) in Parson and Schneider's study. Another study by Smith, Trompenaars, and Dugan (1995) reported data from organisation employees from 43 countries using Rotter's I-E scale. The mean scores of externality locus of control in the Chinese (10.04) were similar to that of samples from some Western cultures, and were actually lower than that of respondents from United Kingdom (mean = 10.29) and Sweden (mean = 11.57). Unfortunately, they did not inform whether the difference in the mean scores were significant or not nor give any interpretations of such mean differences.

Some studies have taken the above arguments a step further by making the link
between locus of control and psychological adjustment in Chinese culture. A recent review (Leung, 1996) suggested that external locus of control is associated with more psychological symptoms than internal locus of control in Chinese people.

It is of note that none of the aforementioned studies compared the Chinese and Western population in terms of health locus of control, which is the application of locus of control theory to health related behaviour. Despite the fact that the foregoing studies comparing locus of control produced inconsistent results, I hypothesise that the Chinese stroke sample will score higher on external (i.e., chance or powerful others) health locus of control than the British patients. This is because Chinese culture is theorised as situation-centred, where uncontrollable factors such as luck, fate or chances tend to play an important role in people's beliefs (Xu, 1997; Xu, Cheng, Li, & Zhang, 1998).

3.5.3 Cultural differences in illness perception (e.g., causes and consequences) and of caring for patients

Although the main focus of the thesis is not on the link between patients' perception of illness (in this case stroke) and PTSD, a brief review in this area is useful to further our understanding of cultural differences in the area of health and illness.

Among the many ways in which culture influences health behaviours, one of the important aspects is people's perceptions of health and illness (Berry et al., 2002; Bond, 1996; MacLachlan, 1997; Matsumoto & Juang, 2004). By perception, I mean the way people think about causes and consequences of an illness. Matsumoto et al. (1995) conducted a cross-cultural study aiming to explore and compare people's attitudes and values relating to osteoporosis and its treatment. They recruited 72 Japanese and Japanese American women over the age of 55, and divided them into two groups. One group included those born and raised in America and who spoke English as their mother language, the other group included those born and raised in Japan and who spoke Japanese as their first language. They reported that Japanese women (those who spoke
Japanese as first language) tended to attribute the cause of illness to something uncontrollable (e.g., fate, chance, or luck), while Japanese American women were more likely to attribute the illness to diet, which is something under one’s control (Matsumoto et al., 1995).

With regard to the perceived consequences of an illness (if they were diagnosed with osteoporosis), more Japanese women than Japanese American women reported economic consequences. The major concern for Japanese American women, however, was mobility problems. These data reflected culture differences in shaping people’s perception of illness, because mobility and being independent are “symbols of autonomy and self-reliance, cornerstones of individualism” whereas “the tolerance for the lack of such individual mobility” may be more prevalent in collective cultures (e.g., Chinese and Japanese) (Matsumoto et al., 1995, p. 52). While their work has some limitations in that they did not assess the degree of acculturation of their samples, the merit of this study lies in the information on culture’s role in formulating the perception of health and illness.

As previously indicated, Chinese culture emphasises interdependence between families, whereas Western culture tends to focus more on the individual, and each individual is responsible for taking care of him/herself (Berry et al., 2002; Hui & Triandis, 1986). It is therefore possible that populations in collectivism and individualism culture differ in the perception of care for medically ill patients. Holroyd (2001) reported that elderly Chinese people living in Hong Kong would expect their adult children to support them in old age, because there is a cultural expectation that one’s children will become one’s caregivers in Chinese culture. On the other hand, Matsumoto et al. (1995) found that more Japanese American women than Japanese women reported that people other than families would look after them if they were diagnosed with osteoporosis.

3.6 SUMMARY
Studies investigating risk factors of illness-related PTSD have suggested that alexithymia was associated with more severe PTSD (e.g., Bennett & Brooke, 1999). Unfortunately, no studies have been carried out to examine the link between alexithymia and psychological distress among the Chinese population. Nevertheless, cross-cultural studies have suggested that the Chinese population tends to score higher on the overall TAS-20 and its three dimensions than Westerners (Dion, 1996; Le et al., 2002). Studies have also shown that externality in health of locus of control might increase individual's susceptibility to medically-related PTSD symptoms and general health problems (Chung et al., 2006b; Soet et al., 2003). Although there were some inconsistence in results, in general, Chinese people are suggested to be more external in locus of control than Westerners (e.g., Hamid, 1994; Hsieh et al., 1989; Lao, 1977). Chinese people with externality locus of control have been found to display more psychological symptoms than those with internal locus of control (Leung, 1996).

In the light of the foregoing literature, it seems logical to hypothesise that Chinese patients will be more prone to developing PTSD following life-threatening illness (in this case stroke) than the British patients. My investigation will add to the PTSD literature and cross-cultural health psychology literature by examining and comparing the relationship between PTSD and aforementioned factors in two different populations. Such investigation has not been carried out previously.

In the following chapter I will discuss the focus group studies in Britain and China aiming to explore the subjective experience relating to stroke of participants in two cultures.
CHAPTER 4

STUDY 1: FOCUS GROUP STUDIES IN BRITAIN AND CHINA

4.1 INTRODUCTION

The aim of this study was to explore the subjective experience of stroke patients in two cultures (British and Chinese) by describing the similar and different patterns in participants’ responses. Prior to this thesis, no research has examined subjective experiences relating to stroke. Information gained through this study would help gain an initial understanding of the similarities and differences of the stroke experience between British and Chinese cultures. This study forms the qualitative part of the PhD project.

The purpose of using focus groups is to learn about the range of experience and opinions of the stroke patients. Focus group methods can ensure "that the researcher has as complete a picture of participants' thinking as possible rather than simply relying on the researcher's assumptions about what is relevant" (Morgan, 1997, p. 25).

Compared with other qualitative methods (i.e., individual interviews), focus group methods have certain advantages. The first is the group interaction to produce the data. Focus groups can provide a comfortable environment for participants in which they may share very personal experiences especially with similar other people (O'Brien, 1993). Participants in a group setting may compare their own experience and opinions with each other, and their interaction provides a valuable source of understanding complex behaviours (Krueger & Casey, 2000; Morgan, 1997). As Zeller (1993) observed "one participant's comment may spark a related thought in the mind of another participant. This participant's articulation of this new thought may lead others to still other thoughts." (p. 100). This interaction allows the investigator to discover information that might not come up in one-to-one settings. Another advantage of focus groups is their "relative
efficiency" in comparison to individual interviews in terms of "gathering equivalent amounts of data" (Morgan, 1997, p. 13). Allowing more than one participant to take part in the discussion offers the chance to collect data in a relatively short time (Krueger & Casey, 2000; Morgan, 1997). Nevertheless, there are also disadvantages to focus group methods. For example, recruiting appropriate participants can be difficult (Wilkinson, 2003).

4.2 METHOD

4.2.1 Sample recruitment

Four focus group discussions were conducted in Britain and China, two in each country. In total, 26 participants were recruited, 11 from one hospital in Plymouth (Hospital A), the U.K. (N = 6 in the first group and N = 5 in the second) and 15 from two hospitals in Beijing, China (N = 5 in the third group from Hospital B and N = 10 in the fourth group from Hospital C). Participants were all in-hospital patients at the time of the discussions. All British patients who were contacted agreed to participate. Eighteen Chinese patients were contacted initially and three refused to participate with no reasons given. Patients were included in focus groups if they had a clinical diagnosis of a stroke and were medically stable at the time (i.e. not under constant medical monitoring). Patients were excluded if they were currently receiving intervention by a psychiatrist for mental health problems or had a previous history of severe mental health problems. Patients were also excluded if they exhibited severe post-stroke cognitive impairments and/or dysphasia.

Patients were recruited on a purely opportunistic basis due to the difficulty of finding enough appropriate stroke patients (based on the aforementioned inclusion/exclusion criteria) within a short period of time. The time constraint of conducting the focus groups was due to the fact that this was the first phase of the PhD
Chapter 4  

Focus Group Studies in Britain and China

project, and I needed to carry out two large-scale quantitative studies afterwards, and that the following studies would take time.

Hospital nursing staff familiar with the inclusion and exclusion criteria of the study approached and identified patients on the researcher's behalf. They then informed me who I could approach. I approached the patients and invited them to participate in the study and obtained their consent. No participants' names were recorded, but information such as gender, age and their stroke history (e.g., numbers of strokes they had previously) were collected.

The ethics approval for the study in the U.K. was obtained from Plymouth Local Research Ethics Committee and from the Human Ethics Committee (HEC) of the University of Plymouth (UoP). The ethics approval for the study in China was also granted by The HEC of UoP. Local research permissions and recruitments of patients were granted by each individual hospital authority in Beijing, China. Consent was obtained from each participant (See Appendix 1 and 2 for a consent form in English and Chinese respectively).

4.2.2 Location and settings

The focus groups in China and Britain were held in a meeting room in each hospital, in December 2003 and February 2004 respectively. A circular seating was arranged and refreshments were available. All group discussions were conducted at times of greatest convenience for participants without interfering with their daily activities. For example, group discussions in China were conducted in the morning or evening after patients had finished their breakfast or dinner. The focus groups in Britain were carried out in the early afternoons after patients had finished their lunch and before visitors were allowed to visit. Chinese participants were paid 40 Chinese Yuan, equal to approximately 3 pounds at that time, as a token of appreciation for their time. Due to financial constraints, I was not able to pay British patients for their participation.
4.2.3 Materials

A discussion guide was drafted before the study based on the research objectives and used during the focus group discussions. It addressed the following topics: (1) description of what happened to participants following their stroke; (2) participants' experiences of hospital care and the involvement of others; (3) participants' beliefs about the causes of their stroke; (4) their perceptions of the stroke consequences; and (5) how they felt about themselves at the time of discussion - following the stroke (see Appendix 3 and 4 for the discussion guide in English and Chinese respectively). The content and structure of the discussion guide evolved through a series of general discussions between the investigator, her supervisors, and physicians of hospitals in both countries. All groups had these topics in common so that they would discuss the issues derived from the topics in a relatively comparable fashion.

4.2.4 Procedure

I greeted participants and introduced myself, explained the aim, procedure and ground rules of group discussions, including the anticipated use of the data (see Appendix 5 and 6 for the English and Chinese version of the introduction). To allow participants to express freely their opinions and to maximise their responses, I emphasised that there were no right or wrong answers to the questions they were going to discuss. Participants were asked to keep the discussions confidential. After an ice-breaker question (i.e. self-introduction or favourite TV program), participants were asked a general open-ended question regarding what happened after their stroke. Open-ended questions, as noted by Krueger and Casey (2000), allow individuals to respond using their own interpretations and personal experiences.

I acted as a group moderator for all focus groups. A native English speaker, who was also from the UoP, was also on-site for the British groups helping clarify terminology, figures of speech and the like if needed. He was also asked to keep the discussions
confidential. All group discussions were conducted with a high level of moderator involvement, which would keep the discussions concentrated on the topics rather than detour to irrelevant issues (Morgan, 1997).

I managed the group interaction so that talkative participants did not overwhelm the interaction. For example, if one particular participant was very talkative, I would say 'We have already heard from Tim on this question, let's hear from someone else.', or 'Thank you Bob, for your opinions, what about the others?'

Each focus group session lasted approximately 1 hour and a quarter, and was audio recorded with the participant's permission. Brief notes were taken during the discussions to facilitate analysis.

4.3 METHOD OF ANALYSIS

The audiotapes were transcribed verbatim. Each line of each transcript was numbered. The transcripts of the British groups were also double checked by the native English speaker who was present at both discussions in the U.K. These transcripts were analysed using content analysis.

Content analysis involves "coding participants' open-ended talk into closed categories, which summarise and systematise the data" (Wilkinson, 2003, p. 196). This method provides a useful summary of the group discussions, and presents participants' diverse ideas in an overview pattern. One particular advantage of undertaking content analysis is that researchers are able to transfer qualitative data into a quantitative form (Wilkinson, 2003). As noted by Sommer and Sommer (1991), the basis of content analysis is "quantification (i.e., expressing data in numbers)" (p. 178). They emphasised that by undertaking content analysis, the investigator can "come up with precise figures" (p. 178), rather than vague impressions about trends. That is researchers can count and add up the number of responses falling within each category and report the frequency or percentage of responses (Wilkinson, 2003). However, it has been debated whether it is
appropriate to report numbers in qualitative research. Some researchers (Krueger & Casey, 2000) object to the use of numbers whereas others consider it not a problem (Morgan, 1997). Content analysis was particularly useful for the present study because it would provide preliminary information on the similarities and differences in the patterns of responses between two cultures (e.g., perceived causes and consequences of stroke, and post-stroke psychological responses).

I repeatedly examined the full set of transcripts. The topics in the discussion guide were used as initial categories (e.g. perceived causes of stroke, feelings at the time of stroke) for organising the data although they were not adhered to rigidly and 'novel' categories were sought. From these transcripts, particular words or phrases used to describe experiences and perceptions were listed and grouped together on the basis of similarity in content (e.g., 'runs in my family', 'I have high blood pressure, so do my daughters'). These similar contents formed the subcategories (e.g., heredity) under the category (e.g., causes of stroke).

The transcripts and identified categories and subcategories were also examined by my supervisors and one native English speaker (for the British focus groups) to provide a reliability check during the data analysis. No major disagreements emerged from the discussions between myself and them. Unfortunately I was not able to check the respondent validation. That is, I was not able to bring together the same group of stroke patients and present the transcripts and categories to them in order to ensure that these categories reflected or represented accurately some of the discussions in the focus groups. The reason was that by the time I had finished transcribing the group discussions and arriving at the categories, the patients had already been discharged from hospitals.

**4.4 RESULTS**

This section summarises the results of the study that was conducted to explore the subjective experience of stroke patients in Britain and China. Seven categories were
identified for both groups: subjective feelings at the onset of stroke, feelings after stroke, experience of hospital care and family involvements, perception of family members’ involvement in daily care, perception of payment for health care relating to stroke (only in Chinese participants), perceived causes of stroke, and perceived consequences of stroke. Quotations from participants were used to illustrate categories and subcategories. Each participant is identified by a number (see Table 4.1). It is noted that the transcript of focus groups in China is in Chinese, but the quotations from Chinese participants were translated into English, verified by my Chinese (Cantonese) -speaking supervisor. The section will start with a description of participants, including their characteristics and the hospitalisation process as described by them.

4.4.1 Description of the sample

4.4.1.1 Characteristics of the sample

Twenty-six stroke patients participated in 4 focus groups, 11 British and 15 Chinese. The British sample consisted of nine men and two women with an average age of 72.1 years (range = 48 to 93). The Chinese sample consisted of ten men and five women with an average age of 65.4 years (range = 37 to 80). The majority (73%) of the British and just over half of the Chinese participants (53%) had their first time stroke. The number of previous strokes for the remaining participants ranged from 2 to 4 times (Table 4.1). Most participants (N=23) had ischaemic stroke, three had haemorrhagic stroke. Although no participant was dysphasic at the time of discussions, 5 of them (3 in the British group and 2 in the Chinese group) did have some degrees of difficulty in speaking.

The majority of British participants (N=9) were at home, while two were elsewhere (e.g., at a party) when stroke happened. Among 10 Chinese participants who talked about this, seven reported that they were at home. Three were not at home (i.e., at work, or in the park) at the time of stroke.
Table 4.1
Demographics and stroke history of focus groups participants

<table>
<thead>
<tr>
<th>Country</th>
<th>Participants' Number</th>
<th>Age</th>
<th>Gender</th>
<th>Stroke History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>B1</td>
<td>81</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B2</td>
<td>72</td>
<td>Female</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B3</td>
<td>91</td>
<td>Male</td>
<td>Second stroke</td>
</tr>
<tr>
<td></td>
<td>B4</td>
<td>62</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B5</td>
<td>93</td>
<td>Male</td>
<td>Second stroke</td>
</tr>
<tr>
<td></td>
<td>B6</td>
<td>84</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B7</td>
<td>53</td>
<td>Male</td>
<td>Second stroke, haemorrhagic stroke</td>
</tr>
<tr>
<td></td>
<td>B8</td>
<td>48</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B9</td>
<td>74</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B10</td>
<td>73</td>
<td>Female</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>B11</td>
<td>62</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td>China</td>
<td>C1</td>
<td>67</td>
<td>Female</td>
<td>Second stroke</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>63</td>
<td>Female</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C3</td>
<td>72</td>
<td>Male</td>
<td>Third stroke</td>
</tr>
<tr>
<td></td>
<td>C4</td>
<td>63</td>
<td>Female</td>
<td>Second stroke</td>
</tr>
<tr>
<td></td>
<td>C5</td>
<td>70</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C6</td>
<td>37</td>
<td>Male</td>
<td>First stroke, haemorrhagic stroke</td>
</tr>
<tr>
<td></td>
<td>C7</td>
<td>56</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C8</td>
<td>76</td>
<td>Male</td>
<td>Third stroke</td>
</tr>
<tr>
<td></td>
<td>C9</td>
<td>80</td>
<td>Male</td>
<td>Fourth stroke</td>
</tr>
<tr>
<td></td>
<td>C10</td>
<td>61</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C11</td>
<td>70</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C12</td>
<td>76</td>
<td>Female</td>
<td>Third stroke, haemorrhagic stroke</td>
</tr>
<tr>
<td></td>
<td>C13</td>
<td>54</td>
<td>Female</td>
<td>Second stroke</td>
</tr>
<tr>
<td></td>
<td>C14</td>
<td>65</td>
<td>Male</td>
<td>First stroke</td>
</tr>
<tr>
<td></td>
<td>C15</td>
<td>71</td>
<td>Male</td>
<td>First stroke</td>
</tr>
</tbody>
</table>

4.4.1.2 Hospitalisation process and methods of treatment/rehabilitation
Britain and China have different medical service delivery systems. For example, there is no General Practice (GP) or similar systems in China. In addition, the hospitalisation process and treatment/rehabilitation methods also differ for stroke patients in the two countries.

When a Chinese feels unwell, he/she can go to a hospital directly to be examined or treated without being referred. In general, Chinese patients are free to choose which hospital to go. If they have medical insurance, they can only go to certain hospitals designated by the insurance companies. The numbers of designated hospitals are limited, usually ranging from 3 to 4 hospitals.

When a British patient feels unwell, he/she tends to go to his/her GP. If necessary, the GP will refer him/her to a specialist, usually in hospitals. Alternatively, patients who have a private medical insurance can go to private hospitals for medical examinations or treatments.

- Hospital choice, payment and hospitalisation process described by the samples

Table 4.2 summarised the major differences in terms of the choice of hospitals, payment and hospitalisation process for the samples from the two countries.
Table 4.2
Choosing hospitals, payment and hospitalisation process in Britain and China

<table>
<thead>
<tr>
<th></th>
<th>Britain</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing hospitals</td>
<td>None of the patients in the study could choose which hospital to go because they decided not to go to private hospitals.</td>
<td>Patients in this study chose which hospitals to go and stay.</td>
</tr>
<tr>
<td></td>
<td>All of them were sent to hospital XX for several days' treatment. They were then transferred to hospital A for rehabilitation.</td>
<td></td>
</tr>
<tr>
<td>Payment</td>
<td>All patients in the study reported that they did not need to pay to enter and stay in the hospitals. Actually, patients in the study had paid for their medical care via their national insurance contribution.</td>
<td>All patients in the study had to pay all the fees including medical examination, treatment, hospitalisation and the like. Some patients were able to have their payment reimbursed by their medical insurance companies. The percentage of the reimbursement ranged from 40% to 100%.</td>
</tr>
<tr>
<td>Hospitalisation</td>
<td>See Figure 4.1</td>
<td>See Figure 4.2</td>
</tr>
<tr>
<td>process</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.1 The hospitalisation process reported by British patients in the study
The medical examinations reported by British participants included blood tests, body temperature examinations, cardiac examinations, eye examinations, scalp/brain scan (Computer tomography - CT), neck examinations and chest X-ray.

\[ \text{Went to Emergency Department in hospitals of their own choice} \rightarrow \text{Assessed in the Emergency Department/neurology department} \rightarrow \text{Doctors prescribed medication to stabilise patients} \rightarrow \text{Admitted to a ward in the neurology department in the same hospital}\]

\[ \text{Or went to neurology department in hospitals of their own choice}\]

**Figure 4.2** The hospitalisation process reported by Chinese patients in the study

Medical examinations reported by the Chinese participants included blood tests, CT, magnetic resonance (MR), electrocardiography, cardiac examinations, and transesophageal echocardiography.

- Methods of treatment/rehabilitation

One British participant had experienced surgery treatment for his stroke. No participants in the British focus groups reported receiving any complementary therapies (e.g., herbal medicine, acupuncture) for their stroke. Some British participants mentioned dieticians' help, in addition to help from physiotherapists, occupational therapists and speech therapists. Two participants mentioned that their relatives prayed for them in Churches.
No participants in the Chinese focus groups had experienced surgery treatment for their stroke. All 15 Chinese participants had taken at least one complementary therapy for treatment/rehabilitation of their stroke. The therapies reported by Chinese participants are outlined in Table 4.3. Except “skin scraping of feet”, “spiritual healing” and “Qi Kong”, all other therapies outlined in Table 4.3 were prescribed by physicians in hospitals in Beijing.

Table 4.3
Therapies for Chinese participants

<table>
<thead>
<tr>
<th>Name of therapy</th>
<th>Numbers of participants reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Chinese herbal medicine</td>
<td>15</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>12</td>
</tr>
<tr>
<td>Chinese herbal medicine added in transfusion</td>
<td>5</td>
</tr>
<tr>
<td>Machines to stimulate points of body</td>
<td>10</td>
</tr>
<tr>
<td>Infrared ray machines for physical therapy</td>
<td>10</td>
</tr>
<tr>
<td>Magnetic adhesive plasters on points</td>
<td>10</td>
</tr>
<tr>
<td>Cupping</td>
<td>10</td>
</tr>
<tr>
<td>Skin scraping of feet</td>
<td>1</td>
</tr>
<tr>
<td>Spiritual healing</td>
<td>1</td>
</tr>
<tr>
<td>Qi Kong</td>
<td>1</td>
</tr>
</tbody>
</table>

4.4.2 Category 1: subjective feelings at the time of stroke

Three sub-categories of subjective feelings at the time of stroke were identified through the analysis. They were feelings of fright, feelings of helplessness; however, some participants reported no unusual feelings when stroke happened. Quotations from participants are used to illustrate the meaning of these sub-categories and are presented in Table 4.4.
Table 4.4  
Subjective feelings at the time of stroke

1. Frightened: 4 instances in the British, 4 in the Chinese
   - "It is frightening, you don’t know what is going on... and nobody was around me." (Participant B4)
   - "It's a bit unnerving when your body's not able to get yourself up off the floor." (Participant B8)
   - "I was really frightened" (Participant C7)
   - "I was very very scared..." (Participant C13)

2. Helpless: 4 incidences in the British, 1 in the Chinese
   - "Well, I, I felt, after, **when I felt it was a stroke**, I couldn't use my arm and my leg. I felt helpless and useless. I felt I'm just useless, I am no good." (Participant B10)
   - "The more you tried, the less success you have of getting up... Just helpless" (Participant B8)
   - "I felt I lost everything..." (Participant C13)

3. No unusual feelings: 0 incidences in the British, 4 in the Chinese
   - "I didn't feel anything unusual. All I knew was that I was lying on the floor. I knew there was something wrong, but I didn't know it was a severe stroke." (Participant C15)
   - "I knew something was wrong. But I don't know what was exactly going on. I thought, oh, well, I need to go to the hospital to check." (Participant C2)
   - "I had a haemorrhagic stroke. It just happened like a flip. So sudden... I don't have time to react or feel anything." (Participant C6)

- End -
Fifteen participants (7 British and 8 Chinese) talked about their feelings when stroke happened. The most frequently reported feeling was fright, followed by feelings of helplessness (see Table 4.4). It is of note that while all British participants who talked about their feelings reported the experience of some unusual feelings when stroke happened, 4 out of 8 Chinese participants reported that they did not experience any unusual feelings. According to 3 participants, this was probably related to the fact that they were not aware of having a stroke at the moment, or the stroke simply happened too quickly for them to feel anything (see Table 4.4 for related quotations).

4.4.3 Category 2: subjective feelings following stroke

Four sub-categories of subjective feelings after stroke were identified. They were feelings of distress/uselessness, fright, guilt and anger. Quotations from participants are used to illustrate the meaning of these sub-categories and are listed in Table 4.5.
Table 4.5
Subjective feelings following stroke

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Distress/Useless : 3 incidences in the British, 5 in the Chinese</td>
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<tr>
<td></td>
<td>“I can’t deal with my own daily functioning. I always need others to look after me. I feel I am a useless person.” (Participant C11)</td>
</tr>
<tr>
<td></td>
<td>“I feel very negative and sad. I am not able to work now. Much of my thinking is different compared to the thinking I had before the stroke. Very distressed!” (Participant C13)</td>
</tr>
<tr>
<td></td>
<td>“I am too old to live now…..At first, I wanted to kill myself by touching an electric switch, just to electrocute myself to death.” (Participant C8)</td>
</tr>
<tr>
<td></td>
<td>“Yes, yes, yes. I’m trying to help myself. You see, one thing, a chair, it really hurts trying to do something, I was crying…” (Participant B3)</td>
</tr>
<tr>
<td></td>
<td>“I feel useless. I am always feeling dependent like I have to rely on other people, (Participant B10)</td>
</tr>
<tr>
<td>2. Frightened : 4 incidences in the British, 0 in the Chinese</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Oh, yes. I am still frightened now I am going to fall, not be able to get up again.” (Participant B10).</td>
</tr>
<tr>
<td></td>
<td>“First thing I went to sleep I thought: Am I going to die tonight… It’s on your mind.” (Participant B11)</td>
</tr>
<tr>
<td></td>
<td>“You can have a stroke any time. You just like that, out of thin air, no warning at all…” (Participant B7)</td>
</tr>
<tr>
<td>3. Guilty: 0 incidences in the British, 3 in the Chinese</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“I feel guilty because my children have to look after me. I gave them too much burden.” (Participant C15)</td>
</tr>
<tr>
<td>4. Anger: 1 incidence in the British, 1 in the Chinese</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“What I have done to deserve this?” (Participant B5)</td>
</tr>
<tr>
<td></td>
<td>“…I don’t deserve this fate (having a stroke) … I have been doing good and doing right for my whole life…I don’t deserve this fate at all” (Participant C9)</td>
</tr>
</tbody>
</table>

- End -
Chapter 4

Focus Group Studies in Britain and China

Thirteen participants (6 British and 7 Chinese) mentioned their subjective feelings after the stroke. The most frequently reported feeling was distress/useless (see Table 4.5). No British sample mentioned suicidal intentions; however, 3 Chinese patients reported that they wanted to commit suicide after the stroke. For example,

"I didn’t want to live after my stroke. I used to hit my head against the wall." (Participant C9)

According to participant C15:

"I really wanted to jump out of the building..."

Participant C15 also wished that a "painless death policy" could be set up for stroke patients who were over 70 years old. He said:

"...the torture and pains for stroke patients is out of the imagination of healthy people..."

4.4.4 Category 3: experience of hospital care and family involvements for daily care

Five subcategories under this category emerged from the transcripts. They are presented in Table 4.6 with quotations from participants.

All British participants expressed that nursing staff (qualified nurses and care assistants) in hospitals were providing both medical and daily care to them. The daily care was related to patients’ daily functioning activities (e.g., bathing, dressing, feeding, and going to the toilet). However, 3 participants stated that hospital nurses/ care assistants would only help with their daily care if the patients could not do it on their own.

All Chinese participants reported that doctors and/or nurses in hospitals were not providing daily care for them. Their family members/relatives and/or paid care
workers\textsuperscript{5} were mainly involved in providing the daily care in hospitals. The expenses of hiring care workers had to be covered by patients themselves or their family members. See Table 4.6 for the content of care provided by either families or care workers and related quotations.

Although family members of the British participants did not have to provide daily care to them in hospitals, they still came to visit the patients. They mainly came to see and chat with the patients, and sometimes brought patients' necessities (e.g., clothes, newspapers).

\textsuperscript{5} The paid care workers are usually people from rural areas in China, who come to cities to look for jobs because there are not enough job opportunities in their hometowns or they lost their farmlands due to various reasons.
Table 4.6
Experience of daily care in hospitals for participants in two countries

<table>
<thead>
<tr>
<th>Subcategories Identified</th>
<th>British Sample</th>
<th>Chinese Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Provider</td>
<td>nurses or carer assistants in hospitals</td>
<td>family members/relatives and/or hired care workers</td>
</tr>
</tbody>
</table>
| Care Activities          | 1. Daily functioning activities (e.g., bathing, dressing, feeding, and going to toilets...)  
2. Nurses/care assistants would not help with the tasks that the patients could do themselves | 1. Daily functioning activities (e.g., bathing, dressing, feeding, going to toilets...)  
2. Buying or bringing daily necessities (e.g. fruits, newspaper)  
3. Rehabilitation activities |
| Quotation                | "Depends on what you can do, isn't it? If they think you can do it, they will let you... They left me to wash up, which was a bit rough, but because I have to, I did. You don't half miss one hand when it's not there but sometimes you do it. And that was good, because if they hadn't made me do that, I wouldn't have done it." (Participant B11)  
"If you say you can't wash down below, or somewhere down the back, the back. I can reach that now, but they won't do any that you can do." (Participant B4) | "My families help me use the toilet, groom and have a bath." (Participant C14)  
"My hired carer helps me buy things... I told him what I want, fruits, newspapers, he will go and get it for me." (Participant C3)  
"They (my family) come daily to bring me three meals and some necessities..." (Participant C2)  
"My sons almost forced me to practice walking." (Participant C8)  
"My hired carer massaged my arms, legs. Help me with my speaking... It is a lot of hard work." (Participant C9) |
| Frequency of care        | 1. Available 24 hours a day, 7 days a week  
2. Sometime patients have to wait due to staff shortages in the hospital | Depends on the patient's medical situation, it can vary |
| Quotation                | "They (nurses) are always there to help." (Participant B2)  
"Sometimes, you have to wait which is, if you want to go to the toilet, which you expect, press the bell and somebody comes, because you would never have enough staff to cope with that feature." (Participant B6) | "When I was in my acute stage, the first 5 days, my family was with me here 24 hours a day. After that, I got better, and they came and stayed during the day." (Participant C1)  
"My carer was with me 24 hours a day. But I am getting better so only need him during the nights." (Participant C3) |

continued on next page
### Table 4.6 continued

<table>
<thead>
<tr>
<th>Categories Identified</th>
<th>British Sample</th>
<th>Chinese Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members’ role in care</td>
<td>1. Visit and sometimes bring necessities (e.g. cookies, clothes, newspapers ...) 2. Providing psychological support and encouragement</td>
<td>Mainly look after patients in hospitals (see above care activities')</td>
</tr>
<tr>
<td>Frequency of family members’ care</td>
<td>Frequency varies, range from daily to not at all</td>
<td>Usually daily</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>British Sample</th>
<th>Chinese Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quotation</td>
<td>see above 'quotation of care activities'</td>
</tr>
<tr>
<td>&quot;Bring me things; you know, evenings, papers, my biscuits, and cakes. My brother washes my clothes, and brings it for me the following day.&quot; (Participant B9)</td>
<td></td>
</tr>
<tr>
<td>&quot;You can be down, and really depressed... Families keep you going.&quot; (Participant B7)</td>
<td></td>
</tr>
<tr>
<td>&quot;Yeah, they (families) can encourage you... They know what you look like when you are getting better.&quot; (Participant B8)</td>
<td></td>
</tr>
<tr>
<td>&quot;My husband comes every day to see me.&quot; (Participant B2)</td>
<td>&quot;I have three daughters, one son, plus a daughter-in-law...the five take turns to come... there is always someone with me here (in the hospital).&quot; (Participant C12)</td>
</tr>
<tr>
<td>&quot;They are not expected to come.&quot; (Participant B6)</td>
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<tr>
<td>&quot;Another thing is because the people had stroke, the majority are elderly, majority of them, therefore don't have a lot of family around. Their families are tended to spread out. I've got family, but no family here.&quot; (Participant B1)</td>
<td></td>
</tr>
</tbody>
</table>
4.4.5 Category 4: perception of family members' involvement in daily care

Twenty-three participants (8 British and 15 Chinese) talked about how they felt about their family members' involvement during their stroke. Half of the 8 British participants thought their family members were helpful and important in that they provided emotional support and encouragement to them. For example,

"They are very important. I got family visitors pretty well every day since I've been down here. I think it makes a difference." (Participant B8)

"Of course important, family is a booster, isn't it? I mean if you are fortunate enough to make some progress, then you can show your family that." (Participant B6)

However, another half of the 8 participants thought that their families could not really help with their stroke. For example,

"They can't do anything about it (the stroke)....You know, they can only try to be of help." (Participant B1)

"That the rest of the family, say, they will say 'Well, it's up to them to get better'..." (Participant B4)

All Chinese participants believed that their family members (e.g., spouses, adult children and children's spouses) had been very helpful and important in caring for their stroke. As participant C13 emphasised that family help was "the most important" during the course of her stroke. According to participant C7

"...the passionate love, concern and care from my family helped my recovery... they are very important to me"

"Without my family, I can't even feed myself or go
4.4.6. **Category 5: perception of payment for stroke**

As was mentioned previously (Table 4.2), no British participant stated that they needed to pay for their medical care relating to stroke, however, Chinese participants reported that they had to pay towards the treatment, medication, hospitalisation etc. The results of this section thus came from the data of the Chinese focus groups and only applied to the Chinese participants.

Seven participants talked about their perception of payment. All of them highlighted that the payment and expenses for stroke were "too high". For example,

"It is too much for us to afford. We have to pay all the fees by ourselves." (Participant C4)

"You can't get treated if you have no money, no matter how severe your stroke is...The fee is a lot for me." (Participant C1)

Even participants whose expenses could be reimbursed, emphasised that the fee was very high. According to participant C15:

"...to get all the treatment and rehabilitation to recover, the fee is too high for common people. I can't afford it at all. The fee is too high! The medicine, the treatment, and hospitalisation, they all cost awful a lot."

4.4.7 **Category 6: perception of causes of the stroke**

Nine subcategories were identified from the data. They are listed in Table 4.7 with quotations from participants.
Table 4.7
Perceived causes of stroke

Subcategories of participants' perceived causes of their stroke

1. Stress from work/life: 5 instances in the British, 5 in the Chinese
   a) From work
      • "I was obsessively stressed when I had a busy time over Christmas, because I was getting boats ready. I had only two days off over Christmas. A lot of overtime going on. I was being reminded if there is work, do it." (Participant B8)
      • "Well, I used to work for a big firm. So they took everything, done everything, all the books. When you have to work for yourself, you have to do all the books and the accounts. And pay tax...too much stress." (Participant B7).
      • "...too much stress from work..." (Participant C6)
   b) From life
      • "I think the worst one is stress. Modern life is much more stressful." (Participant B7)
      • "I have been feeling very bad and stressed since my wife passed away." (Participant C14)

2. Previous medical conditions and/or ignore pre-stroke minor illnesses: 1 instance in the British, 9 in the Chinese
   • "I don't know, I suppose it was something to do with the diabetes." (Participant B10)
   • "I feel it was because I had high blood pressure before the stroke." (Participant C11)
   • "I think this may be also a reason... You got this (the stroke), you might be careless, or ignored some illnesses happened before, such as a cold..." (Participant C5)

3. Ageing: 0 instances in the British, 2 in the Chinese
   • "It’s because I'm old...I'm 72 this year. I have no other illnesses, just this (stroke)." (Participant C3)
   • "With old age, you are bound to have some illnesses." (Participant C2)

4. Heredity: 0 instances in the British, 2 in the Chinese

- Continued -
• “This runs in my family. My parents had high blood pressure. I have as well, and so do my daughters.” (Participant C12)

5. Personality: 0 instances in the British, 2 in the Chinese

• “I am very stubborn. I don’t like to listen to other’s advice.” (Participant C9)
• “I am very short-tempered.” (Participant C10)

6. Smoking: 2 instances in the British, 0 in the Chinese

• “In my case, it will be smoking.” (Participant B8)
• “Yeah, it (smoking) gets you every time.” (Participant B11)

7. Past personal wrong doings were punished by God now: 0 instances in the British, 1 in the Chinese

• “I used to be a communist soldier before the liberation (1949)...I had to kill enemies otherwise I would have been killed by them. I thought it (my stroke) might be my punishment by God for killing people.” (Participant C14).

Note: Participant C14 believed that Inn and Ko maybe the cause of his stroke. Inn and Ko (cause and effect) are destined factors in Buddhism, which are believed to determine health. People who believe Inn and Ko are encouraged to do good and do right and therefore receive good in return (Capra, 1991). People “have little or no guilt and are peaceful, thus promoting their health” when they are morally good and do right (Chen, 2001, p. 271).

8. Fate/bad luck: 1 instance in the British, 1 in the Chinese

• “It is the luck out of the draw.” (Participant B6)
• “I feel I don’t deserve this fate... I have been doing good and doing right for my whole life. Even at the moment when I had my stroke, I was trying to paint a portrait of Chairman Mao...I don’t deserve this fate (having a stroke).” (Participant C9)

9. Other (not sure about the causes): 5 instances in the British, 1 in the Chinese

• “No way out, there isn’t (any reason).” (Participant B3)
• “I can’t think of any (causes).” (Participant B1)
• “I don’t think there are any reasons for me to have stroke.” (Participant C4)

- End -
Twenty-five participants (10 British and 15 Chinese) talked about their perceived causes of stroke. The most frequently reported causes were stress and previous medical conditions and/or ignore pre-stroke minor illnesses (see Table 4.7). It is of note that many participants \((N = 10)\) perceived more than one cause of their stroke. For example, according to Participant C6 "I think there are many reasons, including high blood pressure, short-tempered personality, genetic factors...". Participant C5 perceived that 'pre-stroke medical conditions', as well as 'ageing' might result in his stroke. Participant B11 reported both 'stress' and 'smoking' as possible causes.

While almost all Chinese participants reported at least one reason for their stroke, half of the British participants (5 out of 10) stated that they "don’t know why they had a stroke". In addition, 9 out of 15 Chinese participants reported that their stroke could be caused by previous medical conditions and/or ignore mild illnesses. However, only one British participant (participant B10) mentioned such factor (i.e., pre-existing diabetes) as a possible cause.

Another noteworthy pattern was that several Chinese participants \((N = 4)\) blamed themselves for getting a stroke. For example, participant C5 stated that:

"I was a little careless. If I had taken enough attention to my cold before the stroke, I might not have had it (the stroke)."

However, almost no British participants blamed themselves for getting a stroke. They thought that they had a healthy life style. For example, although participant B10 mentioned about her diabetes as a possible cause, she also emphasised:

"I was on a diet of wholemeal bread, no fat, no sugar, no sweets"

According to participant B4:

"No, I can’t see what I’ve done wrong... I used to walk two miles to work, nearly."
4.4.8 **Category 7: perception of the consequences of stroke**

Three subcategories under perceived consequences emerged from the transcripts. They are presented in Table 4.8 with quotations from participants.

**Table 4.8**
Perceived consequences of stroke

<table>
<thead>
<tr>
<th>Subcategories of participants' perceived consequences of their stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Losing independence: 6 instances in the British, 6 in the Chinese</td>
</tr>
<tr>
<td>a) Unable to do things themselves (including work) as effectively as before</td>
</tr>
<tr>
<td>• &quot;It makes you feel really dependent on other people really. Can't do anything for yourself.&quot; (Participant B7)</td>
</tr>
<tr>
<td>• &quot;I prefer to do things myself. It's just, I mean the stroke, I felt, oh, I am useless. Can't do anything, can't move, can't get out of bed.&quot; (Participant B10)</td>
</tr>
<tr>
<td>• &quot;My wife's father had a couple of very serious strokes, many years ago, and he was a cabbage after that just laying in hospital, the rest of his days really. He couldn't speak, couldn't do anything. I thought to myself, you know, I would never be like that.&quot; (Participant B11 who had a mild stroke)</td>
</tr>
<tr>
<td>• &quot;The first thing is that you can't take care of yourself. Can't walk, can't do daily stuff...&quot; (Participant C11)</td>
</tr>
<tr>
<td>b) life style get restricted</td>
</tr>
<tr>
<td>• &quot;I love gardening, but I don't think I can do any more now.&quot; (Participant B2)</td>
</tr>
<tr>
<td>c) have to be relocated</td>
</tr>
<tr>
<td>• &quot;I might have to move to a (nursing) home after this (the stroke)...I was living on my own before.&quot; (Participant B3)</td>
</tr>
</tbody>
</table>

- Continued -
2. Burdening family members: 1 incidence in the British, 10 in the Chinese
   - "It's a knock on with the relatives." (Participant B8)
   - "...the stroke has severe consequences on family members." (Participants C1, C5, C8, C11 and C15)
   - "My wife broke her waist bones because she had to frequently take me to hospitals for treatments!" (Participant C8)
   - "I feel guilty because my children... they are already busy enough with their own work and family, but they have to spend a lot of energy and time to look after me." (Participant C15)
   - "...look at how many people in a family have to take care of one patient!" (Participant C2)

3. Economic consequences: 1 instance in the British, 8 in the Chinese
   a) Less financial income due to stop working/early retirement
   - "It is 2 years away from my pension. I have to retire early now... lose a lot of pension in the future." (Participant B4)
   - "I have to have early retirement because of the stroke... I only earn one third of what I earned before...." (Participant C13)
   - "I have to spend much more due to the treatment of my stroke, but earn less than before because I can't work, at least for now." (Participant C7)
   b) Increased financial burden due to paying for the medical care
   - "...to get all the necessary treatments and rehabilitations for returning to the previous level of independence, the fee is too high for ordinary citizens to afford. The fee is too high! The medicine, the treatment, and hospitalisation, they all cost an awful lot" (Participant C15)
   - "...my salary has recently increased a little bit now. But before the increase of my salary and right after my stroke, my life was very tough!" (Participant C8)
   - "I can hardly afford the payment for the medication of my stroke." (Participant C4)
Almost all 24 participants (9 British and 15 Chinese) who talked about the consequences of their stroke reported severe post-stroke impact on their lives, as 1 patient said that "It (the stroke) has impacted my life to an extraordinary extent!" (Participant C7).

The total reported incidences of consequences among British and Chinese participants were 8 and 24 respectively. Although participants from both countries identified that stroke had restricted their independent daily activities, British participants reported a higher percentage of this subcategory (75%, 6 out of 8) than the Chinese (25%, 6 out of 24). However, compared with British participants, the Chinese reported a higher percentage of burdening families (42% vs. 11%) and economic consequences (33% vs. 11%). A few British participants (Participant B7 and B10) even stated that there were no economic worries at all following their stroke. Participant B7 explained:

"The last thing is to worry about the money, really. Touch wood, I don't have to worry about money."

With regard to the consequence of burdening families, participant C15 described that a stroke could lead "social problems". He said that "It (the consequence of a stroke) has to be solved from a societal level. The society shouldn't only rely on the families to solve the problems". However, one Chinese participant stated that:

"... there is no need to worry that you are a burden to your children... Worrying won't help... I just keep telling myself that children are expected to look after you in your old age." (Participant C12)

4.5 DISCUSSION

The results of this qualitative study identified seven categories: subjective feelings at the onset of stroke, subjective feelings after stroke, experience of hospital care and family involvements, perception of family members’ involvement in caring for
participants, perception of payments (only in Chinese participants), perceived causes of stroke, and perceived consequences of stroke.

4.5.1 How did participants feel at the time of and following stroke?

Although the participants in this study came from different cultures and countries, they expressed some similar patterns of psychological responses to stroke. When similar patterns of experiences emerged in different subsets of the focus groups (i.e., in this case, the two different cultures), it is likely that these experiences were common across cultures (Knodel, 1993).

The most frequently reported feelings at the time of the stroke were fright or helplessness, which correspond to traumatic responses described in literature (e.g., Joseph et al., 1997) and to the criterion A of DSM-IV (i.e., a person's subjective response to trauma should involve fear, helplessness, or horror) (APA, 1994). The present result is also consistent with Mayou and Smith's (1997) suggestion that severe medical situations were "as intensively frightening" (p. 122) as disasters described in PTSD literature, and severe physical illness or its treatment might cause post traumatic stress symptoms.

The most frequently reported feelings following stroke were distress /uselessness (among the participants who talked about this topic, 62% reported this feelings). This also bears a resemblance to trauma responses. Previous research reported that one of the emotional symptoms among disaster victims was severe distress (Lima, Pai, Lozano, & Santacruz, 1991; Lima, Pai, Santacruz, & Lozano, 1987). Further, Horowitz (1976) identified several traumatic responses including: fear of a repetition of the stressful event, sadness over loss, guilt or shameful feelings and rage. Similar responses were also found in the present study. For example, some participants emphasised being frightened to think they might experience another stroke. Some reported feeling guilty /shameful of letting their family down because of their stroke,
specifically of burdening their family members. And some felt angry at the fact that they had a stroke which they did not deserve.

In summary, the focus group results show that stroke patients displayed traumatic responses following stroke which are comparable with those reported in general PTSD literatures. Following this qualitative study, a quantitative investigation will be conducted on post-stroke PTSD symptoms.

The results from the British and Chinese focus groups also show different patterns in participants' feelings during and after stroke. For example, some Chinese participants reported that they "didn't experience any unusual feelings" when stroke happened, whereas almost all British participants felt the impact of stroke. Indeed, some cross-cultural scholars have postulated that in comparison with people from oriental culture, individuals in Western culture might respond more extremely at the onset of negative events (Xu, 1997). This may help understand why some Chinese participants did not report any extreme feelings when stroke happened, whereas every British participant reported psychological impact of stroke.

Another different pattern is that the Chinese participants reported more depressive/suicidal responses following stroke. Three Chinese patients reported that they wanted to commit suicide after the stroke whereas no British sample mentioned suicidal intentions. That might be due to the consequences of stroke rather than the stroke itself. Although some researchers have suggested that a strong sense of interdependence with family in the Chinese culture might prevent the emergency of depression (Cheng, 1989; Xu, 1987), such strong family tie could have a negative impact on the psychological health of the Chinese stroke patients in this study. For example, they may experience a strong sense of depression and anxiety when they became unable to support their family due to the consequences of stroke. This in turn would often generate a feeling of shame, uselessness, or excessive worrying (Cheng, 1989). The
latter feelings may partially explain the emergence of some Chinese participants' suicidal feelings.

4.5.2 What is participants' experience of hospital care and family involvement?

Participants from the two cultures had different experiences of hospital care and perceptions of family involvement in their care. The former differences rest on who provides daily care for patients, the content of care activities, frequency of daily care, family members' role in daily care, and frequency of family members'. These differences are largely due to the fact that Britain and China have different medical service delivery systems in that the nursing staff in British hospitals provide daily care to patients, whereas the Chinese participants have to rely on their family members or paid care workers to provide daily care.

While all Chinese participants perceived that their family involvement in their care was important, half of the British participants who discussed this topic thought their family involvement was not helpful or important. One possible reason may be related the aforementioned point about the differences in medical delivery service system. For example, in the British health care system, people (e.g., family members) are only allowed to visit their sick relatives during a designated time slot. They cannot stay with the patients for as long as they might like to. This will inevitably affect the amount of help that the families can provide. However, in the Chinese health care system, family members can visit and stay with the patients for the whole day if they choose to do so.

Another possible reason may be that the families of the British participants on the whole live so far away that they cannot provide daily help to them, as participant B1 stated:

"...I've got family, but no family here... They can't do anything about it (the stroke)....they can try to be of help."
An additional reason may be that in an individualistic culture (i.e., the British), family members do not necessarily rely on each other in case of sickness. An individual in such culture is viewed to be responsible for taking care of himself/herself (or his/her immediate family), and to have his/her own independence in life (Hui & Triandis, 1986; Xu, 1997). For example, participant B6 said that his family members "are not expected to come to care for them". Participant B4 also stated that the rest of his family would think it was up to him to get better.

On the other hand, in a collectivistic culture (i.e., the Chinese), family members depend on each other in case of sickness, and adult children feel obligated to look after their elderly parents (Holroyd, 2001; Kagitcibasi, 1990; 1996). For example, one Chinese participant stated that their children were expected to look after them when they got old (Participant C12).

4.5.3 What did the participants think about the causes for their stroke?

A total of nine subcategories describing the causes of stroke emerged from this study. They were: stress from life/work, previous medical condition/ignoring pre-stroke minor illnesses, ageing, heredity, personality, smoking, punishment of past personal wrong doings, fate/bad luck and other (not sure about the causes).

There were one similarity and several differences between the two cultures in the pattern of participants' perceived causes of stroke. The similarity is that some participants believed that there were multiple causes of their stroke. For example, participant B11 reported both 'stress' and 'smoking' as possible causes. Participant C5 perceived that 'pre-stroke medical conditions', as well as 'ageing' might have caused his stroke. The finding of multiple causes corresponds to literature suggesting that medically ill patients tended to report a selection of different causes for their illness (Wilkinson, 2000).
One difference is that while almost all Chinese participants reported at least one reason for the stroke, nearly half of the British participants stated that they "don't know why they had a stroke". When the Chinese participants explained the causes, they tended to attribute the stroke to physical factors (e.g., "pre-existing health problems", "ageing" and "heredity"). This result was somewhat surprising because it contradicted some existing literature suggesting that Chinese tend to attribute negative effects (in this case stroke) to chance (i.e., fate, luck) (Leung, 1996). Yet, the present findings did not support this claim. This may be related to the fact that the Western biomedical health/illness model has been prevalent and dominating in modern Chinese medicine, and the concept of biomedical knowledge has been passed onto the general public (Xu, 1997; Xu et al., 1998). This relates to another somewhat unexpected observation. That is despite, as was mentioned, the fact that the biomedical health/illness model was developed in the West (Berry et al., 2002; Bond, 1996; MacLachlan, 1997; Matsumoto & Juang, 2004), half of the British stroke patients were not able to report the causes of their stroke, rather than identifying the causes in terms of some physical/biological factors.

4.5.4 What did the participants think about the consequences of their stroke?

Three subcategories emerged from this study: losing independence, burdening family members and economic consequences. These subcategories correspond to Leventhal's illness representation model, which stated that the consequences of disease can include physical, social and economic aspects (Leventhal, Leventhal, & Contrada, 1998).

Once again, one similar and several different patterns between the two cultures were found in this category. One similarity is that losing independence as a consequence was a concern for participants in both cultures. This corresponds to studies on post-stroke quality of life, which found that the impairment in quality of life of stroke patients was especially severe in the independent living domain (e.g., Sturm et al., 2004).
This finding is not surprising given that stroke is life-threatening and physically and emotionally disabling for the patients (see Chapter 1 for the pathophysiology of stroke).

However, British participants reported a higher percentage of losing independence than the Chinese. This finding is consistent with Matsumoto et al.’s (1995) study which found that their American sample, compared with the Japanese sample, were more concerned with independent living in the sense of losing mobility, if they were diagnosed with osteoporosis. One can understand the different percentage in reporting losing independence from the perspectives of individualism and collectivism. Due to the notion of individualism embedded within their culture, British stroke patients would probably be more preoccupied with losing individual independence. On the other hand, since the notion of collectivism is more embedded with the Chinese culture, Chinese stroke patients would be less preoccupied with the loss of individual independence. That is, they would be more able to tolerate the lack of individual independence knowing that their problems resulting from the stroke will somehow be shared with, for example, their family members. As suggested by Matsumoto et al. (1995), mobility and being independent is a “symbol of autonomy and self-reliance, cornerstones of individualism”, whereas “the tolerance for the lack of such individual mobility” may be more prevalent in collective culture (e.g., the Chinese) (p. 52).

Another different pattern in the perception of consequences is that the subcategory of burdening families seems to be more pronounced in the Chinese sample than the British sample. This may be related to the fact that Chinese families tend to be more involved in caring for their relatives with stroke than the British families. This different pattern may also reflect the notion of the collectivism culture (i.e. the Chinese), where there is a strong interdependence between families. A chronic and disabling illness of an individual in a collectivistic culture will have marked effects on their families (Kagitcibasi, 1990; 1996).
Finally, it seems that Chinese participants tend to worry more about post-stroke financial problems than their British counterparts. One may argue that the Chinese participants' concern on economic consequences is related to the fact that they have to pay for the medication, physical examination, hospitalisation and the like. However, even Chinese participants whose payment could be reimbursed from medical insurance companies emphasised the financial burden resulting from the treatment of stroke.

4.5.5 Limitations of the study

First, the recruitment of participants may be a limitation of the study. Recruitment for focus groups is normally purposive so as to gain a sample with particular characteristics, and to enhance the representativeness of the sample. As mentioned previously in the sample recruitment section, it was difficult to assure sample representativeness. Therefore it is possible that differences observed between the U.K. and Chinese focus groups may be due to selection bias.

Secondly, although a reliability check on the transcripts and identified categories was conducted by my supervisors and one native English speaker (for the British focus groups), I was not able to check respondent validation due to practical reasons and time constraint. Therefore, to what extent the analysis or interpretation of the data truly represent the points raised in the focus groups discussion remains to be confirmed.

Finally, although I reported the differences in the pattern of participants' responses between the two cultures, and although the findings were consistent with existing literatures, the differences cannot be generalised to the stroke populations in both cultures.
CHAPTER 5


5.1 INTRODUCTION

As was mentioned in Chapter 1, stroke is a sudden, unexpected, and immediately life-threatening illness, and it can trigger psychological problems among its survivors (Castillo et al., 1995; Robinson, 1998). Before commencing the present project in 2003, only two studies had reported the occurrence and incidence rate of post-stroke PTSD [Semi et al., (1998): 9.8% and Berry (1998): 32%] and its accompanying psychiatric co-morbidity (i.e., depression and anxiety), although Berry (1998) focused on a very particular type of stroke – subarachnoid haemorrhage (SAH). They did not investigate the time course of stroke-related PTSD and only Semi et al. (1998) made some effort to examine the risk factors of such PTSD (i.e., pre-morbid neuroticism). Since then two more studies (Bruggimann et al., 2006; Sheldrick et al., 2006) have emerged to show higher incidences of post-stroke PTSD (i.e., Bruggimann et al: 31% scored higher than the cut-off score on the IES and Sheldrick et al: 35.5% at 6 weeks after admission). Additional risk factors of post-stroke PTSD (e.g. gender, educational level, illness perception) were also identified. Sheldrick et al’s study also examined the time course of post-stroke PTSD reporting the severity of PTSD symptoms on the whole decreased overtime.

I conducted a study in Plymouth, U.K. as the second part of my PhD project, with a larger sample size than that used by Semi et al. (1998) and Berry (1998). The
present study offered an insight into the incidence of stroke-related PTSD, its time course, the psychiatric co-morbidity, and the risk factors associated with PTSD and psychiatric co-morbidity in terms of the dispositional variables of personality (i.e., alexithymia) and coping (i.e., health locus of control).

5.1.1 Aims and hypotheses of the study

The study was concerned with the following questions and hypotheses based on previous literature review (see Chapter 2):

(i) What is the incidence of post-stroke PTSD?

**Hypothesis 1:** A proportion (ranging from 10% to 35%) of stroke patients will fulfil the diagnostic criteria for PTSD.

(ii) What is the time course of stroke-related PTSD and its symptoms?

**Hypothesis 2:** Stroke-related PTSD and symptoms will decrease over time.

(iii) What is the psychiatric co-morbidity with stroke-related PTSD in terms of anxiety, depression, somatic problems, and social dysfunction?

**Hypothesis 3:** A proportion of stroke patients will develop psychiatric caseness following their stroke. Compared with Healthy Controls (age and gender matched without life-threatening illnesses), patients will experience more severe psychiatric co-morbidity in terms of psychiatric caseness, anxiety, depression, somatic problems, and social dysfunction.

(iv) What is the association between the predictor variables (alexithymia and health locus of control coping) and the outcomes (the severity of post-stroke PTSD and psychiatric co-morbidity)?
Hypothesis 4: After controlling for the level of post-stroke physical disability, one or more of the dimensions/factors of the alexithymia scale are expected to be associated with the outcome variables. However, it is difficult to predict which one will be a significant predictor due to the lack of research evidence.

Hypothesis 5: After controlling for the level of post-stroke physical disability, an orientation toward internality health locus of control (IHLC) will be negatively associated with poor outcomes, whereas a heightened tendency towards external (i.e., chance or powerful others) health locus of control will be positively associated with poor outcomes.

Hypothesis 6: After controlling for the level of post-stroke physical disability, alexithymia and health locus of control coping will interact to predict outcome variables.

5.2 METHOD

This study adopted a prospective longitudinal design. Ethical approval was obtained from the Ethics Committees of the South West NHS Trust and NHS Plymouth Local Research Ethics Committee, and the University of Plymouth. Participants were assessed with standard questionnaires. The patient sample was assessed at least 1 month post-diagnosis of stroke (T1) and followed up at least 3 months post-diagnosis (T2). For the purpose of comparing psychiatric co-morbidity, a group of Healthy Controls was also asked to complete related self-report questionnaires.

5.2.1 Sample recruitment

5.2.1.1 Stroke patients
Male and female adults were recruited between January 2004 and December 2004. They were in-patients who had experienced a stroke or a transient ischaemic attack (TIA), and were consecutively admitted to a stroke rehabilitation unit in a hospital in Plymouth. I examined their medical records to confirm their diagnosis, onset of their recent stroke, and ability to participate in the study. Information on patients' medical condition (i.e. side of weakness, number of previous strokes, post-stroke functioning problems - breathing, visual and so on) was also obtained from their medical records. Patients were recruited if they were medically stable (i.e. not under constant medical monitoring) and at least 1 month post-diagnosis. The timing requirement was chosen in an attempt to meet the DSM-IV criteria of having symptoms present for at least 4 weeks to diagnose PTSD. Patients were excluded if they were currently receiving intervention by a psychiatrist for mental health problems or had a history of severe mental health problems. Patients were also excluded if they exhibited neurological deficits such as dysphasia and/or severe cognitive impairment or were unable to understand English. A full description of the characteristics of the participants can be found in the Results section of this chapter.

For the study, using the information from existing literature on stroke-related PTSD (Semi et al., 1998), power calculation was conducted to estimate the number of patients needed for the study. The calculation showed that with the sample size of 80 patients (minimum), the study would achieve 95% power [F(10, 69)= 1.97, \( p < 0.05 \)] and a large effect size (0.35) (Cohen, 1988).

5.2.1.2 The Healthy Controls

The Healthy Controls consisted of age and gender matched healthy individuals (defined as individuals who had no life-threatening illnesses such as stroke, cardiovascular disease, cancer and no mental health problems or previous history of
psychiatric illnesses). Controls were excluded if they were unable to understand and read English.

The Healthy Controls were recruited from four resources: (i) a database in the School of Psychology, the University of Plymouth. The database was compiled through the elderly participant pool in the school by networking and advertisement in elderly groups (i.e., the Third Age Education College) in Plymouth; (ii) residence in retirement apartments in Plymouth; (iii) attendants of some church activities in Plymouth; and (iv) recommendations by colleagues.

5.2.2 Assessments

5.2.2.1 Demographic page and information on the stroke and medical history

Sociodemographic variables including gender, age, marital status, and religious affiliation were recorded.

Questions on some basic information of the stroke consisted of the following:
1) How many strokes have the patients had; 2) When did the stroke(s) happen? 3) Where were they at the time of stroke and who was with them? 4) How did they feel when the stroke happened? 5) If patients had more than one stroke, which one was the most traumatic? and 6) what other illnesses did they have? (Appendix 7).

5.2.2.2 Inclusion assessment

The 12-item Short Version of the Mini-Mental State Examination (MMSE) (Braekhus, Laake, & Knut, 1992) was used to examine whether patients had severe cognitive impairments. It has been widely used as a screening instrument for cognitive loss or as a brief cognitive assessment tool in older people (Braekhus et al., 1992; McDowell & Newell, 2006). The test consists of 12 binominally (0/1) scored questions concerning an individual’s “recent memory” (e.g., what is the year/month/date?; repeat three objects) and “praxis and orientation to place” (e.g., writing a sentence, copying a
design) (Braekhus et al., 1992, p. 1142) (Appendix 8). The 12-item version has a sensitivity of 98% and specificity of 91% (Braekhus et al., 1992).

If patients in this project had no post-stroke hemiplegia, a cut off score of 9 was used to indicate no cognitive impairments (Braekhus et al., 1992). In the case of patients with post-stroke hemiplegia on their dominant side (e.g., right side hemiplegia for right handed patients), as suggested by Sampson, Kinderman, Watts, and Sembi (2003), they were not assessed using the section that requires them to ‘write a sentence’ and ‘copy a design’, because they were not able to physically engage in this exercise. A cut-off score of 7 was used in this case.

5.2.2.3 Post-stroke physical disability - independent daily living functioning

This was measured by the 10-item Barthel ADL Index modified by Collin and Wade (1988) (Appendix 9). The Barthel ADL Index, originally introduced by Dorothea Barthel (Mahoney & Barthel, 1965a), has several modified versions, which all aim to measure physical disability and functional independence. The Barthel ADL Index, including Collin and Wade’s version, has been widely used in stroke research and other clinical practice (McDowell & Newell, 2006).

The ten activities cover personal care and mobility. Each item is rated in terms of whether the patient can perform the task independently, need some assistance, or is dependent on help. The version gives a score of 0 (complete physical disability) to 20 (no physical disability). Wade and Hewer (1987) also categorised patients’ disability into five groups according to their scores: very severely disabled (0 – 4); severely disabled (5 - 9); moderately disabled (10 – 14); mildly disabled (15 – 19) and independent (20). Collin et al. (1988) investigated the reliability of the 10-item modified version by studying agreement among 4 methods of administering the scale: self-report, nurses who had worked with the patients making assessment based on clinical impressions, testing by a
nurse and testing by an occupation therapist. Their results showed that Kendall's coefficient of concordance was 0.93 among the four rating methods.

5.2.2.4 Predictor questionnaire assessment

- **Personality – alexithymia**

The 20-item Toronto Alexithymia Scale (TAS-20) (Bagby et al., 1994) is by far the most widely used measure of the alexithymia construct (Henry et al., 2006). It yields a total score of the level of alexithymia and three sub-scale scores: difficulty in identifying feelings (dimension/factor 1, e.g., 'I am often confused about what emotion I am feeling'), difficulty in describing feelings (dimension/factor 2, e.g., 'It is difficult for me to find the right words for my feelings'), and external oriented thinking (dimension/factor 3, e.g., 'Being in touch with emotions is essential') (Appendix 10). Respondents are asked to what extent they agree or disagree with the item statements on 5-point Likert scales (e.g., 1 = 'strongly disagree' to 5 = 'strongly agree'). Higher scores on each subscale represent increased level of alexithymia. The total score of the scale allows researchers to categorise individuals as non-alexithymic (score ranging from 20 to 51), borderline alexithymic (score ranging from 52 to 60), or alexithymic (score ≥ 61).

The reliability of the scales was found to be satisfactory in previous research (Factor 1, Cronbach's $\alpha = .86$; Factor 2, Cronbach's $\alpha = .71$; Factor 3, Cronbach's $\alpha = .61$; and Total score, Cronbach's $\alpha = .83$). The 3-week test-retest reliability was .77 (Bagby et al., 1994).

- **Coping style – health locus of control**

The Multidimensional Health Locus of Control scale (MHLC) (Wallston et al., 1978) aims to measure three dimensions of locus of control orientation in health specific behaviours (Appendix 11). That is, the extent to which people expect that their health is
or is not determined by their own behaviour. The three dimensions are beliefs about three sources of control over one's health behaviours: internality health locus of control (IHLC, e.g., 'if I get sick it is my own behaviour which determines how soon I get well again'), powerful others (externality) health locus of control (POLC, e.g., 'having regular contact with my physician is the best way for me to avoid illness'), and chance (externality) health locus of control (CHLC, e.g., 'No matter what I do, if I am going to get sick, I will get sick'). Each subscale contains six items and responses are made on 6-point Likert scales (1 = 'strongly disagree' to 6 = 'strongly agree'). A higher score in a subscale indicated a stronger orientation toward that dimension.

The MHLC has parallel forms (Form A and B) designed to be alternated for use as repeated measures. In this project, form A was used as it was administered only once in the first assessment. The MHLC scale has been used in many studies, and their results showed that it is moderately reliable (Cronbach's alphas ranged from .60 - .75, and test-retest reliability ranged from .60 -. 70) (Wallston, 2005). With regard to its validity, Wallston (2005) admitted that it was difficult to give a specific figure, but suggested that the simple answer is that "there is plenty of evidence in the published literature to back up an assertion that they do, indeed, measure individuals' health locus of control beliefs" (p. 624).

The MHLC was designed to assess participants' general (general expectancy) health locus of control beliefs (Wallston et al., 1978). In the present study, I made special effort to explain to the patients that the questionnaire aimed to measure their general belief about what determines their health across their life span rather than their health in relation to stroke. For example, I began by saying that "When you respond to the questions that I am going to ask you, please think about your general approach to health, rather than your current situation, would you agree or disagree with the following items...". This was to ensure that the patients answered the questions with regard to their general orientation towards health rather than stroke.
5.2.2.5 Outcome measures

- PTSD symptoms

Post-stroke PTSD diagnosis was assessed by the self-report Posttraumatic Diagnostic Scale (PDS) (Foa, 1995; Foa et al., 1997). The PDS follows the diagnostic criteria for PTSD in DSM-IV and so provides a diagnosis of PTSD and information about the severity of PTSD symptoms.

The first part of the PDS (Part 1 of Appendix 12) focuses on a range of previous traumatic events that participants may have experienced in their lives. This was completed by both the patients and the control group as a way of recording information on the range of traumatic events they had experienced.

Part 2 of the PDS was not used in this project, because the description of the traumatic event (the stroke) was recorded in a questionnaire on stroke and medical history (see Section 5.2.2.1). In this questionnaire, information on how long ago the stroke occurred and what happened during stroke (e.g., whether they felt helpless or frightened) was included.

The 19-item Part 3 PDS assesses re-experiencing symptoms (5 items), avoidance symptoms (7 items), arousal symptoms (5 items), and a total symptom score. All questions in Part 3 were worded to refer to stroke as the traumatic event, so as to capture specific stroke-related PTSD symptoms. For example, the item ‘having upsetting thoughts or images about the traumatic event that came into …’ was changed to ‘having upsetting thoughts or images about the stroke that came into…’ (see Part 2 of Appendix 12). If patients had suffered more than one stroke, they were asked to identify the most traumatic one and answered the questions accordingly. The severity of the symptoms was rated according to the rating scale: 0= not at all, 1= once a week or less/once in a while, 2= 2 to 4 times a week/half the time, 3= 5 or more times a week/almost always.

The last two questions in Part 3 assessed the symptoms’ duration and whether the onset was delayed. According to DSM-IV (APA, 1994), the symptom duration must be over 1
month, and the symptoms must interfere with the individual's functioning – assessed in Part 4 of the PDS (see Part 3 of Appendix 12).

In previous research, reliability of the PDS scale was high (Total Symptom Severity, Cronbach’s $\alpha = .92$; re-experience, Cronbach’s $\alpha = .78$; avoidance, Cronbach’s $\alpha = .84$; hyperarousal, Cronbach’s $\alpha = .84$) (Foa et al., 1997). It has also shown good agreement with the Structured Clinical Interview for the DSM-III-R (SCID) (kappa = .65, agreement = 82%, sensitivity = .89 and specificity = .75) (Foa et al., 1997).

It is of note that besides Full PTSD (see Chapter 2 section 2.3.1 for the diagnostic criteria for Full PTSD) and No PTSD diagnosis, I also used Partial PTSD diagnosis in this project although it is not specified in DSM-IV (APA, 1994). The rationale for classifying patients into different categories of PTSD (Full, Partial or No PTSD) is based on existing literature suggesting that PTSD could be better conceptualised as a spectrum disorder, which may occur along a continuous dimension from normal to extreme or abnormal stress responses (Blank, 1993; Marshall, Spitzer, & Liebowitz, 1999; Shalev, 2002). This implies that it is not always helpful to view this disorder simply in terms of either having it or not (Joseph et al., 1997). Following a trauma, some people may not fulfill the full diagnostic criteria for PTSD but still experience severe impairment in functioning, thus still require "more or less the same level of care" as those with a full diagnosis of PTSD (Carlier & Gersons, 1995, p. 107). To this end, some researchers have classified PTSD reactions into Full, Partial/subclinical/sub-threshold or No PTSD (Amir & Ramati, 2002; Blank, 1993; Carlier & Gersons, 1995; Ginzburg et al., 2002; Kangas, Henry, & Bryant, 2005a; O'Reilly, Grubb, & O'Carroll, 2004).

The term Partial PTSD in this study refers to cases in which patients displayed PTSD symptoms and met criteria for at least one out of the three required symptom clusters (e.g., they met diagnostic criteria for avoidance symptoms, but not re-experiencing and/or hyperarousal symptoms) (Amir & Ramati, 2002; Carlier & Gersons, 1995).
Psychiatric co-morbidity

This was measured by the 28-item General Health Problems Questionnaire (GHQ-28) (Goldberg & Hillier, 1979). Researchers (Ebrahim, Barer, & Nouri, 1987; Robinson & Price, 1982) have suggested that the GHQ-28 is a "standard or marker" of psychopathology in stroke patients. This questionnaire yields four subscales: somatic problems (e.g., 'Have you recently been having hot or cold spells'), anxiety and insomnia (e.g., 'Have you recently been feeling nervous and strung-up all the time'), social dysfunction (e.g., 'Have you recently felt that you are playing a useful part in things?'), and depression (e.g., 'Have you been thinking of yourself as a worthless person?'). The questionnaire was used in the present study to capture the symptoms since the stroke. Each item is scored from 0-3 (e.g., 0 = not at all, 1 = no more than usual, 2 = rather more than usual, 3 = much more than usual) with higher scores indicating higher levels of symptoms (see Appendix 13).

Using a GHQ scoring method (0-0-1-1), the questionnaire can also be used for psychiatric caseness identification. A cut-off score of 5 is indicative of caseness. Based on this cut-off score, the GHQ-28 has a sensitivity value of 88% at a specificity of 84.2% and an overall 14.5% misclassification rate (Goldberg & Hillier, 1979).

5.2.3 Procedure

5.2.3.1 Baseline assessments (T 1) with patients

Clinicians and/or nursing staff on the ward who were familiar with the inclusion/exclusion criteria for the study were asked to help identify eligible patients. I approached the eligible patients and explained the study in details to them. Patients were given the opportunity to ask questions before consenting. They were also informed that they could withdraw at any point during the assessment and that all their responses would be anonymised. Patients were also asked if they wished to delay giving a decision regarding participation until they had spoken with their family members or friends. Those
patients who gave consent to participate in the study completed a consent form (Appendix 14). Patients who requested a delay before consenting were approached again within two days. Patients who agreed to participate in this research were then assessed using the MMSE to determine their cognitive ability. Those who had a MMSE score less than the cut-off score of 9 or 7 were excluded.

I examined the participants' medical records to confirm their diagnosis of stroke, the time of their most recent stroke, and to obtain information on their post-stroke impairments (e.g., whether they had post-stroke paralysis, elimination, visual problems).

The majority of participants \((N=86, 96\%)\) were assessed in the hospital. A few assessments \((N=4, 4\%)\) were conducted at patients' homes because they were discharged from the hospital earlier than 1 month after their stroke.

Due to the effects of stroke (for example, visual problems or paralysis), some patients had difficulties in reading or writing. Therefore I administered the questionnaires by reading all the individual items to patients rather than asking them to complete the questionnaires themselves. The assessment was divided into several stages in order not to exhaust participants because most of them were elderly people and physically weak after the stroke. The assessment took on average one and a half hours.

5.2.3.2 Follow-up assessments (T2) with patients

Contact details (i.e., telephone number, postal address) of participants at T1 were obtained from their medical records with participants' consent. They were contacted by telephone or post approximately 2 months after the first assessment. The time interval between T1 to T2 varied according to their length of stay in the hospital. On average the follow up assessments were conducted 71.4 days \((SD=27.3\text{ days})\) after the first assessment. The average length of time from their recent stroke to the follow up assessment was 118.3 days \((SD=29.5\text{ days})\).
Similar to the first assessment, I started the follow-up assessment using the MMSE to determine patients' post-stroke cognitive functioning at the follow-up stage. All the patients contacted and agreed to participate in the follow up had a MMSE cut-off score over 9 or 7 (in case of post-stroke hemiplegia on patients' dominant side). I then assessed the patients using the Barthel ADL Index, the PDS, and the GHQ-28. Most of the follow-up assessments (N=74, 94%) took place at patients' own homes or in the nursing homes where they lived. A few (N=5, 4%) were conducted in the day centre of the hospital when patients returned for a check-up or physiotherapy.

5.2.3.3 Assessments with Healthy Controls

Age and gender-matched participants for the healthy control group selected from resources (i) and (iv) (see description in section 5.2.1.2) were sent an invitation letter (Appendix 15) outlining the aim of the study. They were then contacted by telephone a few days later and, upon their verbal agreement to participate, were asked to come to the University of Plymouth to take part in the study. To recruit the participants from resources (ii) and (iii), I went to their retirement flats or churches to introduce myself and invite them to participate in this research. The aim of the research was explained to them. Before they completed the questionnaires, all of the above participants signed the consent form. I then assessed their cognitive ability using the MMSE and administered the package of the questionnaires including demographic information, the Barthel ADL Index, part One of the PDS, the GHQ-28, the TAS-20 and the MHL. For those who were unable to write or read, I administered the questionnaires by reading to them all the individual items. Participants were paid 5 pounds as a token of appreciation.

5.2.4 Statistical analysis

- Descriptive statistics were used to describe the demographic and medical details of the sample.
• Chi-square and independent t-tests were used to compare the differences between the patients and the Healthy Controls in demographic variables, cognitive functioning, functional independence and psychiatric co-morbidity.

• Paired t-tests were conducted to compare changes in PTSD symptom scores, psychiatric co-morbidity and independent daily living over time. All tests were two-tailed. With the sample size in this study, t-tests are suggested to be robust to violations of normality of variables according to the central limit theorem (Tabachnick & Fidell, 1996).

• The effect sizes of t tests were calculated in addition to statistically significance. Boundaries recommended by recent literature on statistical analysis for psychological research (Field, 2005) were used to define small (.10), moderate (.30) and large (.50) effect sizes.

• Non-parametric Spearman’s correlations (rho) and point-biserial correlations (rpb) were calculated to establish the associations between post-stroke physical disability, cognitive functioning, other function impairment related variables, predictor variables and outcomes.

• Hierarchical multiple regression analyses were performed to identify to what extent predictor variables independently predicted outcomes, and the percentage of variance in outcome scores they were able to explain. The assumptions and diagnostics pertaining to multivariate analysis were examined. Data were tested for normal distribution of dependent variables, multicollinearity and homoscedasticity of independent variables. Square root transformations were carried out on the variables of PDS total score and the GHQ-28 total score due to non-normality. Following exploration and transformation, assumptions of multivariate normality, linearity and homoscedasticity were met.
Chapter 5  

Post-stroke PTSD and Psychiatric Co-morbidity in the U.K.

- The effect sizes of multiple regression were calculated in addition to statistical significance. Boundaries recommended by Cohen (1988) were used to determine small (.02), moderate (.15) and large (.35) effect sizes.

5.3 RESULTS

This section begins with a description of the patients' characteristics, followed by incidence of stroke-related PTSD, its time course, psychiatric co-morbidity, and predictors of post-stroke PTSD and psychiatric co-morbidity in terms of such dispositional variables as personality (alexithymia) and coping (health locus of control).

5.3.1 Characteristics of the patient group and the Healthy Controls

Table 5.1 reports demographic information for patients and Healthy Controls. A total of 191 patients were screened (106 males and 85 females). Ninety-one patients were excluded because of (i) dysphasia (N=79, 87%); (ii) severe post-stroke cognitive impairment (N=8, 9%); (iii) unstable medical situation (i.e. they had an infection) at the time of assessment (N=2, 2%); and (iv) severe depression at the time (N=2, 2%). Of the 100 eligible patients, seven refused to participate in the study. No reasons were given. Two participants withdrew during the assessment. One died during the data collection process. The remaining 90 patients (43 males and 47 females) participated in the study. The average age was 75 (ranging from 47 - 93 years).

The average length of time between the most traumatic stroke and the assessment at T1 was approximately 47 days. All patients reported that the most recent stroke was the most traumatic one.
Table 5.1
Demographic and medical characteristics of the patients & Healthy Controls

<table>
<thead>
<tr>
<th></th>
<th>Patient group (N=90)</th>
<th>Healthy controls (N=84)</th>
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<tbody>
<tr>
<td>Age (year)</td>
<td>Mean 75.23</td>
<td>Mean 75.24</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>SD 10.25</td>
<td>SD 10.67</td>
<td></td>
</tr>
<tr>
<td>Cognitive function (MMSE)</td>
<td>Mean 10.9</td>
<td>Mean 11.64</td>
<td>-3.92**</td>
</tr>
<tr>
<td></td>
<td>SD 1.5</td>
<td>SD 0.80</td>
<td></td>
</tr>
<tr>
<td>The number of traumatic events had before</td>
<td>Mean 2.29</td>
<td>Mean 1.68</td>
<td>3.04*</td>
</tr>
<tr>
<td></td>
<td>SD 1.37</td>
<td>SD 1.27</td>
<td></td>
</tr>
<tr>
<td>Onset of stroke (day)</td>
<td>47</td>
<td>26</td>
<td></td>
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<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>0.24</td>
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<td>43</td>
<td>48</td>
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<tr>
<td>Female</td>
<td>47</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td>0.41</td>
</tr>
<tr>
<td>Married</td>
<td>44</td>
<td>49</td>
<td>51.2</td>
</tr>
<tr>
<td>Single</td>
<td>7</td>
<td>7</td>
<td>8.3</td>
</tr>
<tr>
<td>Widowed</td>
<td>33</td>
<td>37</td>
<td>35.7</td>
</tr>
<tr>
<td>Divorced</td>
<td>6</td>
<td>7</td>
<td>4.8</td>
</tr>
<tr>
<td>Stroke history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-ever stroke</td>
<td>69</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Second time stroke</td>
<td>14</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Third time stroke</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Function impairment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breathing</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Slight communication problem</td>
<td>41</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Visual defect</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Elimination</td>
<td>32</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Dyspraxia</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Paralysis</td>
<td>20</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Side weakness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left side</td>
<td>46</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Right side</td>
<td>31</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**p < .001, *p < .05. A dash (-) signifies that the items were not applicable.
All patients were white British. The gender distribution among them was quite even with almost half males and half females. Almost half of them were married, and over one third were widowed. Most of them (93%) were retired, and the rest were still working. The majority (N=88, 97%) identified themselves as Christians and two were atheists.

Regarding the medical history of patients, the majority of participants (77%) had their first-ever stroke, about 16% had experienced two strokes, and 7% had experienced three strokes. Eighty-four percent of patients were at home at the time of stroke, and 86% were with family members (e.g., spouses, children) or neighbours/friends. All patients had a MMSE score above 9 or 7 with a mean score of 11. According to Wade and Hewer's classification (1987), one patient (1.1%) had very severe disability, 16 (17.8%) were severely impaired, 33 (36.7%) had moderate disability, 30 (33.3%) had mild impairments and 10 (11.1%) had no post-stroke physical disability. A little less than half of the patients had slight communication problems following stroke, over one third had elimination problem, and nearly a quarter were paralysed. Further, less than 10% of patients had breathing problems, vision impairment and dyspraxia problems. Thirteen patients' data on the side of weakness was missing. Of the remaining, 60% of patients had left side weakness and 40% had right side weakness.

Seventy-four (71%) patients had experienced major illnesses before the stroke. The most prevalent illnesses were heart problems (22%), diabetes (21%) and high blood pressure (21%). Nine had severe arthritis, five had Parkinson's, four had hip/knee replacement surgery and two had cancer.

Eighty-four age and gender matched Healthy Controls were recruited (37 males and 47 females). The average age was 75 (range= 46 - 92 years). All participants were white British. Half of them were married, and over one third were widowed. Most of them (88%) were retired, and the rest were still working. The majority (95%) identified themselves as Christians, two were Catholic and two were atheists. There were no
significant differences between the Healthy Controls and the patients in terms of age \( t(172) = -0.003, \ ns \), gender, \( \chi^2(1) = 0.24, \ ns \), marital status (Fisher's exact test = 0.41, \ ns \) and religion (Fisher's exact test = 1.38, \ ns \). The Healthy Controls had significantly better cognitive functioning than the patients \( t(136) = -3.92, \ p < .001, \ r = .32 \). They had experienced fewer traumatic events during their life time than the patient group \( t(172) = 3.04, \ p < .05, \ r = .23 \).

5.3.2 What is the incidence of post-stroke PTSD?

Before reporting the incidence of post-stroke PTSD, Cronbach's alpha reliability for the PDS symptom clusters was calculated. The reliability was: for intrusion, \( \alpha = .61 \); for avoidance, \( \alpha = .51 \), and for hyperarousal, \( \alpha = .47 \). These figures were lower than the standardised figures (Foa et al., 1997), possibly because of the characteristics of stroke patients. For example, one intrusion item, 'feeling emotionally upset when reminded of the stroke' may not be associated with having nightmares regarding their stroke experience. The internal correlation between these two items was somewhat low (\( \rho = .14, \ ns \)). This could be because for some patients, stroke occurred so quickly that they might not be aware of themselves experiencing a life threatening episode which in turn could have reduced the likelihood to have nightmares about their stroke. However, they could still feel emotional upset when they were reminded of the stroke, because this might remind them, for example, of their psychical disability.

In terms of PTSD diagnosis, Table 5.2 shows that at first assessment, nearly one third of the patients were diagnosed with full PTSD, half were diagnosed with Partial PTSD, and the rest had no PTSD.

Of 90 participants at T1, one died before the follow-up assessment, four were too ill to participate, and six refused to be assessed again. One did not complete the PDS and was removed from the analysis, thus leaving 78 patients (37 males and 41 females) in the follow-up.
At the follow up assessment, less than a quarter were diagnosed with full PTSD, less than half of the patients were diagnosed with Partial PTSD and about one third had No PTSD.

Table 5.2
Incidence of post-stroke PTSD caseness at T1 and T2

<table>
<thead>
<tr>
<th></th>
<th>No PTSD</th>
<th>Partial PTSD</th>
<th>Full PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Time 1 (N=90)</td>
<td>18</td>
<td>20.0</td>
<td>45</td>
</tr>
<tr>
<td>Time 2 (N=78)</td>
<td>26</td>
<td>33.3</td>
<td>34</td>
</tr>
</tbody>
</table>

In terms of post-stroke PTSD symptoms, at both T1 and T2, patients had the highest scores in avoidance symptoms, followed by hyperarousal symptoms, with the lowest scores in intrusion symptoms (Table 5.3).

Table 5.3
The mean scores of PTSD symptoms at T1 and T2

<table>
<thead>
<tr>
<th></th>
<th>T1 (N=78)</th>
<th>T2 (N=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Intrusion</td>
<td>1.47</td>
<td>1.84</td>
</tr>
<tr>
<td>Avoidance</td>
<td>4.22</td>
<td>3.23</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>3.64</td>
<td>2.69</td>
</tr>
</tbody>
</table>

5.3.3 What is the time course of post-stroke PTSD diagnosis and symptoms?

In terms of the trajectory of post-stroke PTSD diagnosis, 25 of those 27 patients with Full PTSD diagnosis at T1 were contacted at the follow up. Among 45 patients who were diagnosed with Partial PTSD at T1, 41 were contacted at the follow up. Among 18 patients who were diagnosed with No PTSD at T1, 12 were contacted.

Of the 25 participants who were diagnosed with full PTSD at T1, over a third remained in the same diagnosis, but more than a half changed to Partial PTSD diagnosis.
at T2. Of the 41 participants who were diagnosed with Partial PTSD at T1, there was an equal proportion of patients who remained in the same diagnostic category and who changed to No PTSD diagnosis. However, more than one fifth changed to the diagnosis of Full PTSD. Of the 12 participants who were diagnosed with No PTSD at T1, the majority remained in the same diagnostic category, with the rest changed to Partial PTSD diagnosis (Table 5.4).

Table 5.4
The trajectory of PTSD diagnosis from T1 to T2

<table>
<thead>
<tr>
<th>PTSD at T1 (N=90)</th>
<th>PTSD at T2 (N=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Met</td>
<td>Criteria Met</td>
</tr>
<tr>
<td>Full PTSD</td>
<td>No PTSD</td>
</tr>
<tr>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>41 (Partial)</td>
<td>9</td>
</tr>
<tr>
<td>12 (No)</td>
<td>0</td>
</tr>
</tbody>
</table>

With regard to the trajectory of post-stroke PTSD symptoms, intrusive and hyperarousal symptoms declined over time, whereas avoidance symptoms increased slightly over time (Table 5.3). However, no significant differences were found between T1 and T2 on intrusion symptoms \([t (77) = 1.15, ns]\) and avoidance symptoms \([t (77) = -0.68, ns]\). Hyperarousal symptoms significantly declined at T2 \([t (77) = 2.23, p < .05, r = .25]\).

5.3.4 What is the psychiatric co-morbidity with PTSD? How do patients compare with the Healthy Controls?

Using the GHQ scoring, 66 (73%) out of 90 patients at T1 and 41 (55%) out of 75 patients (missing data = 3) who completed the GHQ-28 at T2 scored at or above the cut-off score of 5, thus fulfilling the criteria for psychiatric caseness. Among the Healthy Controls, only 13 (15%) patients scored at or above the GHQ-28 cut-off score of 5.
Using the Likert scoring method, patients scored most highly on symptoms of social dysfunction after a stroke, followed by somatic problems and anxiety. Depression was the least of a problem. Similar to the patient group, the Healthy Controls scored most highly on symptoms of social dysfunction, followed by somatic problems and anxiety, and lowest on symptoms of depression.

At T1, a significant difference was found between the patient group’s psychiatric caseness and that of the Healthy Controls ($\chi^2(1) = 58.67, p<.001$). The odds ratio calculation showed that at T1, the patients were 15.28 times more likely to develop psychiatric caseness than the Healthy Controls. At T2, there was still a significant difference between the patient group’s psychiatric caseness and that of the Healthy Controls at baseline ($\chi^2(1) = 26.41, p<.001$). The odds ratio calculation showed that compared with the Healthy Controls, the patients at T2 were 6.72 times more likely to develop psychiatric caseness.

At T1, compared with Healthy Controls, patients experienced significantly more somatic problems ($t(165) = 8.06, p<.001, r = .53$), anxiety ($t(162) = 6.88, p<.001, r = .23$), social dysfunction ($t(154) = 12.59, p<.001, r = .71$), and depression ($t(135) = 6.11, p<.001, r = .47$). At T2, patients still experienced significantly more somatic problems ($t(134) = 4.89, p<.001, r = .39$), anxiety ($t(131) = 3.18, p<.05, r = .27$), social dysfunction ($t(109) = 8.41, p<.001, r = .63$), and depression ($t(103) = 4.82, p<.001, r = .43$) than the Healthy Controls (Table 5.5).

Somatic symptoms ($t(74) = 3.43, p<.05, r = .37$), and anxiety symptoms ($t(74) = 4.09, p<.001, r = .43$) declined significantly over time, but not social dysfunction ($t(74) = 1.55, ns$) or depression ($t(74) = .64, ns$).
Table 5.5
The mean scores of the Barthel and the GHQ-28 subscales for Patients (T1 and T2) and Healthy Controls

<table>
<thead>
<tr>
<th></th>
<th>T1 (N=75)</th>
<th>T2 (N=75)</th>
<th>Control (N=84)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Barthel</td>
<td>13.99</td>
<td>4.34</td>
<td>15.19</td>
</tr>
<tr>
<td>Somatic problems</td>
<td>7.44</td>
<td>3.71</td>
<td>5.96</td>
</tr>
<tr>
<td>Anxiety</td>
<td>7.03</td>
<td>4.75</td>
<td>5.13</td>
</tr>
<tr>
<td>Social dysfunction</td>
<td>12.19</td>
<td>3.14</td>
<td>11.48</td>
</tr>
<tr>
<td>Depression</td>
<td>4.16</td>
<td>4.55</td>
<td>3.88</td>
</tr>
</tbody>
</table>

*(N=79 at both T1 & T2)*

5.3.5 What is the association between predictor variables and severity of PTSD following stroke and psychiatric co-morbidity?

To establish the association between the predictor variables, severity of PTSD (the PDS total score at T1), and psychiatric co-morbidity (the GHQ-28 Likert scoring total score at T1), I carried out a series of hierarchal multiple regression analyses. Before presenting the data, Table 5.6 showed the correlations between cognitive functioning, the independent daily living, other post-stroke impairment related variables and the outcome measures for the patient sample. It shows that the Barthel baseline scores had the strongest correlation with both the PDS total score and the GHQ-28 total score. Further, some variables of post-stroke impairment (e.g., any post-stroke elimination problems and any post-stroke paralysis) were correlated with the Barthel baseline scores. This suggested that the Barthel score was the best indicator of post-stroke physical disability and impairment. In examining the associations between outcome variables and predictors, I controlled for the variance due to post-stroke physical disability (the Barthel total score at T1).
Table 5.7 shows the correlations between the predictor variables and outcome measures. These were examined so as to avoid multicollinearity amongst predictors. Although there were significant correlations between powerful others health locus of control, chance health locus of control and difficulty in identifying feelings, and externally oriented thinking correlated with chance health locus of control, the correlation coefficients were somewhat low, suggesting that multicollinearity was not present in the data.
Table 5.6
Correlations between the Barthel baseline score, cognitive functioning, other post-stroke impairment variables, and outcome measures (N=90)

<table>
<thead>
<tr>
<th>Variable/measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Barthel baseline score</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The PDS total score</td>
<td>-.41**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The GHQ-28 total score</td>
<td>-.40**</td>
<td>.58**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The MMSE baseline score</td>
<td>.27*</td>
<td>-.22*</td>
<td>-.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. No. of previous illnesses</td>
<td>.01</td>
<td>.02</td>
<td>.07</td>
<td>.29**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. No. of previous strokes</td>
<td>-.01</td>
<td>.17</td>
<td>.04</td>
<td>.01</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Onset of the stroke (days)</td>
<td>-.26*</td>
<td>.22*</td>
<td>.17</td>
<td>-.07</td>
<td>.03</td>
<td>-.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Any post-stroke breathing problem</td>
<td>-.14</td>
<td>-.14</td>
<td>-.02</td>
<td>-.01</td>
<td>.01</td>
<td>.03</td>
<td>.32**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Any post-stroke dysarthria problem</td>
<td>-.02</td>
<td>.19</td>
<td>.01</td>
<td>-.26*</td>
<td>-.15</td>
<td>.13</td>
<td>.02</td>
<td>-.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Any post-stroke visual problem</td>
<td>.06</td>
<td>.07</td>
<td>.17</td>
<td>-.05</td>
<td>-.03</td>
<td>-.12</td>
<td>-.04</td>
<td>.07</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Any post-stroke elimination problem</td>
<td>-.30**</td>
<td>.29**</td>
<td>.37**</td>
<td>-.17</td>
<td>-.08</td>
<td>.01</td>
<td>.23*</td>
<td>.16</td>
<td>.11</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Any post-stroke dyspraxia problem</td>
<td>.14</td>
<td>.002</td>
<td>-.01</td>
<td>-.24*</td>
<td>-.11</td>
<td>-.10</td>
<td>-.04</td>
<td>.06</td>
<td>.25*</td>
<td>-.06</td>
<td>.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Any post-stroke paralysis</td>
<td>-.63**</td>
<td>.12</td>
<td>.11</td>
<td>-.12</td>
<td>-.16</td>
<td>-.07</td>
<td>.11</td>
<td>.06</td>
<td>.17</td>
<td>-.14</td>
<td>.19</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>14. Side of weakness (left / right)</td>
<td>.08</td>
<td>-.06</td>
<td>-.05</td>
<td>-.10</td>
<td>-.15</td>
<td>-.09</td>
<td>-.07</td>
<td>-.22</td>
<td>.42**</td>
<td>.05</td>
<td>-.05</td>
<td>.24*</td>
<td>-.15</td>
</tr>
</tbody>
</table>

** p < .001 (two-tailed) * p < .05 (two-tailed)
Table 5.7
Correlations (rho) between outcome measures and predictor variables (N=90)

<table>
<thead>
<tr>
<th>Variable/measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The PDS total score</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The GHQ-28 total score</td>
<td>.58**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Difficulty in identifying feelings</td>
<td>.48**</td>
<td>.43**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Difficulty in describing feelings</td>
<td>.36**</td>
<td>.27**</td>
<td>.49**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Externally oriented thinking</td>
<td>.15</td>
<td>.11</td>
<td>.06</td>
<td>.28**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The TAS-20 total score</td>
<td>.48**</td>
<td>.40**</td>
<td>.80**</td>
<td>.80**</td>
<td>.51**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. IHLC</td>
<td>-.20</td>
<td>-.06</td>
<td>.03</td>
<td>-.11</td>
<td>-.26*</td>
<td>-.12</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8. POLC</td>
<td>.14</td>
<td>.05</td>
<td>.21*</td>
<td>.01</td>
<td>-.11</td>
<td>.08</td>
<td>.15</td>
<td>-</td>
</tr>
<tr>
<td>9. CHLC</td>
<td>.24*</td>
<td>.08</td>
<td>.24*</td>
<td>.24*</td>
<td>.05</td>
<td>.26*</td>
<td>.10</td>
<td>.15</td>
</tr>
</tbody>
</table>

•• $p < .001$ (two-tailed) • $p < .05$ (two-tailed);

IHLC = internality health locus of control; POLC = powerful others locus of control; CHLC = chance health locus of control
I carried out a hierarchical multiple regression to test the relative importance of the predictor variables and the percentage of variance in the PDS total score they were able to explain. The Barthel baseline score was entered into Block 1 to control for post-stroke physical disability, with the three subscale scores of the TAS-20 and the MHLC in the second block. I also tested whether there was an interaction effect between personality (alexithymia) and coping (health locus of control) in predicting PTSD by entering product variables of the TAS-20 total score and the three subscales of the MHLC (i.e. IHLC* TAS, POLC*TAS and CHLC*TAS) in the third block. The PDS total score at T1 served as the dependent variable. No outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics.

The results showed that Block 1 explained a significant proportion of the variance (17%) of the PDS total score \([F(1,88) = 19.60, p<.001, \text{adjusted } R^2 = .173]\). After controlling for the Barthel in Block 1, Block 2 yielded a large and significant effect in improving the prediction of outcome \([F(6,82) = 5.00, p<.001, R^2 \text{ change } = .22, \eta^2 = .37]\). Block 2 accounted for an additional 22% of the variance in the PDS total score. In Block 3, a significant interaction of personality and coping was also found predictive of the total symptoms of post-stroke PTSD \([F(3,79) = 2.83, p<.05, R^2 \text{ change } = .06, \eta^2 = .11]\). Block 3 accounted for an additional 6% of the variance in the PDS total score and explained a total of 39% of the variance in outcome in total. After controlling for the level of post-stroke physical disability, difficulty in identifying feelings \((p<.05)\), and the interaction of alexithymia and chance health locus of control \((p<.01)\), but not any coping factors, independently predicted post-stroke PTSD severity total in the final Block (see Table 5.8 for detailed regression coefficients).
Table 5.8
Hierarchical multiple regression analysis for predicting post-stroke PTSD (the PDS baseline total score) \((N=90)\)

<table>
<thead>
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Note: \(\Delta R^2 = .22\) for Block 2 \((p<.001)\); \(\Delta R^2 = .06\) for Block 3 \((p<.05)\)

***\(p<.001\), **\(p<.01\), *\(p<.05\).
IHLC = internality health locus of control; POLC = powerful other locus of control; CHLC = chance health locus of control; IHLC*TAS = product variable of alexithymia and internality health locus of control; POLC*TAS = product variable of alexithymia and powerful other locus of control; CHLC*TAS = product variable of alexithymia and chance health locus of control.

As the interaction of alexithymia and chance health locus of control was significant, further analysis was carried out to examine this relationship. Using the cut-off score recommended by Taylor, Bagby and Parker (2003), I divided the total patient sample into 'alexithymic' (TAS-20 ≥ 61), 'borderline alexithymic' (TAS-20 ≥ 52 and ≤ 60) and 'non alexithymic' (TAS-20 ≤ 51). I also divided the sample into high and low chance health locus of control using a median split. Then, I calculated the mean PDS baseline total score for each of the six combinations of alexithymic versus non or borderline level and high versus low chance health locus of control (see Figure 5.1 for means). The interaction from a two-way analysis of variance (alexithymia X chance health locus of control) was significant, [F(2, 84) = 3.27, p < .05], confirming the finding from the regression analysis that the degree of alexithymia and chance health locus of control did interact. Figure 5.1 showed that the combination of high degree of alexithymia and high chance health locus of control coping led to worse outcome compared with all other combinations. Alexithymic patients (in contrast to non or borderline) and who also had a heightened tendency towards chance health locus of control coping had more severe post-stroke PTSD symptoms.
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Figure 5.1
The association between the interaction variables (alexithymia and chance health locus of control) and the PDS total score at T1 (N=90)

Note: CHLC = chance health locus of control;
Low CHLC/Non alexithymic, N=33; Low CHLC/Borderline alexithymic, N=11; Low CHLC/Alexithymic, N=4; High CHLC/Non alexithymic, N=22; High CHLC/Borderline alexithymic, N=13; High CHLC/Alexithymic, N=7.

With regard to the association between predictor variables and psychiatric co-morbidity, I carried out a hierarchical multiple regression to test the relative importance of the predictor variables and the percentage of variance in the GHQ-28 total score they were able to explain. The Barthel baseline score was entered into Block 1, with the three subscale scores of the TAS-20 and the MHLC in the second block. I also tested whether there was an interaction effect between personality and coping in predicting the GHQ-28 total score by entering product variables of the TAS-20 total score and the three
subscales of the MHLC (i.e. IHLC* TAS, POLC*TAS and CHLC*TAS) in the third block. The GHQ-28 total score at T1 served as the dependent variable. No outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics.

The results showed that Block 1 explained a significant proportion of the variance (16%) of the baseline GHQ-28 total score \[F(1,88) = 17.29, p<.001, \text{adjusted } R^2 = .155\]. After controlling for the Barthel baseline score in Block 1, Block 2 yielded a moderate and significant effect in improving the prediction of outcome \[F(6,82) = 3.04, p=.01, R^2 \text{ change} = .15, f^2 = .22\]. Block 2 accounted for an additional 15% of the variance in the GHQ-28 total score and explained a total of 26% of the variance in outcome. One alexithymia factor - difficulty in identifying feelings made a significant contribution. Block 3 did not improve the prediction significantly \[F(3,79) = 1.20, \text{ns}, R^2 \text{ change} = .03\]. After controlling for the level of post-stroke physical disability, the only significant predictor was difficulty in identifying feelings \(p<.01\). The coping factors and the interaction (personality and coping) did not contribute significantly to predicting the GHQ-28 total score (see Table 5.9 for detailed regression coefficients).
### Table 5.9
Hierarchical multiple regression analysis for predicting psychiatric co-morbidity (the GHQ-28 baseline total score) (N=90)

<table>
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<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
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<tbody>
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</tr>
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<td>.16</td>
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*Note:* \( \Delta R^2 = .15 \) for Block 2 \((p<.01)\); \( \Delta R^2 = .03 \) for Block 3 \((ns)\).

***\(p<.001\), **\(p<.01\), *\(p<.05\).
IHLC = internality health locus of control; POLC = powerful other locus of control; CHLC = chance health locus of control; IHLC*TAS = product variable of alexithymia and internality health locus of control; POLC*TAS = product variable of alexithymia and powerful other locus of control; CHLC*TAS = product variable of alexithymia and chance health locus of control.

5.4 Discussion

This section will discuss the findings of the four research questions as well as limitations and the implications of this study.

5.4.1 Research question 1: What is the incidence of post-stroke PTSD?

The findings of the present study confirmed the first hypothesis in that 30% of the sample met the diagnostic criteria for Full PTSD at T1. This incidence was compatible with that reported in previous literature [Sembi et al. (1998): 21% screening; Berry (1998): 32%; Bruggimann et al. (2006): 31%; and Sheldrick et al. (2006): 35.5%]. In other words, a similar proportion of stroke patients developed PTSD, despite the differences in the way in which PTSD was measured in the literature [e.g. the Impact of Events Scale (IES), the Penn Inventory of PTSD and the Clinician-Administered PTSD scale], and in the operational definition of stroke [e.g. first time stroke, subarachnoid haemorrhage (SAH), and non-severe stroke]. The implication is then that PTSD reactions were probably not the artefacts of the questionnaires or definitions used. This means that PTSD reactions appear to be robust psychological reactions which affect a certain proportion of individuals following their stroke.

It is noteworthy that this incidence of post-stroke PTSD resulted from persistent efforts to ensure that the PTSD symptoms were not confounded by one particular stroke symptom, namely that the onset of stroke can lead to loss of consciousness. Indeed, existing literature has suggested that this is one important clinical feature of stroke that needs to be controlled for (O’Carroll et al., 1999). In other words, researchers might be confused between psychogenic amnesia (i.e., not being able to recall an important part
of the stroke) and amnesia caused by stroke (i.e., loss of consciousness). To this end, before assessing the patients, I noted from their medical records which patients lost consciousness during the stroke. During the assessment, if these patients reported that they were ‘not able to remember an important part of the stroke’ (question 8 of the PDS), I asked the reason why. If they reported that this was due to the loss of consciousness at the time of stroke which coincided with the medical records, I would treat their answers to this question as ‘0 - not at all’ rather than ‘3 - almost always’. If I had not done this, then there would be an artificial increase in the PDS severity scores. Indeed Shemesh and Stuber (2006) have emphasised that when medical symptoms exist along with PTSD symptoms, the investigator should try not to confound the disease symptoms with PTSD symptoms.

The findings of the present study also showed that half of the patients had Partial PTSD at T1. This supports exiting literature suggesting that PTSD could be better conceptualised as a spectrum disorder and psychological responses to trauma occurring along a continuous dimension from normal to extreme or abnormal responses (Blank, 1993; Carlier & Gersons, 1995; Marshall et al., 1999; Shalev, 2002). Following a stroke, some patients may not meet the criteria for all three of the required symptoms clusters for PTSD, but they still demonstrated PTSD symptoms for at least one of the symptom clusters and still experienced severe impairment in social functioning. The finding that a large proportion of stroke patients displayed Partial PTSD suggested that they also required psychological intervention, as Carlier and Gersons (1995) put it, they still “require more or less the same level of care” as those with a full diagnosis of PTSD (p. 107).

The present findings showed that patients had the highest scores in avoidance symptoms, followed by hyperarousal symptoms, with the lowest in intrusion symptoms. With regard to avoidance symptoms, it is noteworthy that just over half of the patients (51%) avoided talking or thinking about the stroke. However, the majority of them (90%)}
did not avoid activities, places, or people that reminded of their stroke. This could be due to the fact that the majority (86%) of them had stroke when they were with their loved ones (e.g., spouses, children) and friends. This means that it would be difficult for them to avoid seeing these people who could act as constant reminders of their stroke. This corresponds to O'Carroll's research (1999) suggesting most often it would be difficult for stroke patients to avoid being reminded of their stroke, because they often had it in a familiar environment (e.g., at home, with someone they know). In other words it would have been difficult for them to distance themselves physically from being reminded of their stroke. This could explain why half of the patients would instead try to distance themselves cognitively by avoiding thinking of or talking about their stroke.

In terms of intrusion symptoms, almost half of the patients reported that they were emotionally upset when being reminded of the stroke. This was probably due to the changes that they experienced after stroke (e.g., the impairment of independent daily living functioning, or changes in their bodies – paralysis), rather than the experience of flashback or nightmares. After all only a small portion of patients reported nightmares (5.6%) or flashbacks (22%).

In terms of hyperarousal symptoms, it is worth pointing out that more than half of the patients (56%) felt irritable or had fits of anger following stroke. This is consistent with the literature (Chung et al., 2006) suggesting that it is not uncommon that people with an experience of a life-threatening illness (in this case, a stroke) would experience irritability or anger because they found themselves having to suddenly change their lifestyle, daily or leisure activities and indeed their future plans. Understandably, they would find it difficult to adjust to these changes. In addition to anger or irritability, half of the patients also experienced hypervigilance which may be related to a fear of recurrence of the stroke. As suggested by Berry (1998) patients who had a haemorrhage might be overly obsessed with thoughts about the recurrence of another haemorrhage.
5.4.2 Research question 2: What is the time course of post-stroke PTSD diagnosis and PTSD symptoms?

The findings of this study supported hypothesis 2 in that the overall incidence of post-stroke Full PTSD declined from T1 (30.0%) to T2 (23.1%). This corresponds to the only longitudinal study on post-stroke PTSD (Sheldrick et al., 2006), which also showed that PTSD incidence declined for patients with SAH from 6 weeks after admission (T2) to 3 months after admission (T3).

However, over one third of patients (36%) in the present study who had Full PTSD at baseline assessment remained to be diagnosed of Full PTSD at follow up, suggesting that PTSD was a chronic condition for some patients. This finding is also consistent with Sheldrick et al.'s (2006) research. In fact, they found an even higher proportion of patients (55%) who maintained the Full PTSD diagnosis at the follow up stage. This is also similar to Pedersen, Domburg and Larsen's study (2004), in which they observed a decrease in the number of people with myocardial infarction (MI) related PTSD over time but that half of their sample who had PTSD at follow up also had PTSD at T1. In addition, most of the patients who had No PTSD at T1 and participated in the follow up assessment remained in the same category at T2. The implication from the preceding findings is that while PTSD following life-threatening illness on the surface declined overtime, in fact, PTSD symptoms remained persistent for some patients suggesting that there may be individual differences in maintaining PTSD diagnosis following life-threatening illness. This needs to be investigated further in future studies.

Due to the fact that the patients in this study were followed up on average 118 days (nearly 4 months) after the stroke, it was impossible to ascertain the proportion of patients who might yet develop delayed onset of PTSD. This is because delayed onset of PTSD requires the onset of symptoms of at least 6 months after the trauma (APA, 1994).

With regard to the trajectory of PTSD symptoms, the results showed that hyperarousal symptoms significantly declined over time, while intrusion and avoidance
remained relatively stable. The chronic course of intrusion and avoidance symptoms is consistent with the findings of some studies (Andrykowski et al., 2000; Brewin et al., 1998b; Manne, 1999). However, many studies on illness-related PTSD did not report data on hyperarousal symptoms. This is mainly because they used the IES as the main indicator for PTSD.

Focusing on the hyperarousal symptoms, one could speculate that the decline may be related to the improvement of patients' independent daily living ability at the follow up stage. The reason is that such improvement overtime could have increased their confidence and ability to adjust to the changes in their life 4 months after stroke (Åström et al., 1992; King, 1996). Consequently, this might have an impact on, for example, the hypervigilant reaction in that the proportion of patients reporting this difficulty declined substantially (from 50% at T1 to 18% at T2). That is, as they became more independent in daily living, they might have experienced less worry or fear about having another stroke. They also became less angry and irritable (from 56% to 47%). Initially, they might have had a great deal of anger towards the changes resulting from their stroke. Four months later, as their daily living functioning had improved, they had become more capable of adjusting to these changes.

5.4.3 Research question 3: What is the psychiatric co-morbidity accompanying post-stroke PTSD?

The results supported the third hypothesis that patients were significantly worse than the age and gender matched control in psychiatric co-morbidity. Seventy-three percent and 55% of patients fulfilled the criteria for psychiatric caseness at T1 and T2 respectively, whereas the percentage of psychiatric caseness among the Healthy Controls was only 15%. This is consistent with existing literature suggesting that patients with post-stroke PTSD tend to experience other psychiatric difficulties, including depression, anxiety, somatisation and social dysfunction (Berry, 1998; Bruggimann et al.,
2006; Sembi et al., 1998). The present findings also support the idea that PTSD following a traumatic event often occurs with other coexisting psychiatric difficulties (Davidson & Foa, 1991; Helzer, Robins, & McEvoy, 1987; Solomon & Mikulincer, 1990).

It is of note that patients reported social dysfunction the most. This is not too surprising given that stroke is a disabling disease and can cause deterioration in patients' social functioning [e.g., leisure activities (Niemi et al., 1988), working (Lawrence & Christie, 1979)]. In fact, further analyses from the present study also confirmed the foregoing relationship in that social dysfunction was negatively correlated with the Barthel total score \((\rho = -0.39, p<0.001)\). On the other hand, one could argue that social dysfunction could be associated with the psychological distress following stroke such as depression or anxiety. Again, the present study confirmed such relationships (social dysfunction with anxiety, \(\rho = 0.43, p<0.001\); depression, \(\rho = 0.56, p<0.001\)).

While this study revealed some evidence on the range of psychiatric co-morbidities that the stroke patients developed, it did not inform us to what extent post-stroke psychiatric co-morbidity (e.g., depression) is different from post-stroke PTSD psychiatric co-morbidity. The answer to the foregoing question cannot be obtained easily from this study since it did not set out to address it. If one wants to address this question, one would need to, at the very least, identify the most appropriate way of distinguishing post-stroke PTSD patients and stroke patients only. Additionally, in the design, one needs to arrive at the appropriate sample size for both groups of patients. Depressive symptoms and their clinical characteristics can then be compared meaningfully. Although, as was mentioned previously, this study was not designed to address the foregoing question, some data were available in the present study to give some indication of the differences between post-stroke PTSD patients and stroke patients only groups in terms of psychiatric co-morbidity. Comparing with stroke patients only group (who had No PTSD), patients with Full PTSD had significantly more severe somatic problems, anxiety, social dysfunction and depression. There was also a significant difference between the
stroke only group and patients with Full PTSD group in terms of psychiatric caseness. However, one ought to treat this result with caution given that I assumed that the way the two groups (post-stroke PTSD patients and stroke only patients) were distinguished in this study was the most appropriate one and that the sample size for each group was adequate.

5.4.4 Research question 4: What are the predictors of post-stroke PTSD and psychiatric co-morbidity?

Before discussing the findings, it should be noted that whilst considering the predictive capability of variables within the regression models, the statistical results of the regressions in this study do not necessarily indicate causal relations between the predictor variables and the outcomes. Although results are discussed in terms of predictive relations, they do not render any definite causal relationship, rather the interpretation is based on a theoretical consideration.

The present results supported the fourth hypothesis in that after controlling post-stroke physical disability, alexithymia was associated with PTSD and psychiatric co-morbidity. This supported previous literature, for example, burn patients (Fukunishi, Chishima, & Anze, 1994), post-surgical women with breast cancer (Mantani et al., 2007), and patients receiving chronic haemodialysis (HD) therapy (Kojima et al., 2007).

Focusing on the alexithymic dimensions, the findings revealed that the difficulty in identifying feelings dimension of alexithymia scale predicted both PTSD and psychiatric co-morbidity, independently of post-stroke physical disability. That is the more patients found it difficult to identify their feelings, the more they developed severe PTSD symptoms and psychiatric co-morbidity. This finding corresponded to one existing study investigating PTSD among MI patients. Bennet and Brooke (1999) reported that difficulty in identifying feelings was significantly associated with the severity of PTSD following MI. It was also consistent with a study investigating alexithymia and PTSD symptoms in Iraq.
refugees (Sondergaard & Theorell, 2004), which found that the difficulty in identifying feelings was associated significantly positively with symptoms of PTSD.

It is difficult to know the exact mechanisms involved in explaining the relationship between difficulty in identifying feelings and PTSD symptoms and psychiatric co-morbidity. However, there are claims suggesting that some attachment issues in the past and biological defects might be involved in the process. In terms of past attachment issues, the significant other (usually the mother) regulates the infant’s behaviour. In so doing, she also regulates the infant’s autonomic physiology and even the neurochemistry of its maturing brain (Hofer, 1983). As part of the development of its maturing brain, the child also develops normal cognitive processes in which he or she gradually develops simple awareness of bodily sensations and complex feelings (e.g., love) and awareness of other people’s emotions (Krystal, 1974).

However, such normal development can be interrupted by some significant events (e.g., separation from the mother for a long period of time). In turn, this would generate inadequate maternal stimulation, which interrupts the normal development of their ability to be aware of one’s own complex feelings and the feelings of others, as well as the normal connection between the limbic and cortical structures. The interruption of the limbic and cortical structures could contribute to the development of psychosomatic symptoms or psychiatric morbidity (Hofer, 1983). This could be one account of the relationship between difficulty in identifying feelings (i.e., interrupted normal development of the awareness of bodily sensations and the complex feelings of oneself) and psychosomatic symptoms or psychiatric morbidity.

With regard to the explanation of biological deficits, it has been postulated that alexithymic individuals have difficulty in imagination and recognising verbal or non-verbal signals. They consequently experience a great deal of difficulty with internal relationships. That is, they experience a great deal of tension within themselves. This tension generates distressing emotions such as anxiety and frustration and at the same time
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affects the biological systems such as the autonomic nervous and the endocrine systems. In turn, this increases the likelihood for the emergence of different illnesses including psychosomatic or psychiatric illnesses (in this case, PTSD symptoms and psychiatric co-morbidity) (Sifneos, 1973).

Having stated the foregoing possible theoretical explanations from the attachment and biological perspectives, in this study, no information was collected on stroke patients' past attachment issues and abnormality of their biological systems. Therefore, conclusions cannot be drawn on whether the above theoretical postulates can truly explain the relationship between difficulty in identifying feelings and PTSD symptoms and co-morbidity. Nevertheless, given that literature exists in the link between posttraumatic stress, attachment issues and biological mechanisms (Schore, 2002), one is inclined to think that the preceding theoretical postulates probably do bear relevance to the stroke patients in this study, and may help explain the associations between difficulty in identifying feelings and the outcomes.

The results did not support the fifth hypothesis in that after controlling for post-stroke physical disability, health locus of control was not independently associated with outcomes in the final block of the regression analysis. However, the results did show a significant interaction between personality and coping, i.e., a combination of alexithymia and chance health locus of control orientation leading to worse post-stroke PTSD symptoms. Therefore, hypothesis 6 was supported. That is, alexithymic patients (as opposed to non or borderline alexithymic patients) displayed more severe post-stroke PTSD, but only combined with a heightened tendency towards attributing their health problems to outside factors or chance. When patients had a low chance health locus of control orientation, then the level of alexithymia made no difference to the severity of PTSD.

To discuss the foregoing findings, one can draw insights from the additive and interactive models suggested by Hewitt and Flett (1996). The additive model states that
personality and coping make independent and unique contributions to maladjustment. The interactive model, on the other hand, states that personality factors interact with coping strategies in maintaining or developing maladjustment. One could argue that the results showed some support for the additive model in that internality health locus of control, as well as difficulty in identity feeling, were independently associated with PTSD in the second block of the regression analysis. However, the significant additive effect disappeared once the interaction was introduced. This finding was also consistent with an empirical study (Chung et al., 2005) which found that personality factors interacted with coping strategies in maintaining or generating PTSD and general health problems among community residents exposed to aircraft and train crashes.

The disappearance of the significant additive effect and the emergence of the significant interactive effect imply that besides focusing on individual factors, one also ought to focus on the importance of different factors (in this case, alexithymia and chance health locus of control) affecting outcomes in combination.

5.4.5 Limitations of the study

This study has several limitations. Firstly, although the sample sizes for the initial and follow-up assessments were bigger than those reported in previous studies, which meant that this should have minimised potential biases possibly existing in other similar studies with smaller sample sizes (e.g., representativeness), there may still be a selection bias in the present study. That is only stroke patients who were able to communicate were assessed. It is possible that patients with post-stroke dysphasia had even more severe PTSD and/or co-morbidity symptoms. Unfortunately such exclusion criteria could not be avoided for the present study.

Secondly, during the assessment, I only asked patients their responses with the most traumatic stroke as the traumatic event. This does not mean that they had not experienced PTSD resulting from other previous traumatic life events. In other words,
this study was not able to assess to what extent the PTSD symptoms following stroke might have been affected by the additive trauma from past events. However, recent literature has suggested that the 6-month prevalence of PTSD and sub-threshold PTSD among older people in the general population was 0.9% and 13.1% respectively (van Zelst, de Beurs, Beekman, Deeg, & van Dyck, 2003). It could be assumed that this prevalence rate also applies to the patient sample.

Thirdly, with regard to health locus of control, although efforts were made to ensure that patients answered the health locus of control questions with regard to their general health expectations rather than to their stroke, it is still possible that some patients were still thinking about stroke when they were responding to these questions.

Fourthly, there was a difference in the way in which patients and health controls were assessed. I assessed the patients by reading out the questionnaire items to them. The health controls were assessed by filling out self-reported questionnaires in my presence in case of any assistance needed. One may argue that such inconsistency could have influenced the response of patients and health controls. However, given that most stroke patients had physical difficulty in reading or writing, or at least some limitations, reading out the questionnaires seemed to be most appropriate to assess them.

Finally, it is very difficult to exclude all possibilities that stroke symptoms may have confounded with PTSD related symptoms. Such limitation is not an exclusive problem for the present study and appears in many studies on PTSD following life-threatening illness (Shemesh & Stuber, 2006; Tedstone & Tarrier, 2003). The best way to overcome this limitation is unclear, although some may argue that using a structured clinical interview may help to address this limitation. However, due to the time constraints, it was impossible to carry out clinical interviews for such a large group of patients in this study.
5.4.6 Implications

The findings of this study bear relevance for screening and treating patients who suffer from stroke. As part of the assessment, medical professionals need to be aware that apart from displaying physical disability and impairment, stroke patients may also suffer from PTSD symptoms and psychiatric difficulties. In addition to providing medical treatments to stroke patients by means of physiological therapy, occupational therapy and pharmacological treatments, health professionals should also implement psychological interventions to treat PTSD symptoms and psychiatric co-morbidity.

Further, health professionals should be aware of the fact that some intrinsic factors (e.g., personality, coping style), and the combination of them among their patients, i.e. the combination between alexithymic characteristics and chance health locus of control orientation, can also be associated with their psychological difficulties. As part of their rehabilitation, stroke patients might need to be made aware of the extent to which the aforementioned intrinsic factors and their combinations may affect their psychological distress.

5.4.7 Future research

As mentioned in the results section, the present data imply that individual differences may exist in maintaining PTSD diagnosis following stroke. Future longitudinal studies could be carried out to identify individual characteristics which may explain the changes in the PTSD symptoms and diagnosis.

In addition, as was mentioned earlier, future studies can investigate to what extent psychiatric difficulties following stroke is different from psychiatric co-morbidity with post-stroke PTSD. Researchers should make attempts to identify the most appropriate way to distinguish post-stroke PTSD patients and patients with stroke only.

Future studies should also address the phenomenon of additive trauma from past events in addition to PTSD following stroke. Researchers can collect data relating to
PTSD due to previous life events as well as stroke. Thus they might help to inform to what extent PTSD symptoms following stroke might/might not have been exacerbated by the additive trauma.
CHAPTER 6

STUDY 3: COMPARING BRITISH AND URBAN CHINESE ON POST-STROKE PTSD AND PSYCHIATRIC CO-MORBIDITY

6.1 INTRODUCTION

PTSD has been suggested as a Western concept, in that most research validating PTSD as a diagnostic category has been carried out in the Western world (Marsella et al., 1996b). However, many studies have suggested that following a wide range of traumatic events, PTSD can also be diagnosed in non-Western nations (e.g., Cao et al., 2003; de la Fuente, 1990; Kinzie et al., 1990; Marsella, Chemtob, & Hamada, 1992). In fact, trauma reactions have been suggested as a universal human phenomenon (Marsella et al., 1996a; Orr & Pitman, 1999), and PTSD can be understood as a universal disorder (see Chapter 3). Nevertheless cultural variations still exist in the expressive and phenomenological dimensions of PTSD experience, as well as in co-morbidity patterns (Keane et al., 1996; Marsella et al., 1996b; Perilla et al., 2002). As mentioned previously (see Chapter 3), there is increasing interest in studying the ethnocultural aspects of PTSD (Marsella et al., 1996b), but no studies to date have compared Chinese culture with Western culture (i.e., the British) in terms of PTSD symptoms and psychiatric co-morbidity.

Extensive conceptual work and empirical studies have shown that Chinese culture and Western culture differ in terms of attitudes, values, beliefs, and behaviours (e.g., Bond, 1991; Bond, 1996; Chen, 2001; Hoeman et al., 1996; Hsu, 1953; Li, 2003; Morris & Peng, 1994). Chinese people seem to be more alexithymic than Westerners. Some studies reported that compared with Westerners, Chinese tend to score higher on the overall TAS-20, and tend to have more difficulty in identifying feelings, in describing
feelings, and are more externally oriented in thinking (e.g., Dion, 1996; Le et al., 2002). Other research suggested that people in Chinese culture and Western culture also differ in locus of control in that Chinese in general, might have a heightened tendency toward external locus of control (Hsieh et al., 1969; Lao, 1977).

High alexithymia and particularly greater difficulty in identifying feelings have been reported to be associated with more severe PTSD following life-threatening illness (e.g., Bennett & Brooke, 1999). High orientation towards external health locus of control might increase the individual's susceptibility to medically-related PTSD symptoms (e.g., Chung et al., 2006b). Based on the aforementioned research evidence, it seems reasonable to postulate that Chinese patients would develop more severe post-stroke PTSD than British patients. In addition, although the previous cross-cultural literature comparing psychiatric morbidity between the Chinese and Westerners (i.e., depression and anxiety) produced inconsistent results, some researchers have speculated that Chinese would be prone to depression and anxiety when becoming unable to support their families due to, for example, disabling illnesses (Cheng, 1989). Therefore, it seems reasonable to postulate that Chinese culture could potentially exacerbate the psychological distress following a disabling illness (in this case, stroke). That is Chinese patients would develop more severe psychiatric co-morbidity following stroke than British patients.

6.1.1 Aims and hypotheses of the study

This chapter is a cross-cultural comparison chapter which aims to compare the psychological reactions of stroke patients from China and the U.K.. Before describing the aims and hypotheses and reporting the findings, it is worth drawing attention to the following points. Firstly, in terms of psychological reactions, this chapter focuses on post-stroke PTSD and its psychiatric co-morbidity. It also focuses on the relationship between alexithymia, health locus of control, post-stroke PTSD and psychiatric co-morbidity.
Secondly, by Chinese stroke patients, I refer to urban Chinese. Thirdly, in terms of data on the British stroke patients, the baseline data reported in Chapter 5 will be used to compare with the data collected in China. Therefore, the methods, the procedure and the results of the study conducted in the U.K. will not be repeated here. Instead, this chapter will begin with the method and procedure of the study conducted in China. However, the results section will then compare the data between the two cultures.

The research questions for this study are derived from the previous literature review (see Chapter 3).

(i) Are there any cultural differences in the manifestation of PTSD and psychiatric co-morbidity in stroke patients?

**Hypothesis 1:** Urban Chinese (henceforth referred to simply as Chinese) patients are more susceptible to developing post-stroke PTSD than British patients.

**Hypothesis 2:** In comparison with the British, Chinese patients will have more psychiatric co-morbidity symptoms.

(ii) What are the differences between stroke patients in the two cultures in terms of personality (alexithymia) and coping (health locus of control)?

**Hypothesis 3:** Compared with the British stroke patients, Chinese patients will have more difficulty in identifying feelings, more difficulty in describing feelings and more externally oriented thinking.

**Hypothesis 4:** Chinese patients will have a higher tendency towards external (i.e., chance or powerful others) health locus of control than the British.
(iii) What are the similarity and differences between the two cultures in terms of the associations between the predictor variables and outcome variables?

**Hypothesis 5:** Due to the lack of cross-cultural literature comparing the trauma reactions between the Chinese and Western people, the hypothesis for the above question cannot be ascertained.

### 6.2 METHOD

The study conducted in China adopted a cross-sectional design. Participants were assessed using standard questionnaires. Ethical approval was obtained from the Ethics Committee of the University of Plymouth. Research permission was granted by the authority (i.e., the head of neurology department) from each individual hospital where the data was collected. Patients were assessed at least 1 month post-diagnosis of their stroke.

#### 6.2.1 Sample recruitment

Male and female adults were recruited between February 2005 and September 2005. They were in-patients who had experienced a stroke or a transient ischaemic attack (TIA), and were consecutively admitted to the neurology departments in three hospitals in Beijing. Similar to the sample recruitment in the study in the U.K., patients' medical records were examined to confirm their diagnosis, onset of their recent stroke, and ability to participate in the study. Their information on function impairment (e.g., side of weakness, post-stroke functioning problems – breathing, paralysis and so on) was also obtained from their medical records. Patients were recruited if they were medically stable (i.e. not under constant medical monitoring) and at least 1 month post-diagnosis to keep in line with the timing requirement in the DSM-IV criteria of having symptoms present for at least 4 weeks to diagnose PTSD. Patients were excluded if the clinicians suggested that their mental state was too unstable to participate or that they had a
history of severe mental health problems. Patients were also excluded if they exhibited neurological deficits of dysphasia and/or severe cognitive impairment or were unable to understand Mandarin Chinese. A full description of the characteristics of the participants can be found in the Results section of this chapter.

For the study, power calculation was conducted to estimate the number of patients needed for this study. The calculation showed that with the sample size of 90 patients, the study would achieve 92% power \([t (178) = 1.97, p < 0.05]\) for two-tailed T-tests and a medium effect size \((0.50)\) (Cohen's \(d\)) (Cohen, 1988).

6.2.2 Assessments

All measures were in Chinese. Where Chinese versions did not exist, a back translation procedure was adopted and strictly followed according to the suggestions of Matsumoto and Juang (2004). Instruments were firstly translated by me from English to Chinese and then back translated separately by three native Chinese speakers who were fluent in both English and Chinese. Before giving them the instruments to back translate, I provided them with a briefing on the theory and rationale behind the instrument. This process was adopted to increase translation accuracy and ensured that the original meaning of the instrument was retained. The final Chinese versions of the instruments were double checked by one of my PhD supervisors, who himself understands Chinese language and has experienced both British and Chinese cultures.

The following measures were included in this study:

6.2.2.1 Demographic page and information on the stroke and medical history

Sociodemographic variables including gender, age, marital status, working status and religious affiliation were recorded. The choice of 'Hindu' religion in the original English questionnaire was replaced by 'Taoism' because the latter was considered more appropriate for the Chinese population.
Questions on patients' stroke experience consisted of the following:
1) How many strokes have they had; 2) When did the stroke(s) happen? 3) Where were they when stroke happened and who was with them? 4) How did they feel when stroke happened (e.g., panicky, frightened, other)? 5) If patients had more than one stroke, which one was the most traumatic? and 6) what other illnesses did they have? (Appendix 16).

6.2.2.2 Inclusion Assessment - the Chinese version of the Mini-Mental State Examination (CMMSE)

In the U.K. study, the 12-item Short Version of the Mini-Mental State Examination (MMSE) (Braekhus et al., 1992) was used to examine whether patients had severe cognitive impairments or not. However, due to the absence of the Chinese version of the 12-item scale, I decided to use instead a widely used Chinese version of the 20-item Mini-Mental State Examination (CMMSE) (Katzman et al., 1988) (Appendix 17).

The 20-item MMSE, the 12-item short version and the CMMSE all have the same function as to screen and detect cognitive loss. The differences are that the cut-off score for the 20-item MMSE is 23/24 (Folstein, Folstein, & McHugh, 1975), 9 for the short version (Braekhus et al., 1992), and the cut-off of CMMSE varies for different educational groups (Katzman et al., 1988). The cut-off score for illiterate participants is 17. The scores of 20 and 24 are the cut-offs respectively for those who had primary school education and high school education or above. Like the U.K. study, the CMMSE was used as an inclusion assessment for patients in China.

Originally developed for a survey on the impact of illiteracy on people with dementia in China, the CMMSE has been widely used in stroke studies and other investigations (e.g., Li, Ng, Kua, & Ko, 2006; Zhou et al., 2005), and has frequently been used by clinicians in neurology departments in hospitals in Beijing. It includes 10
questions (20 items) on patients’ orientation to time and place (e.g., what is the year/month/date; what city is this; what district is this), calculation or attention (e.g., serial sevens), ability to remember three objects, repetition of a phrase, ability to follow a verbal and a written command, write a sentence and to copy a design. In the CMMSE, the item of repeating ‘No ifs, ands, or buts’ was replaced by repeating ‘forty-four stone lions’ in Chinese (Katzman et al., 1988).

The CMMSE showed a sensitivity of 77% and specificity of 70%. As suggested by Katzman et al. (1988), varying the cut-off for different educational groups could improve its validity.

To keep in line with the study in Britain, if Chinese patients suffered post-stroke hemiplegia on their dominant side (e.g., right side hemiplegia for right handed patients), they were not assessed using the section that requires them to ‘write a sentence’ and ‘copy a design’, because they were not able to physically engage in this exercise. Consequently, the cut-off scores for various educational groups were reduced by 2 in this case (e.g., for illiterate participants, a cut-off of 15 was used to indicate no cognitive impairments instead of the original score of 17).

6.2.2.3 Post-stroke physical disability- independent daily living functioning

A Chinese version of the 10-item Barthel ADL Index was used in this study (Appendix 18). Translated by Chen (1996), this Chinese version has been used in a wide variety of contexts and studies in China (for example, functional limitations in Chinese patients with Chronic Obstructive Pulmonary Disease (Lee, Lee, & MacKenzie, 2006). Cronbach’s α coefficient for internal consistency of the Chinese version in Lee et al.’s (2006) study was .85. See Chapter 5 (section 5.2.2.3) for a more detailed description of the Barthel ADL Index.

6.2.2.4 Predictor questionnaire assessment
Chapter 6  Comparing Post-stroke PTSD and Co-morbidity between the Two Cultures

- **Personality – alexithymia**

  This was measured using the Chinese version of the 20-item Toronto Alexithymia Scale (TAS-20) (Yi, Yao, & Zhu, 2003) (Appendix 19). Based on data from 416 Chinese university students, the Chinese version showed high reliability and validity (Cronbach’s α = .83 and 2-week test-retest reliability = .87). The correlation coefficients of the three factors with the total scale score ranged from .72 to .82 and the correlation coefficients among the three factors ranged from .29 to .54. (Yi et al., 2003). See Chapter 5 (section 5.2.2.4) for a more detailed description of the TAS-20.

- **Coping style – health locus of control**

  Coping style was measured using the Chinese version of the Multidimensional Health Locus of Control scale (MHLC) (Huang, 1992). As mentioned in Chapter 5, section 5.2.2.4, the MHLC has two parallel forms: Form A and Form B, which are identical in meaning, just slightly different in wording, and were designed to be alternated for use as repeated measures (Wallston, 1998). In the study conducted in the U.K., form A of the MHLC was used. However, this form A could not be used in the study in China due to the fact that it was not translated into Chinese. However, Form B of the MHLC is available in Chinese and was therefore used for the current study. The Chinese version showed satisfactory reliability (IHLC, Cronbach’s α = .65 - .67; CHLC, Cronbach’s α = .63 - .67; POLC, Cronbach’s α = .51 - .65) (Chen, Deng, & Chang, 2001; Huang, 1992).

  To keep in line with the study in the U.K., in the present study, I explained to the patients that the questionnaire aimed to measure their general belief about what determines their health across their life span rather than their health in relation to stroke. For example, I began by saying that “When you respond to the questions that I am going to ask you, please think about your **general** approach to health, rather than your current situation, would you agree or disagree with the following items....”. This was to make sure
that the patients responded to the questions according to their general orientation towards health rather than stroke (Appendix 20).

6.2.2.5 Outcome measures

- PTSD symptoms

Since the Chinese version of the Posttraumatic Diagnostic Scale (PDS) (Foa et al., 1997) does not exist, it was translated and back translated by me and my associates (Appendix 21). I made special efforts to include indigenous idioms of distress in the Chinese version. Take this question as an example "Feeling emotionally upset when you are reminded of the stroke.", the phrase "feeling emotionally upset" is difficult for Chinese to understand, therefore it was translated into the idiom of "feeling unhappy".

As used in the British sample, the Chinese PDS (the PDS-C) was worded to reference the stroke as the traumatic event in all questions. It aimed to capture stroke-related PTSD symptoms rather than PTSD symptoms related to other traumatic events in patients' lives. For example, "having upsetting thoughts or images about the traumatic event that came into your mind" was rephrased into 'having unhappy thoughts or images about the stroke that came into your mind' (see Part 2- Appendix 21). If patients had more than one stroke, they were asked to identify the most traumatic one and answer the questions accordingly. See Chapter 5 (section 5.2.2.5) for a more detailed description of the PDS.

- Psychiatric co-morbidity

This was measured by the Chinese version of the 28-item General Health Problems Questionnaire (GHQ-28) (Chan, 1995) (Appendix 22). Based on data from 4 groups of Chinese samples, namely general psychiatric patients (N=150), school teachers (N = 549), university undergraduates (N = 653), and secondary school students (N = 1082), the Chinese version showed satisfactory reliability (somatic symptoms,
Cronbach's $\alpha = .67-.85$; anxiety and insomnia, Cronbach's $\alpha = .71-.85$; social dysfunction, Cronbach's $\alpha = .59-.73$; depression, Cronbach's $\alpha = .75-.87$), and validity with an overall misclassification rate of 23% (Chan, 1995). The Chinese version has been widely used in different health-related studies (e.g., Cheng et al., 2004; Wu & Cheung, 2006). See Chapter 5 (section 5.2.2.5) for a more detailed description of the GHQ-28.

6.2.3 Procedure

The procedure was more or less identical to that in the U.K. study. Clinicians and/or nursing staff in the neurology departments who were familiar with the inclusion/exclusion criteria for the study were asked to help identify eligible patients. Eligible patients were then approached and the purpose of the study was explained to them in detail. Patients could ask any questions regarding the study before consenting. They were made aware of the fact that they could withdraw from the study at any point and that all their responses would be anonymised. Patients were given the opportunity to delay their decision regarding participation until they had spoken with their family members or friends. Those patients who consented to the study completed a consent form (Appendix 23). Patients who requested a delay before consenting were approached again within two days. I then assessed patients who agreed to participate using the CMMSE to confirm their cognitive functioning (see section 6.2.2.2 for the cut-off scores). Those who had a CMMSE score less than the cut-off were excluded.

I checked patients' medical records to confirm their diagnosis of stroke, time of the most recent stroke, and obtained information on their post-stroke impairments (i.e., whether they have post-stroke paralysis, visual problems). Patients who participated were paid 40 Chinese Yuan (approximately 3 pounds) as a token for their time. It was necessary to pay the Chinese participants because this is the custom in conducting
research in China, it would have been very difficult to recruit participants without giving them some reward. All participants were assessed in hospitals.

Due to the effects of having had a stroke (for example, visual neglect or paralysis), some patients had difficulties in reading or writing. Therefore, again to follow the same procedure as the study in the U.K., I administered the questionnaires by reading out all the individual items rather than asking them to fill out the questionnaires by themselves. I carried out the assessment in several stages so that participants would not be exhausted. After all, most of them were physically weak after the stroke. The assessment took on average about 1 and a half hours.

It is of note that unlike the study in the U.K., I did not follow up the patients and did not collect data on a healthy control group. The reasons were: this study primarily aimed to compare the psychological reactions between the two cultures. Therefore data on a healthy control in China was not needed. Further, the focus of this study was not to establish the time course of the post-stroke PTSD in the Chinese group. Therefore, longitudinal data was not necessary. In addition, other practical difficulties would have made it difficult to collect both longitudinal data and data on the healthy control group in China. For example, I would have to go to patients' homes to conduct the follow up assessment. However, it is not considered acceptable nor safe for the family to have a stranger coming to their house in China.

6.2.4 Statistical analysis

- Descriptive statistics were used to describe the demographic and medical characteristics of the Chinese sample.
- Chi-square and independent t-tests were used to compare the differences between the British and the Chinese patients in terms of demographic variables, post-stroke function impairment, PTSD diagnosis, PTSD symptoms, psychiatric co-morbidity, independent daily living, degree of alexithymia and health locus of
control coping. All tests were two-tailed. With the large sample size in this study, an independent t-test is suggested to be robust to violations of normality of variables according to the *central limit theorem* (Tabachnick & Fidell, 1996).

- The effect sizes of t tests were calculated for statistically significant differences. Boundaries recommended by recent literature on statistical analysis for psychological research (Andy Field) were used to define small (.10), moderate (.30) and large (.50) effect sizes.

- Non-parametric Spearman's correlations (rho) and point-biserial correlations ($r_{bp}$) were carried out to establish the associations between post-stroke physical disability, cognitive functioning, other function impairment related variables, predictor variables and outcomes.

- Hierarchical multiple regression analyses were performed to identify to what extent predictor variables independently predicted outcomes in the Chinese sample, and the percentage of variance in outcome scores they were able to explain. The assumptions and diagnostics pertaining to multivariate analysis were examined. Data were tested for normal distribution of dependent variables, multicollinearity and homoscedasticity of independent variables. Square root transformation was carried out on the variable of PDS total score, due to non-normality. Following exploration and transformation, assumptions relating to multivariate normality, linearity and homoscedasticity were met.

- The effect sizes of multiple regression were calculated for statistically significant changes. Boundaries recommended by Cohen (1988) were used to determine small (.02), moderate (.15) and large (.35) effect sizes.

6.3 RESULTS

This section begins with a description of the Chinese patients' characteristics, followed by the comparisons between British and Chinese patients in terms of their
characteristics, incidence of post-stroke PTSD, psychiatric co-morbidity, and predictors of PTSD and co-morbidity.

6.3.1 Characteristics of the Chinese patients

A total of 323 stroke patients were screened (males = 203 and females = 120). Two hundred and eleven patients were excluded because of (i) dysphasia (N=99, 47%), (ii) the occurrence of stroke less than 1 month ago (N=77, 36%), (iii) severe cognitive impairment (N=25, 12%), (iv) unstable medical situation (e.g., they had an infection) at the time of assessment (N=8, 4%), (v) severe depression at the time (N=2, 1%). One patient was excluded because she could not understand Mandarin. Of the 112 eligible patients, seven refused to participate in the study. No reasons were given. Two died during the data collection process. The remaining 102 patients (males = 64 and females = 38, mean age = 64, ranging from 41 to 89) participated in the study. One participant did not finish the GHQ-28, the MHLC, and the TAS-20, but her remaining data were used for analysis.

The average length of time between the most traumatic stroke and the assessment was approximately 44.8 days (SD= 29.8 days). All patients reported that the most recent stroke was the most traumatic one.

All patients were native Chinese living in different regions in Beijing. The gender ratio in this sample was 1.7 males to 1 female. This gender ratio corresponded to an epidemiology study in China reporting that stroke was more common in Chinese men than in Chinese women. The ratio in their study was around 1.3-1.5 male to 1 female (Liu et al., 2007).

The majority of the patients were married, and one fifth were widowed. Most of them (N=77, 75%) were retired, the rest were still working. The majority of patients (N=76, 75%) were atheists. Eight patients (8%) were Buddhists; 8 responded as being
Chapter 6 Comparing Post-stroke PTSD and Co-morbidity between the Two Cultures

communists. Three (2%) were Muslims, and two (2%) were Christians. Five did not specify their religion.

Regarding their medical history, the majority of participants (70%) had their first ever stroke, nearly a quarter had experienced two strokes, and 7% had had three strokes or more. Seventy-eight percent of patients were at home at the time of stroke, and 95% were with family members (e.g., spouses, children) or neighbours/friends. All patients scored at or above the cut-off score of CMMSE in accordance with their educational level (mean =26, SD =3.27). The most frequently reported post-stroke impairments were visual defects, followed by breathing problems and paralysis. The least reported impairments were slight communication problems. No records of elimination problems and dyspraxia were kept in these hospitals in Beijing. Two patients’ data on the side of weakness was missing. Of the remaining, 66% of patients had left side weakness and 34% had right side weakness (Table 6.1).

Table 6.1
Demographic and medical characteristics of the two groups of patients

<table>
<thead>
<tr>
<th></th>
<th>British (N=90)</th>
<th>Chinese (N=102)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>75.23</td>
<td>64.28</td>
<td>10.25</td>
</tr>
<tr>
<td>Number of traumatic events experienced</td>
<td>2.29</td>
<td>2.42</td>
<td>1.37</td>
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<tr>
<td>Barthel Total Score</td>
<td>13.86</td>
<td>14.70</td>
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<tr>
<td>Number of other illnesses before stroke</td>
<td>1.60</td>
<td>1.89</td>
<td>1.75</td>
</tr>
<tr>
<td>Number of previous strokes</td>
<td>1.30</td>
<td>1.41</td>
<td>0.63</td>
</tr>
<tr>
<td>Onset of stroke (days)</td>
<td>48</td>
<td>45</td>
<td>27</td>
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<table>
<thead>
<tr>
<th></th>
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<th>%</th>
<th>N</th>
<th>%</th>
<th>χ²</th>
</tr>
</thead>
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<tr>
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<td></td>
</tr>
<tr>
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<td>43</td>
<td>48</td>
<td>64</td>
<td>63</td>
<td>4.34*</td>
</tr>
<tr>
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<td>52</td>
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Table 6.1 continued

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<th>Chinese (N=102)</th>
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<td>%</td>
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<td><strong>Stroke history</strong></td>
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</tr>
<tr>
<td>First-ever stroke</td>
<td>69</td>
<td>77</td>
</tr>
<tr>
<td>Second time stroke</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
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<td>7</td>
</tr>
<tr>
<td>More than 4 times of stroke</td>
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<td>-</td>
</tr>
<tr>
<td><strong>Function impairment</strong></td>
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<td></td>
</tr>
<tr>
<td>Breathing</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Slight communication problem</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Visual defect</td>
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<td>6</td>
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<tr>
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<td>32</td>
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<tr>
<td>Left side</td>
<td>46</td>
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</tr>
<tr>
<td>Right side</td>
<td>31</td>
<td>40</td>
</tr>
</tbody>
</table>

** $p < .001$ (two-tailed) * $p < .05$ (two-tailed). A dash (-) signifies that the items were either not applicable or not used for analysis.

Eighty (78%) patients had had some major illnesses before the stroke. The most prevalent illness was high blood pressure (N=64, 80%), followed by heart problems (N=32, 40%) and diabetes (N=21, 26%). This also corresponded to the epidemiology ...
study reporting that hypertension was the most important risk factor for stroke in China (Liu et al., 2007).

6.3.2 What are the differences between the U.K. patients and the Chinese patients in demographic variables and medical history?

The British patients were significantly older than the Chinese patients \(t(190) = 7.07, p< .001, r = .46\). The proportion of male and female \(\chi^2(1) = 4.34, p< .05\], married and non-married patients \(\chi^2(1) = 16.94, p< .001\] who participated in the study varied significantly between the two groups. Nearly two thirds of Chinese participants were males, whereas just less than half were males in the British group. The majority of Chinese patients were married, whereas less than half of British patients were married.

Patients from the two countries did not differ in their post-stroke independent daily living functioning [Barthel score: \(t(188) = -1.19, ns\)], or in the number of previous strokes \(t(190) = -1.09, ns\], onset of stroke \(t(190) = 0.83, ns\], the number of other illnesses before stroke \(t(190) = -1.39, ns\], and the number of traumatic events experienced \(t(189) = -0.72, ns\]. However, the proportion of patients with breathing problem \(\chi^2(1) = 10.67, p<.001\], slight communication problems (Fisher’s exact test = 29.76, \(p = .001\]), and visual impairments \(\chi^2(1) = 16.58, p< .001\] varied significantly between the two groups. See Table 6.1 for details.

6.3.3 Are there any cultural differences in the manifestation of post-stroke PTSD and psychiatric co-morbidity?

Before comparing the differences in the incidence of post-stroke PTSD and psychiatric co-morbidity, the Cronbach’s alpha reliability scores of the symptom clusters of the PDS-C were calculated. The reliability for the PDS-C was: for intrusion, \(\alpha = .47\]; for avoidance, \(\alpha = .48\], and for arousal, \(\alpha = .37\]. These figures were lower than the
standardised figures (Foa et al., 1997) and than the British sample (see section 5.3.2 in chapter 5). As discussed in section 5.3.2, the lower figures of Cronbach's alphas in the British sample in comparison to the standardised figures were possibly due to the characteristics of stroke patients. It was possible that, the even lower figures of Cronbach's alphas in the Chinese sample reflected the fact that these stroke characteristics were more prominent among the Chinese sample. As a result, the internal consistency of the questionnaire items was affected to an even greater extent. It was also possible that the even lower figures of Cronbach's alphas of the PDS-C were due to the translation of this questionnaire.

In terms of the incidence of PTSD, the results showed that there was a significant association between the two cultures and the types of PTSD diagnosed. That is, the proportion of participants fulfilling different types of PTSD diagnosis significantly varied depending on the culture group \( \chi^2(2) = 9.31, p < .01 \). Almost 17% of Chinese patients met the diagnosis for Full PTSD, whereas 30% of the British sample met the same criteria (Table 6.2). The odds ratio calculation showed that the British patients were 2.15 times more likely to develop Full PTSD following stroke than the Chinese patients.

<table>
<thead>
<tr>
<th></th>
<th>British (N=90)</th>
<th>Chinese (N=102)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>No PTSD</td>
<td>18</td>
<td>20.0</td>
</tr>
<tr>
<td>Partial PTSD</td>
<td>45</td>
<td>50.0</td>
</tr>
<tr>
<td>Full PTSD</td>
<td>27</td>
<td>30.0</td>
</tr>
</tbody>
</table>
In terms of post-stroke PTSD symptoms, similar to the British patients, the Chinese sample had the highest scores in avoidance symptoms, followed by hyperarousal symptoms, with the lowest scores in intrusion symptoms (Table 6.3).

Compared with the Chinese patients, the British patients scored significantly higher on PTSD symptoms total \(t(161) = 4.30, p<.001, r = .32\), avoidance symptoms \(t(162) = 3.51, p<.01, r = .27\) and hyperarousal symptoms \(t(152) = 4.40, p<.001, r = .34\). No significant difference was found in intrusion symptoms between the two groups \(t(161) = 1.85, ns\).

Turning to psychiatric co-morbidity, there was no significant association between psychiatric caseness and the cultural groups \(\chi^2(1) = 2.73, ns\). Eighty-four out of 101 Chinese patients (83%) scored at above the GHQ-28 cut-off score of 5, whereas 66 out of 90 British patients (73%) did so.

Using the Likert scoring method, slightly different from the British patients (see Chapter 5), Chinese patients scored most highly on symptoms of social dysfunction, followed by anxiety and somatic problems, and least on items of depression. No significant difference was found between British and Chinese patients in social dysfunction \(t(189) = -1.34, ns\). However, patients in the U.K. experienced significantly less severe somatic problems \(t(189) = -2.98, p<.05, r = .21\), anxiety \(t(159) = -2.85, p<.05, r = .22\), and depression \(t(189) = -3.60, p<.001, r = .25\) (Table 6.3).
Table 6.3
The mean scores of PTSD symptoms, the GHQ-28 subscales, the TAS-20 total and subscales and the MHLC subscales between patients in two countries

<table>
<thead>
<tr>
<th></th>
<th>British (N=90)</th>
<th>Chinese (N=102)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td><strong>PTSD symptoms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9.32</td>
<td>6.07</td>
</tr>
<tr>
<td>Intrusion</td>
<td>1.37</td>
<td>1.80</td>
</tr>
<tr>
<td>Avoidance</td>
<td>4.32</td>
<td>3.20</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>3.63</td>
<td>2.70</td>
</tr>
<tr>
<td><strong>GHQ-28 scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic problems</td>
<td>7.28</td>
<td>3.59</td>
</tr>
<tr>
<td>Anxiety</td>
<td>7.18</td>
<td>4.51</td>
</tr>
<tr>
<td>Social dysfunction</td>
<td>12.30</td>
<td>3.13</td>
</tr>
<tr>
<td>Depression</td>
<td>4.20</td>
<td>4.36</td>
</tr>
<tr>
<td><strong>TAS-20 scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAS-20 total</td>
<td>48.21</td>
<td>11.27</td>
</tr>
<tr>
<td>Difficulty in identifying feelings</td>
<td>15.59</td>
<td>6.23</td>
</tr>
<tr>
<td>Difficulty in describing feelings</td>
<td>11.52</td>
<td>4.84</td>
</tr>
<tr>
<td>External oriented thinking</td>
<td>21.10</td>
<td>4.27</td>
</tr>
<tr>
<td><strong>The MHLC subscales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHLC</td>
<td>27.73</td>
<td>5.30</td>
</tr>
<tr>
<td>POLC</td>
<td>23.64</td>
<td>6.35</td>
</tr>
<tr>
<td>CHLC</td>
<td>23.66</td>
<td>7.00</td>
</tr>
<tr>
<td>Externality</td>
<td>47.30</td>
<td>10.26</td>
</tr>
</tbody>
</table>

(CHLC+POLC)

*Note: IHLC = internality health locus of control; POLC = powerful other locus of control; CHLC = chance health locus of control.*

6.3.4 What are the differences in dispositional predictors (alexithymia and health locus of control) between British and Chinese patients?
Chapter 6 Comparing Post-stroke PTSD and Co-morbidity between the Two Cultures

The two groups of patients did not differ significantly in difficulty in identifying feelings \( t (189) = -0.42, \ ns \). However, compared with the Chinese sample, British patients reported significantly less difficulty in describing feelings \( t (187) = -3.03, p<.05, r = .22 \), less externally oriented thinking \( t (173) = -2.13, p<.05, r = .16 \), and they were less alexithymic \( t (178) = -2.23, p<.05, r = .16 \) (see Table 6.3).

The two groups of patients did not differ significantly in internality health locus of control \( t (189) = 1.26, \ ns \) or powerful others locus of control \( t (189) = -0.37, \ ns \). However, compared with the Chinese sample, British patients had a higher tendency towards chance health locus of control coping \( t (189) = 4.37, p<.001, r = .30 \). They had indeed more external orientation in health locus of control than Chinese patients \( t (189) = 2.95, p<.01, r = .21 \) (see Table 6.3).

6.3.5 What are the associations between predictor variables and severity of post-stroke PTSD and psychiatric co-morbidity in the Chinese sample?

To establish the associations between the predictor variables, severity of PTSD (the PDS total score), and psychiatric co-morbidity (the GHQ-28 Likert scoring total score) in the Chinese sample, I carried out a series of hierarchal multiple regression analyses. Before presenting the data, Table 6.4 presents the correlations between the independent daily living functioning, cognitive functioning, other post-stroke impairment related variables and the outcome measures for the Chinese sample. The results showed that the Barthel score had the strongest correlation with both PDS total score and the GHQ-28 total score. Further, some variables related to the post-stroke impairment (e.g., post-stroke paralysis) were correlated with the Barthel score. This suggests that the Barthel score was the best indicator in terms of the post-stroke physical disability and impairment. In examining the associations between outcome variables and predictors, I controlled for the variance due to post-stroke physical disability (the Barthel total score).
Table 6.5 shows the correlations between the predictor variables and outcome measures. These were examined so as to avoid multicollinearity amongst predictors. Although difficulty in identifying feelings correlated with internality health locus of control, and externally oriented thinking correlated with chance health locus of control, the correlation coefficient was not high, suggesting that multicollinearity was not present in the data (this finding is also consistent with the British sample).
### Table 6.4
Correlations between the Barthel baseline score, cognitive functioning, other post-stroke impairment related factors, and outcome measures in the Chinese sample (N=101)

<table>
<thead>
<tr>
<th>Variable/measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Barthel score</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The PDS total score</td>
<td>-.43**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The GHQ-28 total score</td>
<td>-.55**</td>
<td>.79**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The CMMSE total score</td>
<td>.34**</td>
<td>-.21*</td>
<td>-.23*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. No. of previous illnesses</td>
<td>-.05</td>
<td>.08</td>
<td>.14</td>
<td>.12</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. No. of previous strokes</td>
<td>-.09</td>
<td>.20*</td>
<td>.15</td>
<td>-.25*</td>
<td>.20</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Onset of the stroke (days)</td>
<td>-.22*</td>
<td>.25*</td>
<td>.20*</td>
<td>.03</td>
<td>.10</td>
<td>.08</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Any post-stroke breathing problem</td>
<td>-.18</td>
<td>.08</td>
<td>.16</td>
<td>-.21*</td>
<td>.02</td>
<td>.13</td>
<td>-.05</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Any post-stroke dysarthria problem</td>
<td>-.04</td>
<td>.20*</td>
<td>.20*</td>
<td>-.09</td>
<td>-.10</td>
<td>.20*</td>
<td>.06</td>
<td>.29**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Any post-stroke visual problem</td>
<td>.01</td>
<td>.12</td>
<td>.13</td>
<td>-.04</td>
<td>-.04</td>
<td>.04</td>
<td>.12</td>
<td>.06</td>
<td>-.01</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11. Any post-stroke paralysis</td>
<td>-.82**</td>
<td>.22*</td>
<td>.37**</td>
<td>-.26**</td>
<td>.01</td>
<td>.13</td>
<td>-.04</td>
<td>-.03</td>
<td>-.001</td>
<td>-.03</td>
<td>-</td>
</tr>
<tr>
<td>12. Side of weakness (left/right)</td>
<td>.01</td>
<td>-.04</td>
<td>-.02</td>
<td>-.23*</td>
<td>.12</td>
<td>-.02</td>
<td>.001</td>
<td>-.07</td>
<td>.08</td>
<td>.004</td>
<td>.04</td>
</tr>
</tbody>
</table>

**p < .001 (two-tailed) * p < .05 (two-tailed)
### Table 6.5
Correlations (rho) between outcome measures and predictor variables in the Chinese sample (N=101)

<table>
<thead>
<tr>
<th>Variable/measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The PDS-C total score</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The GHQ-28-C total score</td>
<td>.79**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Difficulty in identifying feelings</td>
<td>.21*</td>
<td>.25*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Difficulty in describing feelings</td>
<td>.15</td>
<td>.14</td>
<td>.64**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Externally oriented thinking</td>
<td>.12</td>
<td>.04</td>
<td>.55**</td>
<td>.64**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. TAS-20 total score</td>
<td>.19</td>
<td>.16</td>
<td>.84**</td>
<td>.87**</td>
<td>.86**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. IHLC</td>
<td>-.21*</td>
<td>-.24*</td>
<td>-.29*</td>
<td>-.19</td>
<td>-.19</td>
<td>-.26*</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8. POLC</td>
<td>.21*</td>
<td>.25*</td>
<td>.07</td>
<td>.03</td>
<td>.003</td>
<td>.05</td>
<td>.07</td>
<td>-</td>
</tr>
<tr>
<td>9. CHLC</td>
<td>.36**</td>
<td>.33**</td>
<td>.12</td>
<td>.07</td>
<td>.22*</td>
<td>.16</td>
<td>-.32**</td>
<td>.004</td>
</tr>
</tbody>
</table>

**p < .001 (two-tailed) *p < .05 (two-tailed);**

IHLC = internality health locus of control; POLC = powerful others locus of control; CHLC = chance health locus of control
I carried out a series of hierarchical multiple regressions to test the relative importance of the predictor variables and the percentage of variance in PDS scores they were able to explain. The Barthel score was entered into Block 1, with the three subscale scores of the TAS-20 and the MHLC in the second block. I also tested whether the interaction between personality and coping would predict PTSD by entering product variables of the TAS-20 total score and the three subscales of the MHLC (i.e. IHLC*TAS, POLC*TAS and CHLC*TAS) into the third block. The PDS total score served as the dependent variable. No outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics.

The results showed that Block 1 explained a significant proportion of the variance (14%) in the PDS total score \[F(1,99) = 16.98, p<.001, \text{adjusted } R^2 = .138\]. After controlling for the Barthel score in Block 1, Block 2 yielded a medium and significant effect in improving the prediction of outcome \[F(6,93) = 3.74, p<.01, R^2 \text{ change} = .17, \beta^2 = .24\]. Block 2 accounted for an additional 17% of the variance and explained a total of 26% of the variance in PDS total score. Block 3 did not increase prediction over Block 2 \[F(3,90) = 1.83, ns, R^2 \text{ change} = .04\]. Although there was a significant interaction in beta for CHLC*TAS in Block 3, this must be discounted because the overall Block did not improve the prediction. In sum, after controlling for the Barthel score, the only significant predictor was chance health locus of control coping \(p<.01\). The personality factors and the interaction (personality and coping) did not contribute significantly to predicting the outcome (see Table 6.6 for detailed regression coefficients).
### Table 6.6
Hierarchical multiple regression analysis for predicting post-stroke PTSD in the Chinese sample (N=101)

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>B</td>
</tr>
<tr>
<td>Barthel score</td>
<td>-0.07</td>
<td>0.02</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>-0.06</td>
<td>0.02</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>0.04</td>
<td>0.01</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note: $\Delta R^2 = .17$ for Block 2 ($p<.01$); $\Delta R^2 = .04$ for Block 3 (ns)

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

**IHLC** = internality health locus of control; **POLC** = powerful others locus of control; **CHLC** = chance health locus of control; **IHLC*TAS** = product variable of Alexithymia and internality health.
locus of control; \( \text{POLC}^*\text{TAS} \) = product variable of alexithymia and powerful other locus of control;
\( \text{CHLC}^*\text{TAS} \) = product variable of alexithymia and chance health locus of control.

With regard to the association between predictor variables and psychiatric co-morbidity, I carried out a series of hierarchical multiple regressions to test the relative importance of the predictor variables to co-morbidity and the percentage of variance in the GHQ-28 scores they were able to explain. The Barthel score was entered into Block 1, with the three subscale scores of the TAS-20 and the MHLC in the second block. The interaction between personality and coping (IHLC* TAS, POLC*TAS and CHLC*TAS) was entered into Block 3. The GHQ-28 total score served as the dependent variable. No outliers (Mahalanobis \( \geq 3 \) SD) were detected during the exploration of diagnostics.

The results showed that Block 1 explained a significant proportion of the variance (26%) of the GHQ-28 total score \( [F(1,99) = 35.43, p<.001, \text{adjusted } R^2 = .256] \). After controlling for the Barthel score in Block 1, Block 2 yielded a moderate and significant effect in improving the prediction of outcome \( [F(6,93) = 4.81, p<.001, R^2 \text{ change } = .17, f^2 = .31] \). After controlling for the Barthel score, an additional 17% of the variance in the GHQ-28 total score was accounted for by Block 2, which in total explained a total of 40% of the variance in outcome. Block 3 did not increase prediction over Block 2 \( [F(3,90) = 1.30, \text{ns, } R^2 \text{ change } = .02] \). Therefore after controlling for the Barthel score, the significant predictors were chance health locus of control coping \( (p < .01) \), and one factor of alexithymia – externally oriented thinking \( (p = .05) \) in predicting the GHQ-28 total score (see Table 6.7 for detailed regression coefficients).
### Table 6.7
Hierarchical multiple regression analysis for predicting psychiatric co-morbidity in the Chinese sample (N=101)

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Block 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barthel score</td>
<td>-1.12</td>
<td>0.19</td>
<td>-.51***</td>
</tr>
<tr>
<td><strong>Block 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barthel score</td>
<td>-0.99</td>
<td>0.18</td>
<td>-.45***</td>
</tr>
<tr>
<td>Difficulty in identifying feelings</td>
<td>0.27</td>
<td>0.20</td>
<td>.14</td>
</tr>
<tr>
<td>Difficulty in describing feelings</td>
<td>0.17</td>
<td>0.22</td>
<td>.09</td>
</tr>
<tr>
<td>External oriented thinking</td>
<td>-0.37</td>
<td>0.19</td>
<td>-.21*</td>
</tr>
<tr>
<td>IHLC</td>
<td>-0.25</td>
<td>0.16</td>
<td>-.14</td>
</tr>
<tr>
<td>POLC</td>
<td>0.27</td>
<td>0.17</td>
<td>.13</td>
</tr>
<tr>
<td>CHLC</td>
<td>0.44</td>
<td>0.14</td>
<td>.28**</td>
</tr>
<tr>
<td><strong>Block 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barthel score</td>
<td>-0.99</td>
<td>0.18</td>
<td>-.45***</td>
</tr>
<tr>
<td>Difficulty in identifying feelings</td>
<td>0.28</td>
<td>0.20</td>
<td>.15</td>
</tr>
<tr>
<td>Difficulty in describing feelings</td>
<td>0.17</td>
<td>0.22</td>
<td>.09</td>
</tr>
<tr>
<td>External oriented thinking</td>
<td>-0.44</td>
<td>0.19</td>
<td>-.25*</td>
</tr>
<tr>
<td>IHLC</td>
<td>-0.22</td>
<td>0.16</td>
<td>-.12</td>
</tr>
<tr>
<td>POLC</td>
<td>0.31</td>
<td>0.17</td>
<td>.15</td>
</tr>
<tr>
<td>CHLC</td>
<td>0.51</td>
<td>0.14</td>
<td>.32***</td>
</tr>
<tr>
<td>IHLC*TAS</td>
<td>-1.38</td>
<td>0.92</td>
<td>-.13</td>
</tr>
<tr>
<td>POLC*TAS</td>
<td>-1.38</td>
<td>0.93</td>
<td>-.12</td>
</tr>
<tr>
<td>CHLC*TAS</td>
<td>-1.04</td>
<td>1.00</td>
<td>-.09</td>
</tr>
</tbody>
</table>

*Note: $\Delta R^2 = .17$ for Block 2 ($p < .001$); $\Delta R^2 = .02$ for Block 3 (ns);***$p < .001$, **$p < .01$, *$p < .05$.***
IHLC = internality health locus of control; POLC = powerful other locus of control; CHLC = chance health locus of control; IHLC*TAS = product variable of alexithymia and internality health locus of control; POLC*TAS = product variable of alexithymia and powerful other locus of control; CHLC*TAS = product variable of alexithymia and chance health locus of control.

### 6.4 Discussion

This section will discuss the findings of the three research questions. The limitations and the implications of this study will also be discussed and future studies recommended. Before discussing the results, one needs to be cautious when interpreting the results of this study. Although I have interpreted the results mainly from a cultural perspective, one cannot exclude the possibility that other non-cultural factors such as age, might have also influenced the results.

#### 6.4.1 Are there any cultural differences in the manifestation of post-stroke PTSD and psychiatric co-morbidity?

The present study demonstrated that more British patients than Chinese were diagnosed with Full PTSD following stroke (30% vs. 16.7% respectively). This result contradicted the first hypothesis that the Chinese would be more susceptible to developing post-stroke PTSD than British patients. Different reasons could explain this. Firstly, as a reminder, hypothesis 1 was based on the idea that compared with people in the Western culture, Chinese would be more alexithymic and have higher external locus of control orientation which, in turn, would increase the individual’s susceptibility to developing illness-related PTSD (e.g., Bennett & Brooke, 1999; Chung et al., 2006b). However, this study showed that while Chinese were, on the whole, more alexithymic than the British, they had lower external health locus of control orientation. This might have an impact on the susceptibility for Chinese to developing illness-related PTSD.

Secondly, the British patients were significantly older (11 years older on average) than the Chinese. Previous studies suggested that older people tended to experience
chronic PTSD symptoms exacerbated by the process of ageing (Hyer & Sohnle, 2001; Hyer, Summers, Braswell, & Boyd, 1995). Older people also tended to perceive themselves as being susceptible to developing PTSD following life-threatening illness (e.g., Chung, Berger, Jones, & Rudd, 2006). Old age, therefore, could be one of the reasons for the higher incidence of PTSD in the British sample.

Thirdly, there may be cultural differences in the degree of threat perception at the time of stroke. The results from the qualitative part of this thesis showed that there were different patterns of threat perception of stroke between the British and Chinese patients. While some Chinese participants reported no unusual feelings at the time of stroke, all British participants reported feelings of, for example, fright or helplessness. The literature also suggested that in comparison with people from oriental cultures (e.g., the Chinese), individuals in Western cultures tend to respond more extremely at the onset of negative events (in this case stroke) (Xu, 1997). Further, we know from existing research that the degree of fright at the time of a life-threatening illness (e.g. myocardial infarction) was related to the severity of PTSD (Bennett et al., 2001). This could be another reason why the British patients reported more severe stroke-related PTSD than the Chinese.

In terms of post-stroke PTSD symptoms, this study found that the two groups of patients did not differ significantly in intrusion symptoms. However, the British scored significantly higher in avoidance and hyperarousal symptoms than the Chinese. This finding corresponds to existing literature suggesting that intrusive thoughts and memories of a traumatic event might be universal, whereas avoidance symptoms might depend more on cultural experiences (Marsella et al., 1996b). However, the finding contradicts the same literature suggesting that arousal symptoms are probably universal.

Focusing on avoidance symptoms, it is worth point out that the British patients had a higher tendency to avoid talking and/or thinking about their stroke than did the Chinese patients. Such difference could be due to Chinese people having a high
tendency to share their feelings and emotions with their family members – "the insiders" (Gao et al., 1996). This is a way of forming emotional bonds between family members which echoes the collectivism principle. This might explain why the Chinese patients did not avoid thinking of and/or talking about their stroke as much as the British patients.

With regard to hyperarousal symptoms, one observation was that the British reported more feelings of irritability or anger than did the Chinese. As mentioned in Chapter 5, people with life-threatening illnesses often find that they have to adjust to a different life style, daily or leisure activities and indeed their future plans. The irritability that both groups of patients experienced was probably related to the fact that they found it difficult to adjust to these changes following stroke. The question is why Chinese felt less irritable than the British. This could be related to their philosophy of life. That is, living by the Buddhist and Taoist principles, Chinese people may have learned to become more tolerant and accept to what happens to them, especially when negative events occur (Yang, 2004).

Turning to the psychiatric co-morbidity, this study showed no significant difference between groups in the proportion of patients meeting the cut-off for psychiatric caseness. However, there were significant differences in terms of the level of severity of psychiatric symptoms in that the Chinese patients experienced significantly more somatic problems, anxiety, and depression than the British. In that sense, this finding confirmed hypothesis 2.

With respect to somatic problems, the fact that Chinese patients experienced more of these problems seemed to echo the somatisation thesis mentioned in Chapter 3. That is, Chinese tend to somatise their psychological problems compared with the population in Western world (e.g., Kleinman, 1977; Kleinman, 1982; Marsella et al., 1973).

Turning to anxiety and depressive symptoms, the finding that Chinese patients reported more anxiety and depression seems to be in favour of literature suggesting that
Chinese people tend to have higher scores in anxiety and depression compared with Westerners (Cheung & Lee, 1984; Song, 1981). Similarly, it has been postulated that when a Chinese person feels unable to support his/her family (due to, for example, disabling illnesses), but adds burdens to them, he or she tends to experience feelings of shame, uselessness, or excessive worrying, which in turn creates a great deal of depression and anxiety (Cheng, 1989). In that sense, a strong family ties in the Chinese culture could potentially exacerbate the psychological distress following stroke in the Chinese sample. Indeed, in the qualitative part of this thesis, Chinese patients were most worried about increasing burden for their family as a consequence of stroke. They also reported feelings of guilt and uselessness.

In addition to the preceding explanations, one could also argue the difference between the Chinese and British in terms of the psychiatric symptoms may be related to the age factor. In an epidemiological study, older people were found to report less anxiety and depressive symptoms than the younger ones (Form, 2000). This could also explain why the British stroke patients reported less psychiatric symptoms (e.g., anxiety, depression) than the Chinese because the former were older than the latter.

6.4.2 What are the differences between the stroke patients of the two cultures in terms of personality (alexithymia) and coping (health locus of control)?

The results partially supported the third hypothesis in that the Chinese patients, compared with the British sample, were more alexithymic, and reported more difficulty in describing feelings and more externally oriented thinking. However, they had a similar degree of difficulty in identifying feelings as the British sample. These findings did not entirely correspond to previous cross-cultural studies suggesting that the Chinese population scored higher on the overall TAS-20 scores and all three factors of the alexithymia scale (e.g., Dion, 1996; Le et al., 2002).
Chapter 6 Comparing Post-Stroke PTSD and Co-morbidity between the Two Cultures

It is difficult to explain why the Chinese patients tended to have more difficulty in describing feelings. Some researchers argued that this could be related to the imprecision of the Chinese vocabulary of emotional terms, especially in the expression of personal distress (Draguns, 1996). However, this argument is problematic, the reason being that just because people may have difficulty in using precise vocabulary to describe their own feelings, this does not mean to say that they lack the ability to describe their feelings. One's capacity to describe one's feelings should be determined by the degree of propensity to use words to describe one's feelings and not by whether the words are precise in terms of describing their feelings.

Another explanation might be related to the way in which emotion is communicated in Chinese culture. Some researchers suggested that although Chinese can identify the existence of their emotions, they seemed to believe that emotions are not important and tended to suppress their emotional expressions and descriptions (Kleinman, 1986; Potter, 1988), especially in front of strangers — "the outsiders" (Gao et al., 1996). On the other hand, Western culture tends to view personal emotions as critical and implies that emotional communication (e.g., love) may provide the basis to form or dissolve social relationships (Potter, 1988). Growing in a culture in which describing emotions has not been encouraged, Chinese patients might gradually become incapable of describing their emotions and feelings.

The reason why Chinese patients were more externally oriented thinking (characterised by a lack of inner emotional experiences, and reduction of the propensity to think about emotions) (Henry et al., 2006; Taylor, 1984; Taylor et al., 1991) could be this. Unlike Westerners who believe that emotional life is important and that emotions are almost always linked with individuals' inner feelings, (Potter, 1988). Chinese tend to view emotions as something unimportant, and they believe that emotional life may be situational and linked with external sources. They therefore put less emphasis on the importance of getting in touch with their own internal feelings or emotions. When
communicating their emotions, they tend to focus on external sources such as direct behavioural expressions, as a Chinese informant in Potter's study (1998) explained that "We Chinese show our emotions with our work and actions, not words" (p. 194). That is, instead of describing their feelings and communicating their feelings to others, they might focus on acting or doing things (the work). For example, they might help others with their field work, or household chores, to show a positive feeling towards them. The tendencies described above might enhance their externally oriented thinking.

The results did not confirm hypothesis 4 in that the Chinese patients had a lower tendency towards chance health locus of control than the British sample, and indeed were less externally oriented in health locus of control beliefs. The two groups of patients had similar degrees of orientation towards powerful others locus of control and internality health locus of control. This finding was somewhat surprising, because most literature suggested that the Chinese, on the whole, are more externally oriented in locus of control than the Westerners (Hsieh et al., 1969; Lao, 1977). One explanation could be that the Chinese sample in the present study were urban Chinese living in an increasingly internationalised city (i.e., Beijing) and were increasingly exposed to Western civilisation, especially after China joined the World Trade Organisation. The degree to which they lived their lives on the basis of Confucian and Buddhist teaching might have consequently reduced. The reduction in the influence of Confucian and Buddhist teaching could have affected people's tendency to attribute the cause for negative events (e.g. in the case of sickness) to fate, luck, or predetermined destiny since the teachings of the above two schools of thoughts tended to make such attribution (Phillips & Pearson, 1996). In addition to this explanation, some literature suggested that Western people (e.g., Americans) had a tendency to blame others for being responsible for negative events (Matsumoto & Juang, 2004) (One may also review one of the results from the qualitative study in this thesis showing that almost no British participants blamed themselves for getting a stroke). Drawn on from the literature and the results of the
qualitative study, it could be possible that the British sample in this study tended to blame something else rather than themselves in case of sickness. That could help explain why the British sample in the present study had a higher tendency toward chance health locus of control. That is they could have attributed their health/sickness to external factors (e.g., chance, fate or bad luck).

6.4.3. What are the differences between the British and the Chinese in the associations between predictors, severity of stroke-related PTSD and psychiatric co-morbidity?

Table 6.8 summarised the main findings on the associations between predictor variables, PTSD and co-morbidity after controlling for post-stroke disability.

<table>
<thead>
<tr>
<th>Predictors of PTSD</th>
<th>Predictors of Co-morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.K.</td>
<td></td>
</tr>
<tr>
<td>Personality factor:</td>
<td>Personality factor:</td>
</tr>
<tr>
<td>difficulty in identifying feelings</td>
<td>difficulty in identifying feelings</td>
</tr>
<tr>
<td>Interaction between alexthymia and chance health locus of control</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Coping factor:</td>
<td>Personality factor:</td>
</tr>
<tr>
<td>chance health locus of control</td>
<td>externally oriented thinking - a protector</td>
</tr>
</tbody>
</table>

To discuss the foregoing results, attention will first be drawn to the findings between the Chinese and British samples in terms of the significant associations between the predictors and PTSD. Attention will then turn to the findings between the
Chapter 6  Comparing Post-Stroke PTSD and Co-morbidity between the Two Cultures

two cultures in terms of the significant associations between predictors and psychiatric co-morbidity.

Focusing on PTSD symptoms, for the U.K. samples, one particular personality factor was associated with post-stroke PTSD. That is the more difficulty patients had in identifying their feelings, the more severe PTSD they tended to develop. Also, alexithymic characteristics interacted with chance health locus of control in predicting PTSD symptoms. Meanwhile, for the Chinese samples, one particular coping factor had a significant association with post-stroke PTSD. Chinese patients who had a heightened tendency toward chance health locus of control coping developed more severe PTSD following a stroke. This finding between chance locus of control and PTSD is consistent with many studies in the general PTSD literature (Brown et al., 2002; Gilmartin & Southwick, 2004; Kuterovac-Jagodic, 2003; Mynard et al., 2000; Orr et al., 1990; Regehr et al., 2000; Solomon, Mikulincer, & Avitzur, 1988).

The preceding findings basically suggest that there might be cultural differences in the way in which factors relate to the development of PTSD symptoms following stroke. For some reason, for the British stroke patients, the development of PTSD symptoms was related to the combination of their cognitive-affective deficit (i.e. crudely speaking, their difficulty to be in touch with their own internal feelings or emotions) and their belief that they were not in control of their health (i.e. their health was determined by chance). British stroke patients with such a cognitive-affect deficit and belief system were seemingly more prone to developing PTSD.

On the other hand, there was no evidence that such combination existed among the Chinese sample. For them, possessing the belief that they were not in control of their health but that it was controlled by chance was seemingly the strong determinant for the development of PTSD. The role cognitive-affective deficits played in the development of PTSD was somewhat limited. This could be because in a culture such as the Chinese culture in which social environments do not foster people's ability to describe and
communicate emotions (Dion, 1996; Le et al., 2002; Vinden, 1999). Chinese people consequently learn to put less emphasis on the importance of getting in touch with their own internal feelings or emotions (Potter, 1988). Rather, one might speculate, they might have learned to put emphasis on employing different coping styles (e.g., adopting certain beliefs as a coping style) to cope with distress in life.

Focusing on psychiatric co-morbidity, personality factors were associated with co-morbidity in both groups of patients. However, in the U.K group, the predictor was again difficulty in identifying feelings whereas in the Chinese group, the predictor was externally oriented thinking. For the Chinese patients, the externally oriented thinking was protective against the development of psychiatric co-morbidity following a stroke. That is the more externally oriented they were in their thinking, the less co-morbidity they displayed. The finding that externally oriented thinking was a protective factor against the development of psychological distress was not surprising. A study by Henry and associates (2006) reported that higher scores on the alexithymia dimension of externally oriented thinking were associated with reduced anxiety and negative affect.

The foregoing findings on the associations between difficulty in identifying feelings and co-morbidity among the U.K. samples and between externally oriented thinking and co-morbidity among the Chinese samples suggest that there might be cultural differences in the way in which factors relate to psychiatric symptoms following stroke. The findings revealed some indications of what might be thought to be helpful for both groups of patients. That is, externally oriented thinking for the Chinese patients and improving difficulty in identifying feelings for the British patients buffered against psychiatric symptoms. This bears important implications for research looking into the whole notion of resilience or “protective” attributes. That is, resilience seems to be related to cultural differences which need to be investigated in future research. After all, the notion of resilience, at present, has been investigated mainly from the biological and
developmental psychopathological perspectives (Layne, Warren, Watson, & Shalev, 2007).

Coping factors were significantly predictive of co-morbidity only in Chinese patients. Chinese patients who had an increased tendency to believe that their health was due to luck or chance (one type of external locus of control) tended to have more psychiatric co-morbidity. This finding is consistent with many studies suggesting that a greater orientation in externality locus of control was associated with greater psychiatric disorders (i.e., depression or anxiety) (Archer, 1979; Benassi & Sweeney, 1988; Lefcourt, 1980; Quinn & Norris, 1986).

One could explain the preceding finding in terms of the control theory model which explains how psychiatric symptoms such as depression could arise (Hyland, 1987). This model suggests that when people compare their reference criterion (their goals) with perceptual input (their perception of the reality/ environment), they might detect some discrepancy which generates an error (see figure 6.1). Consequently, people will react to that error by selecting certain behaviours which can in turn operate on the environment. In so doing, the perceptual input can be redefined and the discrepancy reduced. Their reaction would be particularly intensive if that error is salient or important to them, characterised by the term error sensitivity in the model. However, if people keep trying to reduce the discrepancy but failing, they will likely experience what the model calls a prolonged control mismatch (prolonged discrepancy between reference criterion and perceptual input), which can lead to the development of depression (Hyland, 1987).
To apply this model to stroke patients, one may say that following stroke, patients may have difficulty in achieving their goals (reference criterion) which is to, for example, maintain their good health and live a normal life. Consequently, there is a discrepancy between their goals and perception of the reality [perceptual input: they perceive themselves as not maintaining their good health but living in a life with significant health concerns (e.g., one can see from the results of the qualitative study which showed that patients tended to perceive themselves as being useless and lost independent daily living functioning)]. They then perceive an error which leads them to behave in such a way to help redefine the perception of reality thus reducing the discrepancy. For example, they might engage in some rehabilitation programmes which help them to perceive themselves as returning to the "normal" daily functioning, especially when returning to normal functioning is so important to them (error sensitivity). However, if they keep failing to reduce the discrepancy (e.g., the perception of reality has not been redefined), according to the model, they could develop psychiatric co-morbidity such as depression, because they experience a prolonged control mismatch.

What the model does not tell us, however, is to what extent people's coping styles may have a role to play in the process described in the model. For example, one could speculate that the way in which stroke patients react to reduce the discrepancy
between their goals and perception of reality may be influenced by their health locus of control belief system. It is plausible that when patients, who have a tendency to believe that their health is beyond their control but that it is determined by chance, fate or luck, try to react to reduce that discrepancy, they do so without a strong conviction. That is, with a belief that their health is determined not by their own efforts but chance or luck, they probably feel that in the end, whatever they do would not have a big impact on the (perceived) reality, hence reducing the discrepancy. What follows is then that they might find themselves in a situation whereby they react to try to reduce the discrepancy and yet are not convinced that they can do it. This, in turn, probably contributes to not adjusting their perceptual input, hence forming a prolonged control mismatch which leads to the likelihood of developing psychiatric co-morbidity such as depression. In fact, further analysis showed that chance health locus of control was associated with depression \((\rho = .34, p<.001)\) among the Chinese stroke patients.

6.4.4 Limitations of the cultural comparison study

This study has several limitations. Firstly, one could argue that the notion of representativeness among the samples in this study was problematic. The Chinese patients were drawn from Beijing, a big and modern city. Thus, stroke patients in rural areas of China were largely not recruited. Meanwhile, it is possible that stroke patients in rural areas of China would have different manifestations of stroke-related PTSD, co-morbidity, predictors of PTSD. In other words, the results of this study can only be generalised to urban Chinese stroke patients. Similarly, the entire British sample came from Plymouth, a southwest city in the U.K. One could argue that such sample was probably not representative of the general characteristics of British people.

This leads onto the second limitation which is that throughout the thesis, I have used the terms “Western” and “Westerners”. A population of British people recruited from one city would not likely represent the variations in cultural characteristics among
"Westerners". In that sense, one could argue that it is not appropriate to use the term "Westerners" in this study. However, due to practicality, it was impossible to include more than one "Western" sample in this study. If I had done that, arguably, the results of the study would have been more generalisable to "Westerners". This is a typical difficulty that many cross-cultural researchers face.

Thirdly, as was shown in the results section, the Cronbach’s alphas of the Chinese version of the PDS (the PDS-C) were somewhat low. This could be due to the characteristics of the stroke patients or translation problems, although elaborate efforts were made to assure the equivalence of the Chinese version to the original one. The lower inter-reliability in the PDS-C may have influenced the cross-cultural comparisons in this study. Further studies need to be carried out to investigate what truly leads to the low alphas level. For example, the reason could pertain to the characteristics of stroke patients. To this end, one needs to administer the same translated questionnaires to different groups of stroke patients with different degrees of severity and clinical characteristic, ideally recruited from different regions or cities in China. The differences in the alphas levels, if found, between groups may give some indication as to whether the reliability of the questionnaire relates to the characteristics of stroke patients.

Fourthly, similar to the problem mentioned in Chapter 5, this study requested that patients only answered the PDS questionnaire according to their most traumatic stroke. This means that it remains unclear to what extent the results might have been affected by the phenomenon of additive trauma. Although no robust epidemiological studies have been carried to investigate the prevalence of PTSD resulting from other traumas among the general Chinese population, one could speculate that PTSD due to other traumas exists. What that prevalence is and to what extent it is different from that of the Western sample remains to be seen.

6.4.5 Implications of the cross-cultural study
One implication from the present study is that PTSD researchers, health psychologists and cross-cultural researchers need to understand more about how cultures between East and West can affect PTSD symptomatology and psychiatric co-morbidity.

Also, although the study was conducted among the people in mainland China, the results are probably also relevant to the Chinese living in a multi-culture Britain. The reason is that the Chinese immigrants probably still retain a great deal of their cultural characteristics, health beliefs and coping style (Jovchelovitch and Gervais, 1999). However, a recent report suggests that the health needs of the Chinese population in the U.K., which is one of the largest and well established ethnic minority groups in Britain (National Statistics Census, 2001), are being ignored (Medical Studies/Trails, 2004). Compared with other minority groups, in health research, the Chinese population has been studied less and is therefore understood comparatively less. The implication from the present study is that Chinese people could experience significant psychological distress resulting from stroke. This means that the health needs among them should not be ignored. Also, more culturally sensitive health provisions should be made available for these Chinese people in this multi-culture Britain.

In addition, the study gives rise to important implications for Western clinicians working with Chinese patients. That is, they need to learn to appreciate how Chinese health belief system and dispositional characteristics may relate to health outcomes. With such knowledge, they then would be able to provide appropriate and culturally sensitive treatments to these Chinese patients. This implication is also relevant for Western clinicians who work with patients from other cultural groups.

6.4.6 Future research

This study did not fully confirm previous cross-cultural research showing that in comparison with Westerners, Chinese were more alexithymic in all three dimensions and
tended to be more external in locus of control orientation. However, it is not clear whether this was partly due to the differences in the characteristics of the samples (i.e. stroke patients in this study and healthy people in the other studies). Future research may want to focus on comparing the differences in alexithymia and health locus of control between the healthy populations from several localities in China and Britain. It would be interesting to see to what extent the results from such future study correspond to the findings of the present study. If there is a high degree of correspondence, then that will be a challenge to the general findings about Chinese people from the previous research.

As speculated previously, cultural differences may exist in the degree of threat perception thus influencing the level of post-stroke traumatic reactions. It will be useful to investigate the differences between Eastern and Western cultures in the relationship between threat perception and PTSD following stroke.

As suggested previously there is a strong interdependency between family members in Chinese culture, but not in British culture. It will be interesting to carry out a cross-cultural comparison study between Chinese and British in terms of the secondary traumatic stress following stroke among patients' family members. This might give insight into the ripple effect of a traumatic disabling disease (i.e., stroke).

This study mainly focused on the cultural differences in the risk factors associated with PTSD following stroke and co-morbidity. It did not shed light onto the treatment aspects of PTSD. It would be useful to evaluate the effectiveness of different types of treatments and identify to what extent such effectiveness is influenced by the differences in cultural characteristics (e.g. alexithymia and health locus of control).

The next chapter will be a general conclusion of the studies carried out in this PhD thesis.
CHAPTER 7

GENERAL CONCLUSION

7.1 SUMMARY OF THE AIMS AND FINDINGS

This thesis had three objectives and took the form of three studies. The first study was to explore the subjective experiences relating to stroke in two cultures (British and Chinese) by describing the similar and different patterns in participants’ responses. Focusing on a population of stroke patients in the U.K., the second study investigated the notion of post-stroke PTSD by exploring its relationship with other psychiatric symptoms and the risk factors of alexithymia and health locus of control. The trajectory of post-stroke PTSD symptoms was also examined. The third study aimed to compare the differences in post-stroke PTSD, psychiatric co-morbidity and risk factors between the British and Chinese samples.

The results of study 1 identified seven categories of participants’ subjective experiences: feelings at the onset of stroke, feelings after stroke, experience of hospital care and family involvements, perception of family members’ involvement in daily care, perception of payment (only in Chinese participants), perceived causes of stroke, and perceived consequences of stroke. The British and Chinese participants showed similar and different patterns in their subjective experiences relating to stroke. The similarities were that both groups of participants reported being frightened when stroke happened, and that they felt distressed /useless after stroke. Multiple causes of stroke were identified from participants in both groups and almost all of them reported some consequences of stroke (e.g., losing independence, burdening family members and increasing financial burden).
In terms of differences, the majority of British participants reported that they felt the impact of stroke, while some Chinese participants did not experience any unusual feelings when the stroke happened. Both groups also had very different experiences of hospital care and family involvement in daily care. While all Chinese perceived their family members as helpful in caring for them, some British participants thought otherwise. Although multiple causes were identified by both groups, nearly half of the British participants said they did not know why they had a stroke, while almost all Chinese participants reported at least one reason. Many of the Chinese perceived that their stroke to be caused by physical factors (e.g., "pre-existing health problems", "ageing" and "heredity). In relation to the perceived consequences of stroke, a higher percentage of British than Chinese participants reported losing their independence. Chinese in turn were more worried about burdening families.

The second study found that 30% and 50% of stroke patients fulfilled Full and Partial PTSD criteria at T1. Although, as a group, the overall incidence of PTSD declined over time, there appeared to be individual differences in maintaining the PTSD diagnosis. That is, some patients with PTSD at T1 continued to have PTSD at follow up and some patients with no PTSD at baseline remained in the same diagnostic category at follow up. With regard to the trajectory of PTSD symptoms, the results showed that hyperarousal symptoms significantly declined over time, while intrusion and avoidance remained relatively stable. This study also showed that stroke patients were significantly worse than healthy controls in psychiatric co-morbidity.

Study 2 also found that after controlling for post-stroke physical disability, difficulty in identifying feelings, as one dimension of alexithymia traits predicted both PTSD and psychiatric co-morbidity symptoms. Also, alexithymia interacted with chance health locus of control in predicting post-stroke PTSD. Coping factors did not predict the outcomes independently.
Study 3 found that in comparison with Chinese patients, British patients were at greater risk of developing PTSD. British patients were twice as likely as Chinese patients to develop Full PTSD following stroke. However, Chinese patients developed more somatic problems, anxiety, and depression than British patients.

In terms of alexithymia, the two groups of patients had a similar degree of difficulty in identifying feelings. However the Chinese sample reported more difficulty in describing feelings and more externally oriented thinking. Indeed, they were more alexithymic than the British sample. With regard to health locus of control, the two groups of patients had a similar degree of orientation towards internality health locus of control and powerful others locus of control. However, the British patients reported a heightened tendency towards chance health locus of control. Indeed they were more externally oriented in health locus of control beliefs than their Chinese counterparts.

Focusing on the association between risk factors and PTSD symptoms and psychiatric co-morbidity, there were striking differences between the two cultures. Seemingly, there were cultural differences in the way in which different factors related to the development of PTSD symptoms following stroke. For the U.K. samples, after controlling for post-stroke disability, difficulty in identifying feelings was associated with post-stroke PTSD. Also, alexithymic characteristics interacted with chance health locus of control in predicting PTSD symptoms. On the other hand, for the Chinese samples, alexithymia did not predict PTSD symptoms. Rather, coping styles were significantly associated with post-stroke PTSD after controlling for post-stroke physical impairment. Chinese patients who had a heightened tendency toward chance health locus of control coping developed more severe PTSD following a stroke.

Focusing on psychiatric co-morbidity, personality factors had a role to play in predicting co-morbidity for both groups of patients. However, the personality traits were different in that in the U.K group, the predictor was again difficulty in identifying feelings; however, in the Chinese group, the predictor was externally oriented thinking. Also, for
the Chinese patients, externally oriented thinking was a protective factor against the
development of psychiatric co-morbidity following a stroke. Coping styles (i.e. chance
health locus of control) were found to be significantly associated with psychiatric co-
morbidity only among the Chinese sample.

7.2 PRESENT FINDINGS IN THE LIGHT OF AN INTEGRATIVE MODEL

What follows in this concluding chapter is an attempt to make sense of the main
findings from the three studies in a unifying way. To help me achieve that, I want to turn
to the integrative model of trauma responses described in Chapter 2 (Joseph et al.,
1997). To a large extent, the findings on the traumatic stress of stroke patients can be
organised in the light of some of the components described in this model. In other words,
the intention here is not to test the model but simply to use the model to help organise
the findings from the three studies in a unifying way. In so doing, at this end of reading
this thesis, readers will hopefully have an idea of how the findings of the present studies
cohere together. Also, readers will be able to see how the integrative model of trauma is
modified in the light of the present findings.

On the basis of the findings in study 2, stroke, a traumatic and indeed a life-
threatening event, presents patients with stimuli which generate intense emotional
arousal. Such arousal cannot be immediately processed at that time in that, as was
shown in the focus group studies, most patients felt the “impact of stroke” (i.e., being
frightened or helpless) but not necessarily understood what happened to them. For
example, participant B1 explained his experience at the time of stroke and said “I thought
what’s the matter with me?” Participant B8 also stated that “I didn’t know what was going
on”. The model goes on to say that event cognitions, which are in imaginal form, are then
formed and set the basis for intrusive thoughts of stroke. Following stroke, patients
experienced different degrees of intrusive symptoms which persisted over time and
which contributed to their diagnosis of PTSD. In line with the model, patients’ reactions to
these intrusive thoughts are influenced by their personality traits. Stroke patients with more difficulty in identifying feelings tended to develop more severe post-stroke PTSD symptoms of which intrusion was part. In fact, further analysis showed that intrusion was correlated significantly with difficulty in identifying feelings ($\rho = .37, p < .001$).

According to the model, these intrusive thoughts generate further cognitive activity in which patients appraise and reappraise what their stroke meant to them by, for example, thinking about the causes and consequences of their stroke according to the qualitative findings. Their stroke meant to them, for instance, that they lived a stressful life prior to stroke (one of the causes that was identified), that they now had to start living a life which depended on others and which was restrictive in financial terms (consequences of stroke that were identified). The occurrence of traumatic event cognitions and appraisal/reappraisal activities are associated with strong emotional states. Joseph et al. (1997), in the model, used examples such as distress, fear and guilt to represent these emotional states. Indeed, according to the qualitative findings, patients reported feeling distressed, frightened or guilty after their stroke. For the present study, these emotions could also be represented in terms of psychiatric co-morbidity (e.g., anxiety and depression) which was prevalent among the stroke patients in this study. Also, additional analysis showed that intrusion (traumatic event cognition) was correlated with overall co-morbidity ($\rho = .31, p < .01$).

Thus far, the impression is that some of the findings in this thesis fit quite well with some of the components in the model. This means that the way these components are organised in this model in fact represents some of the stroke patients' traumatic reactions. The model then goes on to say that these emotions, which are appraised/reappraised, would trigger coping. Coping could include avoidance behaviour which, in turn, affects emotional states.

While the findings in study 2 also revealed that stroke patients' avoidance behaviour was correlated with their emotional states (i.e., psychiatric co-morbidity total)
(\( \rho = .57, p < .001 \)), coping, which was conceptualised as health locus of control in this study, was not found to be associated with stroke patients' emotional states. Instead, coping (chance health locus of control) interacted with personality (alexithymia) to predict PTSD. Such interactional relationship has not been made explicit in the model. To an extent, this is somewhat surprising, given that literature exists to show that personality and coping often relate to each other to affect outcomes (Chung et al., 2005).

Another factor that was not made explicit in Joseph et al.'s model was the role that age and gender play in relation to PTSD. Although age and gender factors were not the focus of this thesis, they were significantly correlated with PTSD severity in the Chinese samples: gender \( (\rho = -.22, p < .05) \), age \( (\rho = -.20, p < .05) \). These two variables could be included as part of the "environment and social factors" in Joseph et al.'s model.

Turning to the extent to which the findings of study 3 correspond to the integrative model, an interesting picture emerged. In agreeing with the model, while the findings in this study also showed that personality (difficulty in identifying feelings) and coping (chance health locus of control) had a role to play in the traumatic reactions of stroke patients in the two cultures, they related to outcomes in a way which is not apparent in the model. One striking difference was that difficulty in identifying feeling related to both PTSD and co-morbidity among the British patients only. Meanwhile, chance health locus of control related to both PTSD and co-morbidity among the Chinese patients. The implication is that there may be cultural differences in the way in which stroke patients' personality traits and coping styles affect PTSD symptoms and psychiatric co-morbidity.

The preceding three paragraphs basically reveal that there are three aspects of the integrative model of trauma which need to be modified. Firstly, the model has not taken account of the interaction between coping and personality in predicting PTSD. The reason for this is difficult to ascertain. One reason could be that Joseph et al. are mainly
interested in viewing coping in terms of patients manifesting a PTSD symptom, namely, avoidance behaviour, i.e. patients cope with their trauma by avoiding thinking or talking about it. In so doing, they are ignoring the important role that discrete coping strategies, such as emotion-focused, problem-focused and indeed health locus of control, could play in dealing with trauma and thus ignoring the interactional relationship between these discrete coping strategies and personality traits. This is clearly an oversight of the model. The modification of incorporating such interaction into the model is important because, as was mentioned previously, there is literature showing that personality and coping often relate to each other to affect outcomes. Such interactional relationship has recently been shown to be imperative in helping us understand the psychological reactions of patients who suffer from life-threatening illnesses (Chung, Dennis, Berger, Jones, & Rudd, 2008; Chung et al., 2005).

The second aspect is pertaining to patients' demographic factors, particularly, age and gender. One could speculate that the reason why Joseph et al. have not included these factors in their model is because their research has been focusing on the link between social/crisis support and distress outcomes (e.g., Joseph et al., 1993). However, by not taking account of these demographic factors, they are in effect ignoring some important factors which arguably explain individual differences in terms of traumatic reactions. Some recent studies have argued that the effects of gender and age cannot be underestimated and that they are often the variables which explain a significant proportion of the variance of different outcome measures alongside other predictors (Andrykowski, Cordova, McGrath, Sloan, & Kenady, 2000; Bennett & Brooke, 1999; Tolin & Foa, 2006), although the effects of gender and age have not been identified in some studies (e.g., Katz & Nevid, 2005). In the light of the controversy surrounding the effects of gender and age, one could argue that this is more of a reason why Joseph et al should not have discounted gender and age in their model as potential factors associated with traumatic reactions.
The final aspect is concerned with the cultural differences in traumatic reactions of which the integrative model has not taken account. This is not too surprising because much of Joseph et al.'s research is based on UK disaster victims. Based on the present findings, Figure 7.1 describes the traumatic reactions of the British and Chinese samples. It shows clearly the differences between the two samples in terms of the relationship between factors. Having said that, there is also a great deal of similarities between the two cultures in terms of their traumatic reactions. In other words, this modified integrative model is suggesting that some traumatic reactions are perhaps universal, while some others are very much influenced by cultural factors. Such observation is not trivial because if we can understand what and why we share and do not share in our traumatic reactions across cultures, we would be able to understand more about the suffering of patients with PTSD in different parts of the world. Also, with such knowledge, we would be able to provide more culturally sensitive diagnosis and treatment for them.
Chapter 7

General Conclusion

7.3 Final remarks

To close this thesis, it is worth pointing out one important observation from this research. That is, more appropriate PTSD measures for measuring the traumatic reactions of stroke patients need to be developed. As shown in the results sections of Chapters 5 and 6, the internal consistency for the Post-traumatic Diagnostic Scale (PDS) was lower than the standardised figures (Foa et al., 1997), and the Chinese version of PDS had even lower internal reliability than the English version. The low reliability of both
versions could be due to the fact that many PTSD measures, including the PDS, have not been validated in patients with life-threatening illnesses, which is a common methodological problem for studies into illness-related PTSD (Tedstone & Tarrier, 2003). More research is urgently needed to investigate the validity of PTSD measures among these patients before further studies are carried out to investigate the link between PTSD and such life-threatening illnesses as stroke.

In addition, research is needed to examine the cultural sensitivity of PTSD measures. For example, the way in which certain PTSD symptoms are described such as "feeling emotionally numb" in the PDS is not the way in which Chinese people tend to describe their emotions. In other words, they may find such expression "feeling emotionally numb" unfamiliar which consequently affects their responses and, hence, the reliability of the questionnaire.

This thesis is only a small attempt to expand the existing limited literature, the outcome of which, I hope, will open up debate for future research, stimulate other researchers including cross-cultural researchers to take forward what this thesis has found, and be an inspiration for their future work. In addition, I hope the outcome of this thesis will have important implications for understanding and improving the quality of life of those who suffer from this condition.
Reference List


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Faculty of Science

School of Psychology

Participation Payments

Investigator: ____________________

Supervisor: ____________________

Study:
We, the undersigned, hereby consent to participate in the above research study. We give our consent having received satisfactory answers to our questions concerning the study, in the full knowledge that we have the right to refuse to participate and knowing that we may withdraw from the above study without penalty at any time. We also understand that every effort will be made to protect the anonymity of our responses.

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TOTAL 289
我们，同意参加这个研究项目。对于有关此项目的问题，我们已经得到了满意的答复。我们完全理解我们有权利拒绝或者在任何时候退出此研究。并且如果我们退出，不会对我们有任何不利。我们也理解我们的名字会被代号取代。我们真正的名字不会出现在研究报告中。所以我们同意并签字。

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Focus Group Discussion Guide for the British Participants

1. Please describe briefly what happened to you after your stroke.
   
   **Prompters:**
   - Say, for example, where were you when stroke happened?
   - How did you feel when stroke happened?
   - Do you need to pay to be checked, treated and/or hospitalised?
   - What examinations did you receive for your stroke?
   - Do you have a say at which hospital(s) to go?

2. Please tell me something about the hospital care that you are receiving.
   
   **Prompters:**
   - Who are looking after you in hospital?
   - What kind of help are they providing?
   - What do you think of other people's (e.g., your family members) involvement?
   - Is it important for you to have them involved in your daily care?
   - What kind of treatment/rehabilitation are you receiving in the hospital?

3. What do you think might be the reasons why you had a stroke?

4. What are the major consequences of your stroke?
   
   **Prompters:**
   - Financially?
   - Socially?
   - Any other?

5. How do you feel about yourself now?
Focus Group Discussion Guide for Chinese Participants

1. 请简单讲一下在你患了中风之后都发生了什么？
   ➔ 发生中风的时候你在什么地方？
   ➔ 你当时心理有什么感觉？
   ➔ 在接受检查、就诊、住院治疗之前，你需要交钱吗？
   ➔ 你都接受了哪些检查？
   ➔ 是否可以自己选择医院？

2. 请告诉我你在住院时接受的医院护理情况
   ➔ 谁负责在医院护理您？
   ➔ 他们都提供什么帮助，护理？
   ➔ 你怎么看待其他人参与你的护理（比如：家庭成员的参与）？
   ➔ 你认为其他人员的参与重要吗？
   ➔ 你在住院时都接受了哪些治疗，护理和康复方法？

3. 你认为你患上中风大概有可能出于哪些原因呢？

4. 患了中风后，你的生活受到什么样的影响？
   ➔ 经济上？
   ➔ 社会关系上？
   ➔ 其它？

5. 你现在对自己的感觉怎么样？
Focus Group Introduction for the British Participants

Thanks for taking the time to join the discussion of your subjective experience of stroke. My name is Xu Wang (Suzie), a doctorate student from the School of psychology, University of Plymouth.

My research aims to investigate the differences in the way in which British patients and Chinese patients respond to stroke. How these different responses may be related to culture and personal beliefs. At the moment, I have very little knowledge about this information. Your input would be valuable. You would help me know more about your experience related to stroke.

There are no right or wrong answers. Please feel free to share your point of view even if it differs from what others have said.

I will tape record the session because I do not want to miss any of your comments. No names will be included in any reports. Your comments are confidential.

We all have name tags in front of us today. They help me remember names, but they can also help you. If you want to follow up on something that someone has said, you want to agree, disagree, or give an example, feel free to do that. Do not feel like you have to respond to me all the time. Feel free to have a conversation with one another about the questions. I am here to ask questions, to listen, and to make sure everyone has a chance to share. I am interested in hearing from each of you. So if you are talking a lot, I may ask you to give others a chance. And if you are not saying much, I may call on you. If I do, please do not feel bad about it. I just want to make sure we hear from all of you.
Focus Group Introduction for the Chinese Participants

大家好，欢迎你们。很感谢你们抽出时间来参加今天这个讨论。我叫王旭，是英国普利茅斯大学心理学系的博士生。我主要研究中风病人突然患中风之后有可能产生的心理失调问题。具体有以下几方面：1. 中国和英国的病人在中风发生之后心理反应上有什么不同；2. 中国和英国的社会文化不同是否能解释人们在中风之后的不同心理反应，还有中风患者对健康与疾病的理解和观念，是否也影响他们的心理反应。现在我对于这些方面知道得很少，所以你们大家的发言对我来说是非常有价值的。你们可以帮助我更多地了解你们关于中风的个人经验。希望我在将来能够研究出有效的方法来帮助中风患者恢复心理健康，并减轻家属心理压力。

你们的回答或者发言没有对和错之分，我希望你们都能有不同的想法，能自由发言，如果你们的想法和其他人不一样，没关系。我会用录音机录下我们的交谈，这是为了我做研究分析使用的。我不会提到任何人的名字。

在你们每个人面前，我放了一个名牌，这能帮助我记住你们的名字，也能帮助你们之间互相认识。如果你们想就其他人的发言发表自己的意见，表示同意，不同意，请随便。大家不用觉得只能和我进行一对一的交流，你们互相之间也完全可以交流。我可能会叫你的名字。千万别觉得不好意思，我只是想让大家都能发表自己的看法。还有，如果有手机的话，请您暂时关一下机。为了确保我们讨论的效果。
Appendix 7

Date of Interview ___________ Place of Interview _______________________

Gender Male □ Female □

Age ______________________

Ethnicity White □ Mixed Parentage □ Asian/Asian British □
Black/Black British □ Other □

Marital Status Married □ Single □ Widowed □ Divorced □

Working status ______________________

Religion Christian □ Catholic □ Muslim □ Hindu □
Jew □ Buddhism □ Atheist □ Other □

Please briefly answer the following questions about your stroke:

1. How many strokes have you had? ________________________________

2. When did it (they) occur? ________________________________

3. Where did you have the stroke? And who was with you when stroke happened? ________________________________

4. At the time of stroke how did you feel?
   a) panicky □
   b) helpless □
   c) frightened □
   d) other □

5. If you have had more than one stroke, which one is the most traumatic? ________________________________

6. Do/did you have any other illnesses besides the stroke, including mental health/psychiatric illness? What are they? ________________________________
12-item Short Version of the Mini-Mental State Examination

Could you please answer the following questions?

1. What is the year?
2. What is the month?
3. What is the date?
4. What is the day of the week?
5. In which county are we?
6. What is the postal code of your address?

Name three objects, then ask the patient to repeat them after you until he has learned them. Don't give any score at this point.

7. Spell 'world' backwards, give 1 if three or more letters are correct.
8. Ask for the three objects learned earlier in the session, give 1 point if one or more words are reproduced correctly.
9. Repeat the following sentence 'no ifs, ands, or buts'
10. Perform a three staged command: 'Take a piece of paper in your right hand, fold it in half, and put it on the floor'. Give one point if all stages are completed.
11. Write a sentence
12. Copy a design

TOTAL SCORE: [Blank]
Using the Barthel ADL Index guidelines please rate the patient’s levels of independence for the following daily activities by circling the number next to the appropriate statement.

**Bowels**
0 = incontinent (or needs to be given enemata)  
1 = occasional accident (once a week)  
2 = continent

**Bladder**
0 = incontinent, or catheterized and unable to manage alone  
1 = occasional accident (maximum once per 24 hours)  
2 = continent

**Grooming** (preceding 24-48 hours)  
0 = needs help with personal care  
1 = independent face/hair/teeth/shaving (implements provided)

**Toilet Use**
0 = dependent  
1 = needs some help, but can do some things alone  
2 = independent (on and off, dressing, wiping)

**Feeding**
0 = unable  
1 = needs help cutting, spreading butter, etc.  
2 = independent (food provided in reach). Able to eat any normal food (not only soft food). Food cooked and served by others. But not cut up.

**Transfer** (from bed to chair and back)  
0 = unable, no sitting balance  
1 = major help (one or two people, physical), can sit  
2 = minor help (verbal or physical)  
3 = independent

**Mobility**
0 = immobile  
1 = wheelchair independent, including corners etc.  
2 = walks with help of one person (verbal or physical)  
3 = independent (but may use an aid e.g., a stick)

**Dressing**
0 = dependent  
1 = needs help but can do about half unaided  
2 = independent (including buttons, zips, laces etc.)

**Stairs**
0 = unable  
1 = needs help (verbal, physical, carrying aid)  
2 = independent up and down

**Bathing**
0 = dependent  
1 = independent (or in shower)
Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements by circling the corresponding number. Give only one answer for each statement.

Circle 1 if you STRONGLY DISAGREE
Circle 2 if you MODERATELY DISAGREE
Circle 3 if you NEITHER DISAGREE NOR AGREE
Circle 4 if you MODERATELY AGREE
Circle 5 if you STRONGLY AGREE

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1. I am often confused about what emotion I am feeling.</td>
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<td>2. It is difficult for me to find the right words for my feelings.</td>
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<td>3. I have physical sensations that even doctors don't understand.</td>
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<td>4. I am able to describe my feelings easily.</td>
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<td>5. I prefer to analyse problems rather than just describe them.</td>
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<td>6. When I am upset, I don't know if I am sad, frightened, or angry.</td>
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<td>7. I am often puzzled by sensations in my body.</td>
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<td>8. I prefer to just let things happen rather than to understand why they turned out that way.</td>
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<td>9. I have feelings that I can't quite identify.</td>
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<td>10. Being in touch with emotions is essential.</td>
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<tr>
<td>Statement</td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree Nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
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<td>11. I find it hard to describe how I feel about people.</td>
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<td>12. People tell me to describe my feelings more.</td>
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<td>13. I don’t know what’s going on inside me.</td>
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<td>14. I often don’t know why I am angry.</td>
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<td>15. I prefer talking to people about their daily activities rather than their feelings.</td>
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<td>16. I prefer to watch “light” entertainment shows rather than psychological dramas.</td>
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<td>17. It is difficult for me to reveal my innermost feelings, even to close friends.</td>
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<td>18. I can feel close to someone, even in moments of silence.</td>
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<td>19. I find examination of my feelings useful in solving personal problems.</td>
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<td>20. Looking for hidden meanings in movies or plays distracts from their enjoyment.</td>
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</table>
Please answer these items carefully, but do not spend too much time on any one item. Try to respond to each item independently and as much as you can. Do not be influenced by your previous choices. It is important that you respond according to your actual beliefs not what you should believe or how you think we want you to believe.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If I get sick it is my own behaviour which determines how soon I get well again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. No matter what I do, if I am going to get sick, I will get sick.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. Having regular contact with my physician is the best way for me to avoid illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. Most things that affect my health happen to me by accident.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. Whenever I don't feel well, I should consult a medically trained professional.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. I am in control of my health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. My family has a lot to do with my becoming sick or staying healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. When I get sick, I am to blame.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. Luck plays a big part in determining how soon I will recover from an illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10. Health professionals control my health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>11. My good health is largely a matter of good fortune.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12. The main thing which affects my health is what I myself do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>13. If I take care of myself I can avoid illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>14. When I recover from an illness, it is usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>15. No matter what I do 1 am likely to get sick.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>16. If it's meant to be I will stay healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>17. If I take the right actions, I can stay healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>18. Regarding my health, I can only do what my doctor tells me to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
Part 1

Many people have lived through or witnessed a very traumatic event at some time in their lives. Below is a list of traumatic events. Please mark in the box next to ALL of the events that have happened to you or that you have witnessed.

☐ Serious accident, fire, or explosion (e.g. an industrial, farm, car, plane, train or boating accident)
☐ Natural disaster (e.g. tornado, hurricane, flood or major earthquake)
☐ Adult physical assault or abuse (e.g. being mugged, physically attached, shot, stabbed, hit, beaten up or held at gunpoint)
☐ Child physical assault or abuse (e.g. being mugged, physically attached, shot, stabbed, hit, beaten up or held at gunpoint)
☐ Adult sexual assault (e.g. rape or attempted rape or made to perform any type of sexual act through force or threat of harm)
☐ Child sexual assault (e.g. rape or attempted rape or made to perform any type of sexual act through force or threat of harm)
☐ Military combat or war zone
☐ Imprisonment
☐ Torture
☐ Captivity (e.g. being kidnapped, abducted, held hostage, prisoner of war)
☐ Life-threatening illness or injury
☐ Sudden, violent death (e.g. homicide, suicide)
☐ Sudden, unexpected death of someone close to you
☐ Serious injury, harm or death you caused to someone else
☐ Exposure to toxic substance (e.g. dangerous chemicals, radiation)
☐ Other traumatic event (please specify ___________________)

Part 2

Below is a list of ordinary psychological reactions that people sometimes have in response to their most stressful stroke. Please read each one carefully and circle one of the numbers (0-3) to the right to indicate how much you have been bothered by your stroke since it occurred.
0 - Not at all  
1 - “Once in a while” = Once a week or less  
2 - “Often” = 2 to 4 times a week  
3 - “Almost always” = 5 or more times a week

<table>
<thead>
<tr>
<th>Event</th>
<th>Not at all</th>
<th>Once a week</th>
<th>2 to 4 times a week</th>
<th>5 or more times a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Having upsetting thoughts or images about the stroke that come into your head when you don’t want them to</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Having bad dreams or nightmares about the stroke</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Reliving the stroke, acting or feeling as if it were happening again</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling emotionally upset when you are reminded of the stroke (for example, feeling scared, angry, sad, guilty)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Experiencing physical reactions when you are reminded of the stroke (for example, breaking out into a sweat, heart beating faster)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Trying not to think about, talk about or have feelings about the stroke</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Trying to avoid activities, people or places that remind you of the stroke</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Not being able to remember an important part of the stroke</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Having much less interest or participating much less often in important activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Feeling distant or cut off from people around you</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Feeling emotionally numb (for example, being unable to cry or have loving feelings)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. Feeling as if your future plans and hopes will not come true</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. Having trouble falling or staying asleep</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Feeling irritable or having fits of anger</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Having trouble concentrating (for example, drifting in and out of conversations, losing track of a story on television, and forgetting what you read)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
16. Being overly alert (for example, checking to see who is around you, being uncomfortable with your back to a door) | 0 | 1 | 2 | 3
17. Being jumpy or easily startled (for example, when someone walks up behind you) | 0 | 1 | 2 | 3

How long have you been experiencing the problems that you reported above? (circle ONE)

1. Less than 1 month
2. 1 to 3 months
3. More than 3 months

How long after your stroke did these problems begin? (circle ONE)

1. Less than 6 months
2. 6 or more months

Part 3

Which areas of your life have been affected by the symptoms you reported? (Note: the symptoms, not stroke)

Indicate below if the problems you rated above have interfered with any of the following areas of your life since your stroke. Circle Y for Yes or N for No.

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td></td>
</tr>
<tr>
<td>Household chores and duties</td>
<td></td>
</tr>
<tr>
<td>Relationships with friends</td>
<td></td>
</tr>
<tr>
<td>Fun and leisure activities</td>
<td></td>
</tr>
<tr>
<td>Schoolwork</td>
<td></td>
</tr>
<tr>
<td>Relationships with your family</td>
<td></td>
</tr>
<tr>
<td>Sex life</td>
<td></td>
</tr>
<tr>
<td>General satisfaction with life</td>
<td></td>
</tr>
<tr>
<td>Overall level of functioning in all areas of your life</td>
<td></td>
</tr>
</tbody>
</table>
I should like to know if you have had any medical complaints and how your health has been in general, *since your stroke*. Please answer ALL of the following questions by circling the response which you think most closely applies to you.

It is important that you answer ALL the questions. ALL responses are completely confidential.

Have you recently......

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Better than usual</th>
<th>Same as usual</th>
<th>Worse than usual</th>
<th>Much worse than usual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Been feeling perfectly well and in good health?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>2.</td>
<td>Been feeling in need of a good tonic?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>3.</td>
<td>Been feeling run down and out of sorts?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>4.</td>
<td>Felt that you are ill?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>5.</td>
<td>Been getting any pains in your head?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>6.</td>
<td>Been getting a feeling of tightness or pressure in your head?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>7.</td>
<td>Been having hot or cold spells?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>8.</td>
<td>Lost much sleep over worry?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>9.</td>
<td>Had difficulty in staying asleep once you are off?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>10.</td>
<td>Felt constantly under strain?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>11.</td>
<td>Been getting edgy and bad tempered?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td></td>
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<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>12. Been getting scared or panicky for no good reason?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>13. Found everything getting on top of you?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>14. Been feeling nervous and strung-up all the time?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>15. Been managing to keep yourself busy and occupied?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Rather less than usual</td>
<td>Much less than usual</td>
<td></td>
</tr>
<tr>
<td>16. Been taking longer over things you do?</td>
<td>Quicker than usual</td>
<td>Same as usual</td>
<td>Longer than usual</td>
<td>Much longer than usual</td>
<td></td>
</tr>
<tr>
<td>17. Felt on the whole you were doing things well?</td>
<td>Better than usual</td>
<td>About the same</td>
<td>Less well than usual</td>
<td>Much less well</td>
<td></td>
</tr>
<tr>
<td>18. Been satisfied with the way you've carried out your task?</td>
<td>More satisfied</td>
<td>About the same as usual</td>
<td>Less satisfied than usual</td>
<td>Much less satisfied</td>
<td></td>
</tr>
<tr>
<td>19. Felt that you are playing a useful part in things?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less useful than usual</td>
<td>Much less useful</td>
<td></td>
</tr>
<tr>
<td>20. Felt capable of making decisions about things?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less so than usual</td>
<td>Much less capable</td>
<td></td>
</tr>
<tr>
<td>21. Been able to enjoy your normal day-to-day activities?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less so than usual</td>
<td>Much less than usual</td>
<td></td>
</tr>
<tr>
<td>22. Been thinking of yourself as a worthless person?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>23. Felt that life is entirely hopeless?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>24. Felt that life isn't worth living?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>25. Thought of the possibility that you might make away with yourself?</td>
<td>Definitely not</td>
<td>I don't think so</td>
<td>Has crossed my mind</td>
<td>Definitely have</td>
<td></td>
</tr>
<tr>
<td>26. Found at times you couldn't do anything because your nerves were too bad?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>27. Found yourself wishing you were dead and away from it all?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
<td></td>
</tr>
<tr>
<td>28. Found that the idea of taking your own life kept coming into your mind?</td>
<td>Definitely not</td>
<td>I don't think so</td>
<td>Has crossed my mind</td>
<td>Definitely has</td>
<td></td>
</tr>
</tbody>
</table>
Consent Form

Title of Project: An investigation into the relationship between post-traumatic stress disorder and stroke

Name of researchers: Ms. Xu Wang, Dr. Man Cheung Chung and Professor Magid Bakheit

1. I confirm that I have read and understood the information sheet dated __________ for the above study and that I have had a chance to ask questions about the study.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without my medical care or legal rights being affected.

3. I am willing to allow access to my medical records but understand that strict confidentiality will be maintained. The purpose of this is to check that the study is being carried out correctly.

4. I agree to take part in the above study.

_________________  ______________  __________________
Name of patient    Date                Signature

_________________  ______________  __________________
Name of the person Date                Signature
taking consent   (if different from researcher)

_________________  ______________  __________________
Researcher        Date                Signature

1 for patient, 1 for researcher, 1 to be kept in the patient's medical record at xxx Hospital.
TO
xxxx

22nd June 2004

Dear xxxx

My name is Xu Wang (Suzie) and I am a doctoral research student from the School of Psychology, at the University of Plymouth. The purpose of this letter is to invite you to participate in a study that I am currently undertaking, as part of my doctoral research. You have been recommended to me by my colleagues Professor Tim Perfect, Dr Pilar Andres and Dr Chiara Guerrini as someone who may be able to participate in this study.

The aim of the study is to ascertain the general health status, the level of social support, personality factors and coping styles of elderly people in Plymouth. All that is required from you is to fill in some relevant questionnaires. I can assure you that all the information gathered from this study will be anonymous and strictly confidential. No names or personal contact details will be recorded in the study. It should take approximately 30 minutes to complete the questionnaires.

I sincerely hope that you are willing to participate in this study. I will contact you in the near future to find out if you are willing, and if so, the most convenient date and time for us to meet. When I phone, please do not hesitate to ask me any questions that you may have about the study and I will do my best to answer them. Our record shows that your telephone number is xxxx, please let us know if this number is incorrect or has been changed.

As a token of appreciation, I would be delighted to pay you £5.00 for your participation in the study.

I look forward to speaking to you soon and hopefully meeting you in due course.

Yours sincerely

Xu Wang (Suzie)
Postgraduate researcher
访談日期 ________________ 访談地点 ________________

性别 男 □ 女 □

年龄 ________________

婚姻状况 已婚 □ 单身 □ 丧偶 □ 离异 □

职业 ________________

宗教信仰 佛教 □ 基督教 □ 穆斯林 □ 道教 □

无神论者 □ 其他 □

请简要回答下面这些问题

1. 您患过几次中风？

2. 它（们）什么时候发生的？

3. 中风发生的时候您在哪里？有谁和您在一起吗？

4. 当中风发生的时候您有什么感觉？请选择：

   a) 惊慌 □
   b) 无助 □
   c) 害怕 □
   d) 其它 □

5. 如果您患过不止一次中风，哪一次是您觉得最具有创伤性的？

6. 您除了中风还患有其他疾病吗？包括精神，心理上的。是什么的疾病呢？
简易智能量表（Mini Mental State Examination，MMSE）

编号：文化程度：（大学、高中、初中、小学、文盲）
总分：满分：30分 缺失：无、有（轻、中、重）
医院名：检查者签名：日期：

序号  评价项目  正确  错误  得分

1. 现在我要问您一些问题来检查您的记忆力和计算力，多数都很简单
   （1）请说出今年的年份？  1  0
   （2）现在是什么季节？  1  0
   （3）现在是几月份？  1  0
   （4）今天是几号？  1  0
   （5）今天是星期几？  1  0
   （6）这是什么城市（城市名）？  1  0
   （7）这是什么区（城区名）？  1  0
   （8）这是什么医院（或胡同，医院名或胡同名）？  1  0
   （9）这是第几层楼？  1  0
   （10）这是什么地方（地址门牌号）？  1  0

2. 现在我告诉您三种东西的名称，我说完后请您重复一遍。请您记住这三种东西，过一会儿我还要问您（请仔细说清楚，每样东西一秒钟）。  1  0
   告诉您这三种东西的是：“树”、“钟”、“汽车”，请您重复。
   树  1  0
   钟  1  0
   汽车  1  0

3. 现在我请您算一算，从100中减去7，然后从所得的数算下去，请您将每减一个7后的答案告诉我，直到我说“停”为止：
   100减7等于  1  0
   93减7等于  1  0
   86减7等于  1  0
   79减7等于  1  0
   72减7等于  1  0
   停止！

4. 现在我请您说出刚才我让您记住的是哪三种东西?
   树  1  0
   钟  1  0
   汽车  1  0

5. （检查者出示自己的手表）
   请问这是什么？  1  0
   （检查者出示自己的铅笔）
   请问这是什么？  1  0

6. 请您跟我说“四十四只石狮子”  1  0

7. （检查者给受试者一张卡片，上面写着“请闭上您的眼睛”）请您念一念这句话，并按上面的意思去做。  1  0
8. 我给您一张纸，请您按我说的去做。现在开始:

用右手那拿着这张纸：
用两只手把它对折起来：
放在您的左腿上
9. 请您给我写一个完整的句子。
10. （出示图案）请您照着这个样子把它画下来。（如所有的边、角都正确，
    且内部重叠成一个四边形则得1分）

*总分范围为0－30分正常与不正常的分界值与受教育程度有关：文盲（未受教育）组
17分，小学（受教育年限＜6年）组20分，中学或以上（受教育年限≥6年）组24分。分界
值以下为有认知功能缺陷，以上为正常。

检查过程应尽量避免外界干扰。老人容易灰心、丧气或放弃，故应多鼓励，一般检查
一般需要5－10分钟。

2*．只许让试者讲一遍。不要求受试者按物品次序回答。若第一遍有错误，则先记分；然
后告诉病人错误所在，并再请他回忆。直至正确。但最多只能“学习”5次。
### Barthel 每日生活活动指数及计分方法

<table>
<thead>
<tr>
<th>项目</th>
<th>计分标准</th>
</tr>
</thead>
</table>
| 1. 大便控制 | 0 = 失禁  
1 = 偶尔失禁  
2 = 控制 |
| 2. 小便控制 | 0 = 失禁（包括尿失禁者）  
1 = 偶尔失禁（每24小时少于1次：每周多于1次）  
2 = 控制 |
| 3. 整洁修饰 | 0 = 需要帮助  
1 = 独立洗头、梳头、刷牙、剃须 |
| 4. 洗澡 | 0 = 依赖  
1 = 自理 |
| 5. 使用厕所 | 0 = 依赖别人  
1 = 需部分帮助  
2 = 自理（提裤子或擦拭） |
| 6. 进食 | 0 = 依赖  
1 = 需部分帮助（如切面包、抹果酱）  
2 = 完全自理 |
| 7. 坐椅/床转运 | 0 = 完全依赖别人，不能坐  
1 = 需少量帮助（1个或2个人，体力上的），可以坐  
2 = 需少量帮助（1人指导或语言帮助）  
3 = 自理 |
| 8. 平地行走 | 0 = 不能动  
1 = 在轮椅上独立行走（坐轮椅可走45米）  
2 = 需1人帮助步行（体力或语言指导，在帮助下可走45米）  
3 = 独立步行（可用辅助器械） |
| 9. 穿衣 | 0 = 依赖  
1 = 需一半帮助  
2 = 自理（解系纽扣、开关拉锁和系鞋带等） |
| 10. 上下楼梯 | 0 = 不能  
1 = 需帮助（体力或语言指导）  
2 = 自理 |
谢谢你的配合，请认真回答下面的问题，在最适合你情况的数字上划圈：

（1）完全不同意
（2）不同意
（3）中立
（4）同意
（5）完全同意

<table>
<thead>
<tr>
<th>序号</th>
<th>问题内容</th>
<th>答案</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>我常常搞不清自己有什么样的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>2</td>
<td>我感到难以用恰当的词语来描述我的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>3</td>
<td>我有一些连医生也不能理解的感觉</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>4</td>
<td>我能容易描述自己的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>5</td>
<td>我更喜欢分析问题而不是对问题进行描述。</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>6</td>
<td>当我心里难受时，我不知道究竟是悲伤，害怕，还是愤怒</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>7</td>
<td>我常常对我身体的一些感觉感到莫名其妙</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>8</td>
<td>我常常只注意到事情的发生，而忽略了其发生的原因</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>9</td>
<td>我有一些自己难以识别的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>10</td>
<td>知道自己的情绪体验对我来说很重要</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>11</td>
<td>我难以描述我对别人有何感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>12</td>
<td>人家说我很少谈及自己的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>13</td>
<td>我不知道自己的内心活动</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>14</td>
<td>我常常不知道我为何愤怒</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>15</td>
<td>我更愿意与别人谈论他们的日常活动而不是他们的内心感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>16</td>
<td>我宁可看轻松的娱乐片而不愿看严肃的情节片</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>17</td>
<td>即使是对密友，我也难以表达我内心深处的感受</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>18</td>
<td>我能感到与某人有亲切感，即使在我们沉默无言之时</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>19</td>
<td>我觉得反省自己内心的感受对于解决个人问题是有用的</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td>20</td>
<td>寻找电影或戏剧中隐藏的含义会使人从娱乐中分心</td>
<td>1-2-3-4-5</td>
</tr>
</tbody>
</table>
多层次健康控制中心量表（MHLC）

说明：以下想了解您对健康的想法，这些题目都没有标准答案，请按照您真实的想法回答，而不是您应该怎么想或者我们希望您怎么想。1=「非常不同意」，2=「中度不同意」，3=「稍微不同意」，4=「稍微同意」，5=「中度同意」，6=「非常同意」。

<table>
<thead>
<tr>
<th>题号</th>
<th>问题</th>
<th>非常不同意</th>
<th>中度不同意</th>
<th>稍微不同意</th>
<th>稍微同意</th>
<th>中度同意</th>
<th>非常同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>如果生病了，我自己的行为习惯能决定我恢复的速度</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>我常觉得不论我做什么，如果注定要生病，我就会生病</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>定期去看医生，对我来说是避免生病的最好的办法</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>我的健康问题似乎都是一些突发的情况</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>只要我觉得身体不适，我就要请医疗专业人员或者看医生</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>我能控制自己的健康</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7.</td>
<td>别人对于我是否健康有着很重要的影响</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8.</td>
<td>如果生病了，那是我自己的过失</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9.</td>
<td>当我生病时，好运气能在我很大程度上决定我恢复的速度</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10.</td>
<td>医疗人员能够控制我的健康状况</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11.</td>
<td>我能有健康其实大部分是运气好</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12.</td>
<td>我怎么照顾自己是影响我健康状况的主要原因</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>13.</td>
<td>如果我好好照顾自己，我可以避免生病</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>14.</td>
<td>我能从疾病中康复，基本上是由于其他人好好照顾我</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>15.</td>
<td>即使我很小心的照顾自己，还是会容易生病</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>16.</td>
<td>如果是注定的，我应该可以保持健康</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>17.</td>
<td>如果好好照顾自己，我应该可以保持健康</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>18.</td>
<td>对我来说，完全遵从医生的指示是维持健康最好的方法</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
很多人在一生中曾经历或者目击过非常创伤性的事件。下面列出的是一些创伤性事件。请在所有您曾经历或者目击过的事件旁打勾。

- 严重的事故，火灾或爆炸（例如：工业、农田、汽车、飞机、火车或者船只的事故）
- 自然灾难（例如：龙卷风、飓风、洪水或者大地震）
- 发生在成人的身体上的攻击或者虐待（例如：被打劫、身体上的攻击、开枪射伤、刺伤、打伤、毒打等）
- 发生在儿童的身体上的攻击或者虐待（例如：被打劫、身体上的攻击、开枪射伤、刺伤、打伤、毒打等）
- 发生在成人身上的性的攻击（例如：强奸或强奸未遂或者猥亵）
- 发生在儿童身上的性的攻击（例如：强奸或强奸未遂或者猥亵）
- 军事战争
- 被判刑
- 折磨、拷打
- 被绑架（例如：被诱拐、当作人质、战犯）
- 危及生命的疾病或者伤害
- 突然的，暴力性的死亡（例如：凶杀或者自杀）
- 您身边的人突发的，意外的死亡
- 您给别人造成的严重的伤害或者致使他人死亡
- 暴露在有毒物质下（例如：危险的化学品或者辐射）
- 其他具有创伤性的事件（请指明：______________）

第二部分
下面是人们在他们最严重中风发生后可能出现的一些正常的心理反应。请您仔细阅读每个问题，然后在问题右边的数字（0-3）上画圈，指出在多大程度上您被中风所困扰。

0 – 一点也不
1 – “有时候” = 一星期一次或更少
2 – “经常” = 一星期2-4次
3 – “几乎总是” = 一星期5次或更多

<table>
<thead>
<tr>
<th>事情</th>
<th>一点也不</th>
<th>一星期一次或更少</th>
<th>一星期2-4次</th>
<th>一星期5次或更多</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 当您在休息或做其他事的时候，有关自己中风的痛苦回忆突然闯入脑海（就像放电影一样）</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. 做噩梦梦到有关自己中风的事情</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. 人在中风发生时会有不同的痛苦感受（例如，恐惧，无助等）。您在休息或做其他事的时候，突然觉得这种感受又一次出现。</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. 其他人和您谈论中风疾病的时候，您在感情上感到难受或痛苦（如：觉得恐惧、气愤、悲伤，内疚等）</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. 其他人和您谈论中风疾病的时候，您在生理上感到不适（比如：出汗或者心跳加快等）</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. 努力回避，不让自己去想，不愿谈及有关中风的话题</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. 努力回避那些使您回想起中风的人物、地点或者活动</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. 不能回忆起自己患中风的某个重要的细节</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. 对过去常做的重要活动明显减少兴趣或者参加的次数明显减少</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. 对您周围的人感觉心理上有距离或者有隔阂</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. 情感上变得麻木（比如：不能够大哭或者表达出爱的感情）</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. 感觉好像您未来的计划和希望不能实现了</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13. 入睡困难或者睡眠不深</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. 容易生气或者发怒</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

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15. 注意力难以集中（比如：和别人谈话的时候思维游移不定，看电视的时候无法跟上故事的情节或者容易忘记自己刚刚读过的东西）

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

16. 变得过分的警觉（比如：总是要查看谁在你的身边，自己的后背对着门会感到很不舒服）

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

17. 变得紧张或者容易受惊吓（比如：当有人突然走到你身后的的时候）

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

您发现上述问题有多长时间了？（请选择一个）

4. 少于一个月
5. 1到3个月
6. 3个月以上

您在患中风之后多长时间开始产生上述这些反应的？（请选择一个）

1. 6个月之内
2. 6个月以上

第三部分

请指出自中风后，您产生的上述心理反应是否干扰了以下几方面的生
活。请在“是”或“否”上打勾。（请注意：是那些心理上的反应而不是中风疾病直接的影响）

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>是 否</td>
<td>工作</td>
<td></td>
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<tr>
<td>是 否</td>
<td>家务事</td>
<td></td>
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<tr>
<td>是 否</td>
<td>和朋友之间的关系</td>
<td></td>
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<tr>
<td>是 否</td>
<td>休闲活动</td>
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<td>是 否</td>
<td>学校的作业</td>
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<td>是 否</td>
<td>和家庭成员之间的关系</td>
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<td>是 否</td>
<td>性生活</td>
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</tr>
<tr>
<td>是 否</td>
<td>对生活的满意程度</td>
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</tr>
<tr>
<td>是 否</td>
<td>您生活的方方面面</td>
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</tbody>
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请仔细阅读以下的说明：

我们想了解你有没有医疗方面的问题，以及你中风后的健康情形。请在以下每个问题的四种答案中选出你认为最能表达你健康情况的，以(✓)表示出来。以下的问题对我们都很重要，请你答复每个问题，谢谢你的合作。

请问你最近是不是：

<table>
<thead>
<tr>
<th>序号</th>
<th>问题内容</th>
<th>比平时好一些</th>
<th>和平时一样</th>
<th>比平时差一些</th>
<th>比平时差很多</th>
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<tbody>
<tr>
<td>1</td>
<td>觉得健康很好？</td>
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<tr>
<td>2</td>
<td>觉得需要进补品或服补药？</td>
<td>一点也不</td>
<td>和平时差不多</td>
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<td>比平时多很多</td>
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<td>3</td>
<td>觉得相当疲倦</td>
<td>一点也不</td>
<td>和平时差不多</td>
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<td>比平时多很多</td>
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<td>4</td>
<td>觉得身体不适？</td>
<td>一点也不</td>
<td>和平时差不多</td>
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<td>比平时多很多</td>
</tr>
<tr>
<td>5</td>
<td>觉得头痛？</td>
<td>一点也不</td>
<td>和平时差不多</td>
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<td>6</td>
<td>觉得头部有压迫感？</td>
<td>一点也不</td>
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<td>比平时多很多</td>
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<td>7</td>
<td>觉得发热或发冷？</td>
<td>一点也不</td>
<td>和平时差不多</td>
<td>比平时多一些</td>
<td>比平时多很多</td>
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<td>8</td>
<td>为担忧而失眠？</td>
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<td>比平时多很多</td>
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<td>9</td>
<td>很难熟睡？</td>
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<td>比平时多很多</td>
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<tr>
<td>10</td>
<td>觉得总是有精神上的压力？</td>
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<td>和平时差不多</td>
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<td>比平时多很多</td>
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<td>11</td>
<td>觉得自己很易发怒？</td>
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<td>和平时差不多</td>
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<td>比平时多很多</td>
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<td>12</td>
<td>会无缘无故地害怕或惊慌？</td>
<td>一点也不</td>
<td>和平时差不多</td>
<td>比平时多一些</td>
<td>比平时多很多</td>
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<td>13. 觉得每样事情都难以应付？</td>
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<td>和平时差不多</td>
<td>比平时多一些</td>
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<tr>
<td>14. 觉得精神紧张？</td>
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<tr>
<td>15. 让自己忙碌而不会感到闲着无聊？</td>
<td>比平时多一些</td>
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<td>比平时少一些</td>
<td>比平时少很多</td>
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<tr>
<td>16. 工作效率比以前慢些？</td>
<td>比平时快一些</td>
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<td>比平时慢一些</td>
<td>比平时慢很多</td>
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<td>17. 觉得一般事情自己应付得很好？</td>
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<td>比平时差很多</td>
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<td>18. 对自己做事的方式感到满意？</td>
<td>比平时较满意</td>
<td>和平时差不多</td>
<td>比平时较不满意</td>
<td>比平时更不满意</td>
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<tr>
<td>19. 觉得自己在各方面担当有用的角色？</td>
<td>比平时有用</td>
<td>和平时差不多</td>
<td>比平时没用</td>
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<tr>
<td>20. 觉得处事可以拿定主意？</td>
<td>比平时多一些</td>
<td>和平时差不多</td>
<td>比平时较少一些</td>
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<td>21. 觉得日常生活有趣味？</td>
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<td>22. 觉得自己没用？</td>
<td>一点也不</td>
<td>和平时差不多</td>
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<td>23. 觉得生活毫无希望？</td>
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<tr>
<td>24. 觉得不值得继续生活下去？</td>
<td>一点也不</td>
<td>和平时差不多</td>
<td>比平时多一些</td>
<td>比平时多很多</td>
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<tr>
<td>25. 想到结束自己生命的可能？</td>
<td>绝不会</td>
<td>我想不会</td>
<td>曾经想过</td>
<td>认真想过</td>
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<tr>
<td>26. 觉得有时精神太差而不</td>
<td>一点也不</td>
<td>和平时差不多</td>
<td>比平时多一些</td>
<td>比平时多很多</td>
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<td>27. 希望及早死去,提早解脱？</td>
<td>一点也不</td>
<td>和平时差不多</td>
<td>比平时多一些</td>
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<tr>
<td>28. 觉得自杀的念头常出现在脑海？</td>
<td>绝不会</td>
<td>我想不会</td>
<td>曾经想过</td>
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</table>

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研究确认书

研究课题：中风后的心理失调与精神创伤后应激性障碍之间的关系：一个跨文化的研究（中国和英国）

研究人员：王旭，钟民祥博士，Magid Bakheit教授

1. 我确认我已经阅读并理解了这张有关此研究的介绍，我也有机会提问。

2. 我明白我的参与是自愿的，我有权利在任何时候退出研究。我的医疗或者法律权利不会因此受到影响。

3. 我允许此项目的研究者看到我的医疗记录，而且我明白研究人员必须对此绝对保密。查看医疗记录的目的是为了确保研究能够正确进行。

4. 我同意参与这项研究。

患者姓名 ___________ 日期 ___________ 签字 ___________

其他参与人员 ___________ 日期 ___________ 签字 ___________
（如果不是研究者的话）

研究者 ___________ 日期 ___________ 签字 ___________

1份交给病人，1份由研究者保存。