FACTORs AFFECTING SPOUSE WELL-BEING
FOLLOWING CLOSED HEAD INJURY

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A thesis submitted in partial fulfillment of requirements for the degree of Master of Clinical Psychology, Australian National University 1990:
Originality of thesis

I hereby certify that, except where otherwise acknowledged, this thesis describes original research carried out by the author. It has not been submitted previously to any university or other institution.

Mary E. McGrath
ACKNOWLEDGEMENTS

I would like firstly to thank those women who were involved in the study for their time and invaluable input. I would like to thank the hospitals who helped by providing access to patient information. In particular, I would like to thank Ms. Jenny Batchelor (Clinical Neuropsychologist, Westmead Hospital, Sydney) and Dr. Vernon Hill (Director - Spinal Unit, Princess Alexandra Hospital, Brisbane) for their time and interest.

My family has provided constant support and encouragement and each of them requires special mention, thanks to Betty, Brian, Ann, John, Paul, Milton, Frances and Venetia.

Most importantly, I would like to thank my supervisor, Dr. Kathleen Griffiths who has been a constant and patient supporter and adviser. She was joined last year by Dr. Deborah Terry, who has also provided invaluable and much appreciated assistance. Thank you.
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ABSTRACT

The study compared 20 wives of closed head injured men with 18 wives of spinal cord injured men. The women completed a questionnaire which investigated husband's personality change, marital role change, social support, wife's adaptability, and wife's well-being. Well-being comprised her reports of subjective burden, general psychological health, anxiety, depression, somatic symptomatology, and marital satisfaction. Wives of closed head injured men evidenced significantly more symptomatology and significantly less marital satisfaction than did wives of spinal cord injured men. Also, wives of closed head injured men were less likely to name their husbands as their confidants than were wives of spinal cord injured men. Extent of personality change was greater among closed head injured men and was associated with greater burden, symptomatology, and marital dissatisfaction. The relationship between marital role change and wives' well-being was more complex. While no difference between the two groups was found in regard to amount of role change; role change was significantly associated with burden, symptomatology and marital satisfaction among wives of closed head injured men, but not among wives of spinal cord injured men. It was concluded that role changes associated with physical disability are less predictive of wives'
well-being than changes associated with the mental sequelae of closed head injury (particularly personality change). Neither general social support, nor the presence of a confidant were found to predict wives' well-being. However, whether or not the woman's husband was named as her confidant, was associated with her reports of burden and of marital satisfaction. Wife's flexibility was not found to be associated with her well-being, although an unexpected difference was found on this variable between the two groups, with wives of closed head injured men being less flexible than wives of spinal cord injured men. Future directions for research, and the clinical implications of the findings are discussed.
CHAPTER 1

INTRODUCTION

An increasing number of people are involved in traffic and industrial accidents, and an increasing number of these patients are now surviving severe blunt head injuries which would previously have been fatal. The majority of patients surviving severe head trauma are young, and while some make a satisfactory recovery, most face some level of disability for life. Of the multiple consequences of head injury it appears that the mental sequelae (especially personality changes), are the most distressing and disabling. Not suprisingly they impose a heavy burden upon the patient's family as the primary unit of aftercare.

The physical, cognitive, psychological and social outcomes of closed head injury have been the subject of considerable research, while the impact of closed head injury and its sequelae on caretaking relatives has attracted less attention and produced largely inconclusive results. The present study investigates the impact of closed head injury on relatives, specifically wives, and aims to determine which factors best predict reported burden in these women. This chapter presents background information on the nature of closed head injury, and outlines relevant research to provide a rationale for the study which will be described in subsequent chapters.
1.1 Epidemiology of head injury

1.1.1 Incidence

Traumatic head injuries are so common that they have been described as both a major health problem (Jennett & Teasdale, 1981), and an "unpreventable epidemic" (Selecki, 1981). The main causes of severe closed head injury are motor vehicle accidents, falls, assaults and work related accidents (Jennett, Teasdale & Galbraith, 1977).

Despite the relative frequency of head injuries, a dearth of reliable statistics about them exist. The primary obstacles to comprehensive data collection have been the lack of agreement regarding the definition of severe head injury, and the fact that those head injured patients who do attend hospital (and this is the minority, as most minor head injuries do not result in hospitalization) tend to be dispersed throughout the health care system being treated in a variety of hospital departments, and by a number of medical specialists. As a consequence of these problems, available statistics must be interpreted with caution. The majority of statistics available relate to mortality, and are collected by local health agencies and hospitals. At present, in Australia, this information is not centralized, and so national statistics for head injury do not exist (Australian Bureau of Statistics, 1989).

Addressing this problem, Jennett (1981) examined international statistics for deaths due to accidents (not specifically due to head
injuries). Accidents are the primary cause of death among people under the age of 44 in western societies, with road accidents accounting for over half of all lethal accidents (Selecki, 1981). As 70% of road accident fatalities result from cerebral damage, useful statistics regarding the epidemiology of head injury can be gleaned from accident statistics. According to these statistics, Australia has one of the highest accident rates in the world, mostly due to road accidents. The proportion of road accidents as a rate per hundred thousand is also high, and is virtually twice the British rate (Jennett, 1981). In Britain each year 1 percent of all deaths are attributed to head injuries, a quarter of trauma deaths, and almost half of road accident deaths. Out of every 100,000 people in Britain, 9 die each year from head injuries.

In the United States, it is estimated that new cases of head injury requiring hospitalization occur at the annual rate of 200 per 100,000 population (Kalsbeek, McLaurin, Harris & Miller, 1980). As accident rates per head of population in Australia are comparable (in fact, they are higher than in the US), perhaps this figure provides the most realistic guide to the extent of the problem in Australia.

Results of a pilot study of the epidemiology of neurotrauma in NSW undertaken in 1977 provide preliminary data which supports these predictions. Selecki et al. (1981), found that the head injury death rate in NSW (25) was almost 3 times the 1976 UK rate (9). The rate of hospital admissions for head injury was 376 per 100,000. More
alarming was Selecki et al.'s finding that a minimal estimated number of 750 patients (in NSW in 1977) suffered permanent deficit of varying degrees as a result of head injury.

1.1.2 **Demographics**

A number of authors have noted that the tragedy of head injury is that it is the young and vigorous who are most at risk of dying or being seriously injured and disabled as a result of this type of injury (eg. Thomsen, 1984; McEwin, 1981). Statistics consistently indicate that head injury is more common among men than women, and among younger rather than older sections of the population. The following table (from McEwin, 1981), details the age/sex breakdown of the head injured as surveyed in NSW in February, 1979, as compared with the age/sex breakdown of the NSW population as a whole.

Table 1.1

**Age/sex ratio of the head injured in NSW (February, 1979)**

<table>
<thead>
<tr>
<th>Age</th>
<th>NSW population</th>
<th>Survey groups</th>
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<tbody>
<tr>
<td></td>
<td>male</td>
<td>female</td>
</tr>
<tr>
<td>15-24</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>25-44</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>All Ages</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Sewell (1981), in his presentation of preliminary data on neurotrauma hospital morbidity in New South Wales for 1978 as a
whole, found even stronger evidence for the trend toward head injury in
the 15-24 year old age group, and particularly among males. He found
that twice as many males as females were hospitalized for
neurotrauma, as is the universally-encountered pattern. He went on to
note that the highest proportion of cases were in the 15-24 year old
age group. Males in this age group accounted for more than one in five
of all hospital admissions for neurotrauma (neurotrauma refers to
injuries to the head (85% of total), spine (13%) and peripheral nerves
(2%). The rate of head injury per head of population was also highest
for males in this age group, and was three times the rate for the
population as a whole. In a recent review of head injury research,
Godfrey, Marsh and Partridge (1987) estimated that in the 15-24 age
group, one male in 27 attends hospital each year with a head injury.

1.2 Mechanics and Pathology of Closed Head Injury

As discussed previously, traumatic head injuries most commonly
result from motor vehicle accidents. The type of brain injury which
follows results from the movement of the brain within the skull which
occurs when the moving head undergoes acceleration/deceleration at
the time of impact. This type of injury is referred to as an impact or
'closed head injury', because the brain may be severely injured even
though the skull is not penetrated. Another type of traumatic head
injury occurs when the skull is penetrated, as in gunshot or missile
wounds (relatively uncommon in civilian life). These type of injuries are referred to as open head injuries. In open head injuries, focal lesions usually result, whereas in closed head injuries, the cerebral damage is usually more widespread.

While some head injuries resulting from motor vehicle accidents involve compound fractures and so are 'open' from the immediate management point of view (Jennett & Teasdale, 1981), more widespread damage consistent with rapid acceleration/deceleration will almost certainly be present and lead to these injuries being simultaneously designated as 'closed'. Consequently, 'closed head injury' can be viewed widely to refer to all non-missile head injuries, and this is the definition which will be assumed in this paper.

A number of mechanisms have been identified which account for the common patterns of damage associated with closed head injury, the most important of which are the force of the impact, and the translatory force associated with rotational acceleration of the brain.

1] The force of impact

The force of impact is the predominant cause of brain damage in static injuries, that is, injuries in which the stationary victim receives a blow to the head (Lezak, 1983). Such a blow (when severe) is not only likely to cause cerebral contusions (bruising) at the point of impact, but may also cause considerable injury to parts of the brain far removed from impact. These contrecoup injuries are brought about by
the movement of the brain relative to the skull (Walsh, 1978; Lezak, 1983). Holbourne (1943) first highlighted the contrast between the rigidity and irregularity of the skull, and the brain which is not rigid but is incompressible. The force of a blow may literally bounce the brain off the opposite side of the skull, as the head is suddenly accelerated after a blow, or when the moving head undergoes deceleration as occurs in motor vehicle accidents (Teasdale & Mendelow, 1981).

While agreeing that the movement of the brain relative to the skull is responsible for the bulk of cerebral contusions, a number of researchers (eg. Ommaya, Grubb & Naumann, 1971; Adams, Graham, Murray, & Scott, 1982), have suggested that contrecoup effects alone do not account for the typical pattern of traumatic brain damage (especially when the person sustains head trauma when moving rapidly, as in road accidents). Ommaya et al. (1971) in a study of head injuries produced experimentally in monkeys, found that contusions were maximal in the frontotemporal region, irrespective of where the skull was struck. It appears that rapid acceleration/ deceleration of the head results not necessarily in a linear movement of the brain relative to the skull but rather in rotational motion during which the brain makes contact with the inside of the skull in a number of places. Teasdale and Mendelow (1984) suggest that such forces are maximal between the soft frontal and temporal lobes, and the sharp wing of the
sphenoid which separates the anterior and middle cranial fossae. As a consequence, most contusions occur in these sites.

2] Rotational acceleration

The combination of translatory force and rotational acceleration of the brain within the bony structure of the skull is responsible for another kind of brain damage (Lezak, 1983), which tends to be more widespread and yet less easily identified. Such forces produce movement between different components of the brain itself (Teasdale & Mendelow, 1984). The rotation of the brain strains delicate nerve fibres and blood vessels, stretching them to the point of shearing (Strich, 1956). This shearing mechanism results in diffuse axonal injury, manifested in microscopic lesions which occur throughout the brain, but which tend to be concentrated in the frontal and temporal lobes (Oppenheimer, 1968; Lezak, 1983). In the severely injured, structural damage to the mid-brain is also common (Bond, 1984).

The discussion above has focused on primary brain damage, the damage which occurs at the time of injury, as a result of distinctive mechanical factors, specifically the traumatic impact and the consequent movement of the brain within the skull. These mechanical factors are common to the majority of closed head injuries, explaining their common symptom patterns, and allowing the 'closed head injured' to be treated as a group in research. Indirect or secondary brain damage may occur after the initial damage and can be as destructive as
the initial trauma. As such damage is unpredictable, and is potentially preventable or reversible with treatment, it will not be dealt with in this discussion.

In summary, when a person sustains head trauma while moving rapidly (eg. in a motor vehicle accident), brain damage results from the impact of the brain bouncing around inside the skull upon sudden deceleration (Lezak,1983). Invariably, the undersides of the frontal and temporal lobes take the brunt of the impact. In addition, the high velocity of impact causes shearing effects which result in diffuse axonal damage. Although axonal damage is usually widespread, it tends to be concentrated in the frontal and temporal lobes, and in the midbrain of the more severely injured.

1.3 Sequelae of Head Injury

Disorder of mental functioning is the most consistent consequence of closed head injury (Jennett and Teasdale, 1981), which commonly affects cognition and personality. While a comprehensive review of the research on the sequelae of head injury is beyond the scope of this thesis, the main areas of research will be discussed briefly below.

Summarizing the findings of a number of his earlier studies Brooks (1984), noted that typically, head injured patients suffered widespread memory and learning deficits relating to recall,
recognition, and learning of both verbal and non-verbal material. His findings concur with those of other researchers (e.g. Brooks & Aughton 1979; Thomsen, 1977; Groher, 1977), all of whom found that the head injured were impaired on a range on memory tasks, including recall of stories and activities requiring new learning.

Severe closed head injury also commonly compromises mental speed, attentional functions (e.g. van Zomeren, Brouwer, & Deelman, 1984) and intellectual ability (e.g. Levin, Rose, & Teasdale, 1979; Mandleberg & Brooks, 1975, Mandleberg, 1975 a, b). These problems are usually manifested in inability to concentrate or to perform complex mental operations, confusion and perplexity in thinking, irritability, fatigue, and a general decrease in the ability to perform tasks requiring higher level cognitive functions.

Mandleberg and Brooks (1975) reported that head injured patients show marked and prolonged deficits on the performance scales of the WAIS, because the complexity of the tasks requires them to integrate a number of higher cognitive functions, such as learning, perception, motivation and attention, dexterity, speed and organizational skills. For similar reasons, head injured patients tend to perform poorly on oral or sequential arithmetic and on complex reasoning problems (Gronwall & Wrightson, 1981).

As has been noted previously, the frontal and temporal lobes are the areas most susceptible to damage in closed head injuries. It is
widely known that this pattern of damage leads to readily recognizable changes in intellectual ability, emotion and behavior. These symptoms are often referred to as the 'frontal syndrome' (eg. Lipowski, 1978; Bond, 1984).

Intellectual changes associated with this pattern of damage include the impaired integration of behavior over a period of time, loss of the capacity to think in abstract terms, and the inability to plan and follow through a course of action and to take into account the probable future consequences of one's actions (Walsh, 1978).

Personality changes are also associated with the frontal syndrome. In fact, Benton (1968) suggested that some facets of 'intellectual' impairment which typically occur following severe head injury are probably as much related to personality change as they are to cognitive impairment. Personality changes noted by most authors include disinhibition, facile euphoria, blunting of emotional responsiveness, egocentricity, irresponsibility, lack of tact and concern, emotional lability, impulsiveness, and childishness. Patients tend to exhibit purposeless drive and show loss of initiative, judgement and spontaneity, and while many display apathy and inertia, others display marked aggressiveness (eg. Brooks & McKinlay, 1983; Benton, 1968; Walsh, 1978; Bond, 1984; Jennett & Teasdale, 1981).

While the pattern of intellectual sequelae and personality changes described above are generally linked with specific patterns of
organic damage, other types of emotional dysfunction following head
injury have been linked to reactive disturbance rather than organic
pathology.

Fordyce, Roueche and Prigatano (1983) found that unlike
cognitive dysfunction, for some patients, emotional disturbance (as
measured by the MMPI) worsened with the passage of time. They
believed that this reflected reactive changes in the patient as they
became aware of residual deficits and problems in social adjustment
which were not obvious to them during the acute period. A more
recent study (Kinsella, Moran, Ford & Ponsford, 1988) involving patient
self reports, reported that emotional disorder (as measured by the
Leeds depression and anxiety scales, and the GHQ) was common among
the severely head injured up to two years post injury.

In discussing reactive affective symptoms following head
injury, Jennett and Teasdale (1981) noted that suffering a head injury
is a significant experience for anyone, especially for the severely
injured patient who regains consciousness and continuous memory days
or sometimes weeks after the accident. The head injured patient is
then likely to live from day to day for some time while they recover
physically, not realizing the magnitude of the effects of the injury on
their life until they go home. It is only as the process of recovery
slows down that the probability of permanent disability is gradually
realized, and the patient enters a new phase of reaction to the
situation, the outcome of which depends on the patient's ability to adapt and cope with new environmental stresses. As Jennett and Teasdale point out, it is these very mental capacities that a head injury most consistently affects.

**Head Injury and Psychosocial Adjustment**

Not surprisingly, the significant personality and cognitive changes following head injury which were outlined above produce adverse effects on patients' post-injury psychosocial adjustment. Psychosocial adjustment is usually assessed by considering the extent to which the patient has returned to his or her pre-injury level of social role performance (work, leisure and social activities).

Return to work following traumatic head injury appears to be related to severity of injury (eg. Oddy,1984). Most severely head injured patients do not re-enter the workforce, or continue with their studies (Thomsen,1984). Those that do return to work are usually less severely injured (i.e., PTA < 1 week), and are likely to resume employment at a lower level than before (eg. Weddell, Oddy, & Jenkins,1980; Oddy, Humphrey & Uttley, 1978; Oddy et al.,1985). Oddy et al. (1984) and, more recently, Tate et al. (1989) have noted that employers, while not always officially downgrading employees following a severe head injury, usually reduce the work load and responsibilities of these workers, and more closely supervise them.
Lezak (1984) suggested that, despite often considerable residual abilities, one combination or another of impaired initiative and apathy, lack of critical capacity, defective social judgement, childishness and egocentricity, inability to plan or sustain activity, impulsivity and low frustration tolerance, is likely to account for the failure of the more severely injured to re-enter the workforce.

The head injured patient is also likely to engage in fewer social and leisure activities than prior to the accident. Thomsen (1974) reported that the main complaint mentioned by patients one to six years after severe head injury was lack of social contact. Social isolation continued to be cited as a major problem in a follow up study 10 - 15 years post-injury (Thomsen, 1984). Similarly, Bond (1976) found that along with work, leisure activities were the most disrupted aspects of daily life for the head injured. Tate et al. (1989) found that, even in the group of head injured subjects who had been classified as having made a "Good Recovery" according to the Glasgow Outcome Scale, half experienced major difficulties maintaining interpersonal relationships, and a significant number were socially isolated and had poorly defined leisure interests.

Reviewing studies concerning the effects of head injury upon social and leisure activities, Oddy (1984) concluded that available evidence suggested that such activities were at least as vulnerable as work capacity. As with work capacity, personality and cognitive
changes were more detrimental to the maintenance and quality of the patient's social relationships than were either motor or sensory impairments (Oddy et al., 1978; Oddy, 1984; Weddell et al., 1980).

1.4 Impact of Head Injury on the Patient's Family

Relatives of the head injured, as the primary unit of aftercare, could be expected to suffer some degree of burden as a result of the sequelae of severe head injury already discussed. A number of researchers have investigated whether this burden compromises the relative's psychological health and general social functioning and the results of their studies will be discussed below.

1.4.1 Psychological effects of burden on relatives

Klein (1982) referred to the problem of head injury as a "silent epidemic", because many of the mental sequelae of head injury are subtle, and may only become evident to family and friends after the patient has left the well-structured environment of the hospital ward or rehabilitation unit to return home. Consequently, the extent of cognitive and mental disorder due to head injury within the community remains hidden, with much of the burden of assistance and supervision being carried by relatives.

Lezak (1981) suggested that the burden experienced by relatives of the head injured is compounded by the fact that they are largely
unprepared for the behavioral problems which accompany closed head injury. She observed that many patients are discharged as 'recovered' when they can walk, talk and perform some self care activities. Family members typically believe that 'recovery' means 'back to normal' and only after months or years of frustration and floundering to help the patient 'recover', do they become aware of the extent of the patient's residual deficits. Tate et al. (1989) referred to many of the head injured as suffering an 'invisible disability' as their good presentation and superficially adequate social skills can mask subtle impairments which cause significant disability and handicap. They noted that the effects of these ongoing difficulties are often underestimated, by both the patients themselves and by doctors and health care workers.

The experience of having a relative suffer a life threatening injury, months of hospitalization and doctors visits, followed by the need to come to terms with their permanent disabilities, is obviously a traumatic and extremely stressful one. In support of this supposition, the empirical data have consistently found that relatives of head injured patients suffer symptoms of stress and psychopathology in the period after the injury. For instance, Oddy et al. (1978) using the Wakefield Depression Inventory as a measure of stress, found a high incidence (39%) of depression among relatives early in the recovery stage. While the degree of stress appeared to level off by the six
month mark, it showed no further sign of diminishing over time. This study also investigated emotional and psychosomatic disorders incurred by relatives in the year following head injury, and found that the incidence of such symptomatology in the relatives remained high throughout the year.

Unfortunately, interpretation of Oddy et al.'s results is hampered by several factors. They failed to use a control group, nor did they discuss their results in the context of the incidence of depression in the general community as measured by the Wakefield Scale. Further, due to the small number of married patients in the sample, reliable analysis as to whether the impact of having a head-injured patient in the family was more marked for spouses than for other relatives was not possible. Finally, a quarter of subjects had dropped out of the study between the first and the second follow up (i.e., between 3 and 6 months post injury). The reasons for this high drop out rate are not discussed, and revised marital status, severity and age statistics were not supplied.

Like Oddy et al., McKinlay, Brooks, Bond, Martinage and Marshall (1981) studied a close relative of each of 55 severely head injured adults at 3, 6, and 12 months post injury. Responding to what they believed was Oddy et al.'s inadequate description of their sample, especially with regard to severity, McKinlay and his colleagues specified that their sample consisted of patients who had sustained
severe blunt head injury, clearly defining both 'severe injury' (PTA > 2 days), and 'blunt head injury' (penetrating localized wounds were excluded). Once again, no control group was used. While their sample included a significant number of married patients (33/55 at one year; 19/42 at five years), analysis and discussion pertained to the group as a whole.

McKinlay et al. found that over 70% of relatives in their study suffered from 'medium' to 'high' stress throughout the year following the injury. As the year progressed, an increased association developed between personality change in patients and subjective burden in the relatives. In a follow up study on the same sample five years later Brooks, Campsie, Symington, Beattie, & McKinlay, (1986) found that relatives reported being under great strain, the level of strain being significantly greater than that reported at one year. Stress among relatives was measured simply by means of a 7 point analogue scale (ranging from 1- I feel no strain, to 7 - I feel severe strain). While such a scale has face validity as a measure of subjective burden, it is not clear if it also measures psychological well-being.

Once again assessing relatives at 3, 6, and 12 months after injury, Livingston, Brooks and Bond (1985a,b) demonstrated that there is a measurable psychiatric and social impact on the relatives of severe head injury victims throughout the year following injury.
Unlike the majority of earlier studies which relied on clinical impressions or psychometrically unsophisticated measures, Livingston et al. (1985a,b) used well known and accepted scales to assess psychiatric functioning (General Health Questionnaire) and mood state (Leeds scales for anxiety and depression) among relatives. They found that over one third of relatives suffered levels of anxiety which were of clinical significance and reported 40% to have a high probability of psychiatric illness at both 3 and 6 months after the injury, scoring twice the level of psychiatric dysfunction found in the general population.

Livingston et al.'s study employed a control group of men who had sustained mild head injuries. While such a group is matched in so far as risk factors, it is not well matched in terms of severity of trauma. Clearly, stress among relatives would be considerably higher among those who had suffered a life threatening rather than minor injury.

Rosenbaum and Najenson (1976) in a landmark study addressed this problem by comparing the wives of severely head injured patients with the wives of paraplegics who had sustained their injuries in the same war. The hypothesis that wives of the brain injured would report more symptoms of low mood than wives of paraplegics was strongly supported. Further, they found that one year after the husband's head injury, wives had experienced drastic and disturbing changes in their
lives and that these changes were closely related to their level of depression. The changes in the lives of the wives were most pronounced in their interpersonal relationships with their husbands, in-laws and friends. Brain-injured husbands were much more likely to be described by their spouses as self-oriented and dependent than were paraplegic husbands. Wives of brain injured men expressed concern for the lack of a ‘father figure’ at home, and were more likely to report that they had to assume the man’s role in the family than were wives of paraplegics.

While the Rosenbaum and Najenson (1976) study has been one of the few to employ a well matched control group, caution must be taken in generalizing from their results for a number of reasons. Firstly, the sample size was very small, comprising only 10 wives of brain-injured men, six wives of paraplegics, and 14 wives of non-injured war veterans. Secondly, the head injured group was heterogenous with regard to site of and nature of injury, with both closed head injuries and penetrating missile wounds being included in the sample. The majority of patients had suffered missile wounds. Thirdly, as the head injured sample were war veterans their families would not have experienced financial burdens, and would have been likely to receive a level of medical and other support not so readily available to the civilian head injured. It would be expected that even greater burden
would be experienced by spouses of a more representative sample of the closed head injured.

1.4.2 Relative's social functioning

The impact of having a relative with a head injury is also evident in the relative's level of social functioning. In the first study to address this issue directly, Rosenbaum and Najenson (1976) found that wives of the brain injured engaged in few pleasant activities either at home or outside, and felt lonely and isolated. This is consistent with Thomsen's (1984) finding that loss of social contact remained the patients most disabling handicap in daily life 10-15 years post injury, and that both the patient and their family felt isolated.

More recently, Livingston et al. (1985) investigated the social functioning of relatives using the Weissman social adjustment schedule. Their results indicated that while social functioning was initially adequate, problems began to develop three months following injury and remained over the year. While all areas of the relatives' social functioning were impaired when compared with community norms, those roles performed in the family home (i.e., family unit and marital functioning), were most affected, deteriorating significantly over the year post injury.
1.4.3 **Family Relationships/Marital Satisfaction**

The quality of marital and family relationships are also adversely affected by the presence of a brain-injured patient. Bond (1975), for instance, examined a group of very severely head injured patients two years after injury, and found that a high degree of mental disability (especially memory and personality impairment) was associated with a high degree of disruption of family cohesion. He also noted that while family cohesion was very vulnerable to mental disability, it was seemingly unaffected by physical disability. The measure of family cohesion Bond used was, however, less than satisfactory. The relative was simply required to supply a rating on a 3 point scale with: 0 - unchanged, 2 - deteriorated interpersonal relations of any form, and 4 - total separation of patient from family.

Oddy and his collaborators (Oddy et al.,1978; Weddell et al., 1980) employed a similar one item scale to assess family friction. They reported that significant levels of family friction were present two years after injury. Friction was most frequent between patients and siblings, and most commonly reported by families of patients suffering adverse personality change.

A number of researchers have distinguished between marital and parental relationships in their study of burden experienced by relatives of the head injured. The early studies conducted by Panting and Merry (1972), Thomsen (1974) and Rosenbaum and Najenson (1976) all
reported that the husband-wife relationship was less stable under the stress of a head injury than the parent-child relationship. Thomsen (1984) found that this difference held true 10-15 years after the accident, finding that the different reactions of spouses and parents were striking, with the former expressing considerably more realistic views. Unfortunately, Panting and Merry's married sample were older on average than their unmarried sample, limiting the validity of their findings. As mentioned previously, Thomsen's sample size was extremely small (eight married couples) and her conclusions appear to be based on clinical impressions rather than statistical analysis of quantitative data.

Oddy et al. (1978b) compared the Wakefield Depression Inventory scores of spouses with those of parents 6 months and then 12 months following their relative's head injury. While they found no significant differences, they noted that this result should be viewed cautiously in light of the small number of married subjects (12/54) involved. Also, as noted by Brooks (1984), the majority of Oddy's subjects were less severely injured than those in studies reported by those previous researchers who did report differences in reaction between wives and parents.

Livingston et al. (1985 a, b) while using a more severely injured sample than Oddy, also found no difference between spouses and parents on scales measuring depression, anxiety and general
psychological functioning. However, they did report that wives of head injured patients were more severely handicapped psychosocially compared to control wives, than were mothers of head injured patients compared to their controls.

Interestingly, Livingston et. al. reported that wives showed a marked increase in burden between 3 and 6 months, while mother's burden decreased slightly during this time. As their final follow up was at 12 months post injury, their results may not reflect long term outcome regarding burden among relatives, which has been noted by other researchers (eg. Brooks et al., 1986) to worsen over time.

Despite the conflicting results mentioned above, the bulk of research into the significance of type of family relationship in predicting burden suggests that marital relationships are more vulnerable to burden than parental relationships. For this reason, the present study will focus on the marital relationship exclusively.

The quality of the marital relationship following head injury in the spouse has been virtually ignored by previous researchers. An exception to this is Oddy et al. (1978), who reported few signs of marital disruption two years following head injury. It should be noted, however, that less than half of their sample (which included both men and women) were married (i.e. 20/50), and only 12 of these couples were included in the two year follow up. It is also unclear how marital disruption was measured in their study, thus generalizability of the
results reported by Oddy et al. is limited.

Little evidence is available concerning the divorce rate of wives of individuals who sustained severe brain injuries, although Panting and Merry (1972) did report a 40% divorce rate among their severely brain injured sample. Rosenbaum and Najenson (1976) compared this figure to the divorce rate among paraplegics which is reported in the literature to range between 7% and 39% (Guttman, 1973). Thomsen (1984) reported a considerably higher frequency of marital breakdown in her study of severely head injured patients 10-15 years after injury. While her findings are by no means conclusive because of the small sample size involved, it is interesting to note that of the eight patients married at the time of injury, seven had subsequently divorced. In each case emotional regression and/or lack of emotional control were cited by spouses as the reason for divorce.

It is likely that divorce rates, especially in the years immediately following head injury do not reflect the extent of marital dissatisfaction. As Lezak (1978) has asserted, brain injury can prolong an unhappy marriage by tying the caretaking spouse to the patient by bonds of guilt and fears of disapproval. To date the important issue of marital satisfaction following closed head injury has not been specifically addressed. The present study, by investigating marital satisfaction among spouses of the head injured aims to address this gap in knowledge.
1.4.4 **Relative's reactions as a function of time since injury**

A number of researchers have suggested that symptoms of stress among relatives of the head injured worsen rather than improve with time. For instance, the work of Brooks et al. (1983, 1986) and Thomsen (1974, 1984), suggest that not only does the relationship between relative's burden and the patient's personality increase over time, but that a greater number of personality changes are reported over time, especially in the year following head injury. The reasons for these findings are not clear. However, a number of explanations have been mooted.

Brooks and McKinlay (1983) suggest that relatives may cope decreasingly well with negative changes in the patient as time goes on. Alternatively, they may slowly become aware of the full extent of the changes in the patient which they may have previously coped with by denying. Romano (1974) observed the protracted persistence of denial of disability among the families of head injured patients. Similarly, Lezak (1981), speaking from clinical experience, noted that it may take months before friction and frustrations erode the family's pretraumatic perception of the patient. She believes that the vast majority of families are unprepared for the behavioral changes that accompany head injury, and noted that the reactions of unprepared families tend to be quite similar involving five distinct stages.
In **Stage 1**, the family is absorbed in helping the patient. They are so pleased that he/she is alive and home with them that should the patient exhibit any disagreeable behavior they are likely to dismiss it as fatigue or attribute it to his/her having been waited on for so long in hospital. By **Stage 2** relatives typically experience anxious bewilderment. Because many frontal lobe problems are subtle and difficult to verbalize, relatives often realize that the patient is "different but cannot put a finger on it" (Lezak, 1981 p.10). They may blame themselves, and try harder and harder to placate and cajole the patient. Between the sixth and ninth month **[Stage 3]**, the caretaker often becomes anxious, depressed and helpless as they realize that they cannot improve the situation, and slowly come to realize that the patient's behavior is probably not going to improve very much. For many, Lezak believes, full awareness of the patient's deficits and their chronicity **[Stage 4]** comes only after a year or more of misery. The final stage of active mourning in which the family learns to give up the hope that the person they loved will return, usually takes another six months to a year to resolve **[Stage 5]**.

Citing clinical impressions similar to those of Lezak, Rosenbaum and Najenson (1976) viewed the end of a year as a "moment of truth" when relatives review the patient's progress and must face the full implications of disability in the patient. While recovery has often slowed by this time, the hopes of a complete recovery may be
diminishing and serious problems in adjustment may be beginning.

Summary of findings/impact of CHI on relatives

The burden of assistance and supervision of the head injured is carried by relatives who are largely unprepared for the marked changes in temperament which typically accompany severe closed head injury. A small number of researchers have investigated the impact of head injury on relatives, and have reached largely consistent results. They have found that relatives tend to report a high incidence of depression, anxiety, and psychiatric dysfunction in the year following injury. Relatives have also been found to report social isolation up to 15 years after injury. Research tends to indicate that marital relationships are more vulnerable than parental relationships, and that the reaction of relatives changes over time, perhaps worsening toward the end of the first year.

1.5 Predicting the Severity of Spouse Stress

It is extremely difficult to predict which families will show most burden. Oddy et al. (1978 a) found that the level of stress reported by relatives did not appear to depend on how long the patient was in hospital, the degree of physical disability or even the severity of the head injury. They found that personality change and the relatives' own perception of the symptoms arising from the head injury emerged as more crucial factors.
Livingston (1985b) also found that measures of severity of injury (post traumatic amnesia, coma duration) were rarely significantly associated with the relative's outcome. They reported that the level of subjective complaints voiced by the patients was the best predictor of the relative's psychiatric and social status.

Similarly, Bond (1976) reported that, whereas the presence of a memory disability, a disorder of working capacity, and a change in leisure were all related to PTA duration, the presence of personality change, mental symptoms, changes in family cohesion and sexual activity were all unrelated to PTA. Thus it appears that the sequelae of head injury most likely to be associated with stress in relatives are not likely to be associated with the severity of injury (except of course in the most severe cases, where patients require long term custodial care).

Brooks et al. (1986) in a five year follow up study of patients suffering severe blunt head injury found that the extent to which patient outcome (as assessed by the relative) related to severity of head injury, diminished from the first year. While they found that simple severity of injury (as measured by PTA) was a predictor of burden in relatives at 5 years, the simplicity of their burden measure limits the usefulness of their findings.

Brooks et al. (1986) concluded that factors other than severity must become increasingly important to the prediction of burden in
relatives of the head injured as time progresses. Other researchers have speculated that among these factors are the type of family relationship (eg. Thomsen, 1974, 1984; Rosenbaum and Najenson, 1976), premorbid personality of the patient, personality change (eg. Brooks and McKinlay, 1983), and the personality of the relative (McKinlay and Brooks, 1984). These together with other possible factors which may predict stress in relatives and which have not been addressed in the literature to date (specifically role change and relative's social support) will be discussed below.

1.5.1 Personality of the patient

There is evidence that head injured patients do not comprise a random sample of the population, being typically young, male and prone to heavy drinking (Brooks, 1984). Nevertheless, there have been few serious attempts to examine premorbid personality status of the head injured patient in relation to outcome and to burden in their spouses following head injury. Brooks (1984) reviewed the available research and concluded that results (while seldom based on 'hard data') suggest that the patients with the least prepossessing personalities before injury may well show the greatest negative changes, with presumably the greatest resulting burden upon the family.

While little attention has been paid to premorbid personality, personality change, on the other hand, has emerged as crucial in predicting stress in relatives of the head injured (eg. Oddy et al., 1978;
Since London (1967) first drew attention to the distressing effects of head injury on the personality and emphasized the heavy burden this imposes on the patient's family, only a small number of researchers (Bond, 1975; Panting & Merry, 1972; Thomsen, 1974; and Brooks & McKinlay, 1983, and Oddy et al., 1978a) have examined the issue of personality change and its relationship to specific sequelae of head injury.

These researchers have, however, reached remarkably consistent conclusions. In the first instance, it has been consistently reported that mental changes in the patient following injury, especially personality changes, tend to cause families more difficulty than physical disability (Bond, 1975; Bond, 1976; Bond & Brooks, 1976; Brooks & Aughton, 1979; Thomsen, 1974; Oddy et al., 1978a,b; McKinlay et al., 1981). Symptoms of personality change most commonly complained of by relatives are irritability, hot temper, asponteneity, restlessness, and severe emotional regression (especially childishness and dependence) (Thomsen, 1974). These changes impose severe strain upon the relatives who have to deal with them.

Brooks and McKinlay (1983) attempted to determine which features of personality change are most strongly associated with burden on the relative of the head injured patient. They found that the relationship between relative's burden and the patient's personality
increases over time. At six months post trauma, aspects of personality change reflecting control of temper, social withdrawal, affection, lack of energy, cruelty and unreasonableness were all significantly higher in the relatives suffering greatest burden. By 12 months these features were joined by immaturity, insensitivity and changeability among those patients whose relatives suffered high burden. As discussed previously, a number of reasons have been postulated to explain the apparent worsening of personality changes and their effect over time.

Brooks et al. (1986) in a 5 year follow-up study found that the picture concerning burden on relatives 5 years after the accident was even worse than at one year. They found that both the relative's subjective burden scores, and their reports of negative and distressing changes in the patient, had increased over the 5 years. As late as 10-15 years post injury, Thomsen (1984) found that changes in behavior and personality continued to be the most serious burden reported by relatives of head injured patients.

In light of the fact that personality change has been consistently demonstrated to be more related to spouse burden than either severity of injury or physical disability, it will be used as an independent variable in the present study.
1.5.2 **Role Change**

It has been noted previously that marital relationships appear more vulnerable to burden following head injury than do parental relationships, although the reasons for this discrepancy are not clear. Thomsen (1974) speculated that the reasons underlying the difference in burden between marital and parental relationships were subtle. She felt that mothers were much better able than wives to accept behavioral changes in the patient, and pointed out that the role changes imposed by a head injury would be greater in marriage than in a parent-child relationship.

Rosenbaum and Najenson (1976) hypothesized that role changes within the family were related to depression in the wife. They noted that a number of wives in their study reported tension between themselves and their in-laws due to the over-protective attitude of the patient's parents, some of whom the authors suggest may have found the dependent behavior of the patient, if not gratifying, at least acceptable. Wives, however, found this dependent behavior unacceptable and stressful, and felt that they had to assume their husband's role in the family. They also expressed concern for the lack of a father figure at home.

Rosenbaum and Najenson (1976) also noted that brain injured husbands played a significantly lesser role in child rearing than either paraplegic or normal controls. In fact, they found that the severity of
the wives' depressed mood correlated highly with the degree of reduction in marital sharing in the care of the children, and with their perception of their husband's childlike dependency. Thomsen (1984) reported that, as late as 10-15 years after the injury, spouses continued to consider themselves the only grown-ups in the family.

It appears that wives suffer greater role change and greater role strain following head injury in their spouse, than parents whose roles as caretakers require little role shift from their traditional one. Perhaps it is for similar reasons that marked friction was found between patients and their siblings in the absence of friction between patients and parents (Oddy, 1984). Like spouses, siblings probably expect a more adult relationship with the head injured than do parents, and so are more affected than parents by increased dependency, and self-orientation which typically result from a head injury.

The only researchers to address roles within marriage empirically since Rosenbaum and Najenson (1976) are Livingston et al. (1985) who, while not addressing role change, assessed the social functioning of wives in a number of social roles in the year post injury using the Weissman Social Adjustment Scale. They found that marital and family unit functioning were significantly worse in relatives of the severely injured, while social role performance outside the home was less affected. It should be noted that while the Weissman scale (Cooper, Osborn, Gath & Feggetter, 1981) claims to assess social role
functioning, it could be argued that the questions do not actually assess role performance. For example, family unit functioning was assessed by questions such as "In the past two weeks, have you been worrying more than necessary about ..... your family". While such a scale has face validity as a measure of mood state, it is questionable whether it is an adequate measure of role function.

Despite the importance placed on role change by many authors in their discussion of the effects of head injury on the relatives of the patient (eg. Thomsen, 1974, 1984; Rosenbaum & Najenson, 1976; Lezak, 1978) there is a dearth of systematic research on this issue. Rosenbaum and Najenson (1976) are the only authors to measure role change following head injury and their study lacks generalizability for the reasons discussed previously, and due to the way role change was assessed in their study. In the first instance, the scale which they used to assess marital roles was quite old (Hurwitz Marital Roles Inventory, 1960), and the roles may not be applicable to contemporary married couples. Also, as the roles inventory required relatives to rank roles according to their perceived importance, it could be suggested that such a scale assessed wives' attitude to role importance rather than assessing role performance per se. As a consequence, much of Rosenbaum and Najensons's discussion regarding role change arises from their clinical impressions rather than from empirical evidence.

Role change would be expected to follow any serious injury,
especially those causing permanent disability, as a small number of studies have noted (e.g., Deutsch & Goldston, 1960; Carpenter, 1974; Klein, Dean & Bogdonoff, 1967). Because of the paucity of information regarding role change following head injury, these more general studies will be discussed briefly below.

As early as 1960, Deutsch and Goldston in a study of the home adjustment of severely disabled polio victims found that the patient's social role in the family prior to and after disability was the best predictor of home placement (as opposed to institutionalization). They found that young married adult males have the greatest problem, experiencing marked role conflict (in other words the gap between role prescriptions and role fulfillment was greatest for the disabled husband and father). They concluded that in light of the fact that "only the unusual family can accept a role reversal.... and allow the entire burden for supporting the family to fall on the wife; semi-institutional placement for the young husband may prove ultimately to ensure a more intact family for the children" (!) (Deutsch and Goldston, 1960, p316). While their conclusions obviously reflect the more rigid family roles of 1960, their discussion regarding role changes that follow injury and the role conflict that they produce for the spouse is just as relevant today.

Klein et al. (1967) investigated the impact of chronic illness and the role tensions it created upon the spouse. They found that 80% of
patients and 56% of spouses scored an increase in role tension during illness, and noted that role tension was significantly correlated with symptomatic status in both the patient and the spouse. They assert that the findings support their clinical impression that illness exerts a significant effect upon the 'well' members of the family. It does this by leading to role failure which results in psychological tension in the spouse, and eventually results in spouse illness.

Shellhase and Shellhase (1972), speaking from their clinical experience believe that stress among relatives of patients who suffer disabling injuries is unique because the patient and the family have minimal role preparation. Most stress is likely to occur when the patient returns home, given that in the hospital he/she can assume 'the sick role', and so be freed to some extent from familial role demands. Upon his/her return home considerable change in the role functioning of family members is likely, and these changes are likely to be accompanied by considerable stress as they require the accommodation of the reality of disability (often denied for some time by both the patient and his family).

Carpenter (1974) investigated the relationship between role change and disagreement in families with disabled husbands. He found that the degree of severity of the husband's disability affected the extent to which the husband assumes a changed role. He also noted a small trend of disagreement in homes where role change was greatest.
Unfortunately, these findings are limited by the lack of definition of sample (described simply as disabled), and by the failure to consider socio-emotional roles (eg. disciplining children, emotional support of spouse).

Performance of these emotional roles may be more important to wife's burden than the task oriented roles measured by the studies conducted by Carpenter (1974), and Rosenbaum and Najenson (1976). Researchers investigating the application of role theory to marital satisfaction (eg. Nye and McLaughlin, 1976; Brinley, 1975; and Chadwick, Albrecht, and Kunz, 1976), have found that partner's performance of the therapeutic (emotional support) role is related to marital satisfaction. Terry (1984) found support for their hypothesis that socio-emotional roles (eg. therapeutic and sexual role performance) were more related to marital satisfaction of both spouses than were task-oriented roles (eg. provider and housekeeper).

Summary of results regarding the significance of the type of family relationship and role change

To date, research into the significance of type of family relationship in predicting stress in relatives of the injured has produced inconclusive results, due at least in part to small sample sizes, and the reliance on clinical impressions rather than empirical data. Nevertheless, the majority of researchers have speculated that
the husband-wife relationship is less stable under stress following head injury than the parent-child relationship. It has been suggested that this difference relates to the greater magnitude of role changes experienced in the marital relationship. Despite the importance placed on role change by a number of authors, it has never been systematically and reliably investigated.

While it is possible that role shifts forced upon the wife by the disabilities of the injured husband contribute largely to family burden, more systematic study is needed to determine the nature of role change, its relationship to personality change in the husband, and to stress and symptomatology in the wives. Further, because role change is likely to follow any major trauma (especially if it results in physical disability), it is important that such research employ a well matched control group. Only by using a control group matched for severity of illness can role change associated with long term illness be differentiated from that which occurs as a result of the behavioral sequelae of closed head injury. Finally, it is necessary to include a variety of emotional and task-oriented roles, as socio-emotional roles, while highlighted in research into marital satisfaction have been overlooked in the head injury literature to date. The present study aims to address these problems.
1.5.3 **Social Support**

The importance of interpersonal relationships (specifically the support of one's social network) to the maintenance of emotional stability has been investigated by a number of researchers. They have defined social support systems as a set of presently significant others who are either members of one's social network (i.e., family or friends) or affiliated health professionals (e.g. clergy, physicians) (Hirsch, 1980). Henderson (1977) went further to specify that social support is that support gained from one's primary group, that is, those persons in an individual's social network with whom he/she has both interaction and commitment. The role of social support as a buffer when individuals encounter problems or difficulties has been repeatedly demonstrated (e.g. Cobb, 1976; Henderson et al., 1981).

More specifically, social relationships have been shown to serve a protective function against physical or psychiatric morbidity when people are faced with the challenge of adverse life experiences (Cassell, 1976; Cobb, 1976; Brown & Harris, 1978; Henderson, Byrne & Duncan-Jones, 1981). In other words, it has been found that supportive interactions among individuals protect against the health consequences of life stress, and in fact may facilitate recovery from illnesses (Cobb, 1976). Social network support has been reported to help an individual's ability to cope with job loss (Gore, 1974), life and job stressors impacting upon marriage (Burke & Weir, 1977), and life transitions.
(Hirsch, 1980).

A distinction has been made between intimate and more diffuse relationships. Brown, Bhralchain, and Harris, (1975), in a study of depressive illness in two groups of women, found that the most powerful moderator between severe adversity and the onset of psychiatric disorder was the presence of an intimate and confiding relationship with a husband or boyfriend. They found that a close relationship with a husband or boyfriend provided almost complete protection in the face of adverse life events or difficulties.

While supporting Brown et al.'s findings regarding the value of social support, Miller and Ingham (1976) using a general practice population, went on to suggest that not only the presence of a confidant but also the presence of more diffuse relationships protected against neurotic symptoms. Their study examined the association between social support and the severity of psychological and physical symptoms. In support of Brown et al.'s findings, they noted that women reporting the lack of an intimate confidant suffered more severe psychological symptoms than those with a confidant. They went on to note that the absence of many casual, less intimate friends was also associated with higher symptom levels (both physical and psychological). Their findings suggest that the presence of friends had a compensating function for those who lacked an intimate, confiding relationship.
The direction of causality remains in question in the majority of social support research. While studies such as the one conducted by Brown et al. (1975) appear to suggest causality, specifically that lack of social support leads to physical and psychiatric morbidity, it is possible that the absence of social bonds may be secondary to morbidity, not causal (Henderson, 1977). Henderson (1984) points out that personal networks are not static structures, but rather change their properties with major life events such as bereavement or relocation, and with the onset of psychiatric or physical illness. He maintains that, although the overlap between life events and the loss of social support appears obvious, it has largely been ignored in studies of the buffering effect of social support on adversity. He believes that this is of particular concern because life-event research has tended to indicate that persons with high life-event exposure will tend also to have recent losses of social support.

Social support and psychiatric morbidity among spouses of the head injured

As discussed previously, closed head injured patients are rarely able to maintain social relationships (Weddell et al., 1980), and tend to complain of social isolation (Thomsen, 1984). More recently, it has been noted that the head injured report deficient availability of both intimate and diffuse relationships (Elsass & Kinsella, 1987), and that the lack of an intimate confiding relationship is associated with
depression among the head injured (Kinsella et al., 1988). In light of
these findings regarding the head injured themselves, it would be
expected that lack of social support may also be an important predictor
of stress in relatives of the head injured. Social support among
relatives, however, has not been investigated.

As has been noted previously, relatives of the head injured have
reported feeling lonely and isolated up to 15 years post injury
(Rosenbaum & Najenson, 1976; Thomsen, 1984). It is likely that the
relatives lose many of their social relationships following head injury
because the head injured patient's post injury behavior is often
unacceptable in social situations. As a consequence, relatives may
withdraw from such interactions. Also, as the head injured patient
may be very demanding, relatives may feel compelled to stay at home
to care and supervise them, rather than maintain their own social
network.

Wives of the head injured are likely to suffer greatest problems.
It is probable that the loneliness referred to by wives of the head
injured relates to changes in their marital relationship, as much as it
does changes in outside social contact. As mentioned previously, it has
been consistently reported that wives of the head injured often feel
that they are the only grown-ups in the family (eg. Rosenbaum &
Najenson, 1976). As a consequence of the personality changes which so
often accompany head injury (especially increased childishness,
dependence and egocentricity), head injured husbands are likely to cease to be a confidant for their wives, and so remove from them the buffer against psychiatric morbidity in the face of life stress described in the literature.

To summarize, the amount and quality of social support available to wives following their husband's head injury, especially the presence of a close confiding relationship and its relationship to morbidity, are important issues which have not yet been addressed. Both of these issues will be investigated in the present study.

1.5.4 Personality of the Relative

Little attention has been paid to the role of the relative's personality characteristics in determining how they perceive and how they cope with stress arising from head injury in a spouse. McKinlay et al. (1981) cautioned that a direct causal relationship cannot be assumed between reported changes in the patient and the stress the relative suffers and attributes to these changes. They noted that an interplay may exist between the stress in the relative and the relative's observation of the patient, with their observations being coloured by the degree of stress experienced.

Similarly, Klein et al. (1967) in their discussion of the impact of chronic illness upon the spouse, noted that spouses who report high role tension in themselves also reported high symptomatic levels in the patient. They suggested that this may reflect either that greater
symptomatic distress of the patient causes more emotional tension in
the spouse, or that high emotional tension in a spouse (from whatever
cause) makes them more sensitive to symptoms in the patient.

More recently McKinlay and Brooks (1984) addressed this
question in a study designed to determine whether the relative's
personality will influence their perceptions of changes in the head
injured patient. They hypothesized that neuroticism would be related
to high stress experienced by relatives. This was found to be the case,
and while the extent of influence of personality was not overwhelming
their findings highlight the need for caution in drawing causal
inferences in burden studies.

The only other researcher to investigate the personality of the
relatives of head injured patients, was Buxbaum (1967) who examined
the effect of the personality variable of nurturance on wife's
appraisals of their marital satisfaction and the degree of their
husbands aphasia. Buxbaum found that high nurturance was associated
with measures of marital satisfaction among wives of aphasic men.
The hypothesis that wife's nurturant needs were related to a positive
bias in the perception of their husband's speech impairments was also
supported. Buxbaum concluded that high nurturance seems to be an
asset to wives whose husbands have sustained a disability, whereas
wives who are low in nurturance seem to have more difficulty coping
with the changes caused by their husbands' impairments. These
findings may not be directly applicable to the closed head injured population, whose personality changes are likely to cause more interpersonal conflict than the changes associated with aphasia, and which may affect their capacity to accept nurturance and the desire of the spouse to respond in this way.

Buxbaum's findings may well reflect the fact that wives high in nurturance (who view their spouse as in need of care and nurturing) suffer little role change following their husbands head injury - in fact have their role strengthened and legitimized. For the same reason, parents (accustomed to the caretaking, nurturant role), may experience less role change following head injury in their son. Wives not high on this variable would be likely to experience great role change and role strain when faced with a husband who needs or demands such care and nurturing. As such Buxbaum's findings may simply reflect the ability of the wives to cope with change, rather than provide evidence that her level of nurturance predicts outcome.

As mentioned previously, Jennett and Teasdale (1981) in their discussion of the reactive affective symptoms which may be present in patients following head injury, commented that the ability to adapt and cope with new environmental stresses is important to the patient's psychiatric outcome. They noted that it is these very mental capacities that head injury most consistently affects. Adjusting one's whole lifestyle to a sudden and catastrophic change is always
difficult, and it is likely that the *spouses* ability to adapt to the changes following head injury will predict her levels of stress and reactive symptomatology.

It could be proposed that the spouse's tendency to be adaptable and flexible rather than rigid in response to the changes which follow head injury will be associated with their reactions to these changes. In the present study the personality variable of adaptability/flexibility will be explored as a possible predictor of spouse burden.

1.6 Methodological inadequacies of head injury research

Research to date regarding psychosocial outcome of head injury for both patients and relatives has been characterized by methodological inadequacies and inconsistencies which render the findings of these studies inconclusive. The most common methodological flaws relate to inadequately defined samples, the use of poor measures, and inadequate control groups.

1.6.1 Definition of sample

Samples have tended to be poorly defined in terms of both demographic and injury variables. For instance, some studies have failed to report the mean age of their sample (eg. Rosenbaum & Najenson, 1976), making comparisons with other studies difficult. Further, results are rarely broken down to enable comparisons which specify sex, age, type of family relationship and marital status of
relatives. Employment status of patients and relatives and socio-economic variables are rarely detailed.

While the majority of studies include a measure of severity of injury, these are not uniform (ranging from clinical impressions of severity, to duration of loss of consciousness, coma and PTA duration), and precise methods of making these assessments are often not provided (eg. Oddy et al., 1978b). Because methods of measuring severity are so varied, they need to clearly specified.

Criteria for subject selection varies considerably from study to study, and has generally been poorly described. Many studies have examined quite heterogenous groups of head injured patients, often including both penetrating wounds as well as closed head injuries (eg. Rosenbaum & Najenson, 1976; Bond, 1976). Because sequelae differ greatly depending on site and extent of injury, it is difficult to assume that head injured patients are a homogenous group.

1.6.2 Quality of measures

The quality of measures of psychological and social functioning has generally been poor (Godfrey et al., 1987). Many of these measures have not been standardized, and often comprise a single item (eg. Bond's 1976 measure of family cohesion; and the subjective stress scale of Brooks and McKinlay, 1983). In contrast, only a small number of studies have employed widely used and accepted assessment measures (eg. GHQ - Kinsella et al., 1988; Leeds Scales for Anxiety and

These scales have the added advantage of offering norms for general community samples, and if future research continues to use such measures, comparisons between studies will become possible.

1.6.3 **Control Groups**

As previously noted, unless an appropriate control group is included it is simply not possible to identify changes in the functioning of either patients or their relatives which are uniquely associated with closed head injury. The majority of the earlier studies into the psychosocial outcome of head injury, and the impact of head injury on the patient's relatives have not employed control groups (for instance Oddy et al., 1978; Brooks and McKinlay, 1983; Brooks et al., 1986; Thomsen, 1974, 1984).

When control groups have been used they have tended to be poorly matched. Some studies have compared a head injured population with a 'matched' sample of non head injured people (eg. Elsass & Kinsella, 1987). Others have chosen other injured populations. For instance Oddy et al. (1978b) compared a group of severely head injured patients with patients who had suffered traumatic limb fractures. More recently, Livingston et al. (1985a,b) employed a control group of men who had sustained mild head injuries. While these injured groups may be drawn from the same 'at risk' population, the injuries are relatively mild and their effects short term.
A suitable control group must come from a similar 'at risk' population (i.e., over-representation of young males from lower socio-economic backgrounds) as the head injured. Further, control subjects should have sustained a life threatening traumatic injury, which results in significant disability and the associated re-evaluation of life plans (McKinlay & Brooks, 1984).

Severe spinal injuries (e.g., paraplegia) form the most promising control group. McKinlay and Brooks (1984) caution that a number of between group differences may still cause problems (e.g. better rehabilitation for spinal patients; the fact that disability of spinal patients is sometimes quite final which is likely to make adverse psychological reactions more acute than those of the head injured). Nevertheless, spinal injuries would still appear to more adequately satisfy the requirements for an appropriate control than any other patient group.

1.7 Rationale and Hypotheses of the Present Study

It has been consistently found that the personality changes which result from closed head injury produce greater stress in caretaking relatives (especially spouses), than do physical disabilities or cognitive impairments. It is not clear, however, why this is the case and why spouses are more at risk of developing stress symptoms than are caretaking parents. Despite the importance placed on role
change by a number of researchers, role change has not been systematically analyzed.

The present study aims to address this gap in knowledge by investigating the relationship between personality change and role change following head injury, and symptomatology in wives. It is hypothesized that the personality changes which follow closed head injury produce greater stress than do physical disabilities because of the role changes which accompany them. It is further hypothesized that certain types of role change (specifically those concerning socio-emotional roles) will be more related to personality change and to spouse morbidity than will task-oriented role changes.

Studies to date have demonstrated that it is extremely difficult to predict which relatives will suffer greatest burden as this does not appear to be related to severity of injury. While it has been suggested that the personal characteristics of the relative may influence both their perception of the patient’s symptoms and subsequent stress, only two studies have addressed this issue, and their findings are largely inconclusive. In keeping with the hypothesis that amount of role change is an important predictor of burden among the spouses of the head injured, it is likely that personality variables which mitigate perception of and reaction to role change are likely to be related to spousal symptomatology. Such a personality variable is flexibility/adaptability, and it is assessed in the present study.
Finally, in view of the fact that the role of social support (especially the presence of a confiding relationship) as a buffer against the health consequences of life stress has been widely demonstrated; the present study will assess the amount of social support available to wives of the head injured as a possible predictor of their psychological health. It is likely that the personality changes which accompany head injury (especially increased childishness and egocentricity) may render the husband incapable of fulfilling the role of confidant for his wife, and so remove from her the buffer against psychiatric morbidity in the face of life stress described in the literature. The relationship between husband's personality change, the availability of a confidant as reported by wives, and the burden and symptomatology which she reports will be analyzed in the present study.

To overcome the problems of generalizing from the one item, unspecified or little known scales which have often been used to assess impact of head injury on the patient's relatives, the present study will use a variety of well known measures to assess wives' well being. Specifically, burden, anxiety, depression, somatic symptomatology and marital satisfaction will be assessed. The investigation of marital satisfaction among spouses of the head injured in the present study, addresses a gap in the literature to date. While a small number of studies have attempted to determine divorce
rate following head injury, no study has systematically analyzed marital satisfaction. In light of the possibility that brain injury can prolong an unhappy marriage, tying the spouse by bonds of guilt, it is likely that many women are dissatisfied with their marriage following their husband's head injury, but stay with the marriage perhaps at the expense of their own psychological health. The present study will assess wives' marital satisfaction following their husband's head injury, and compare this with the magnitude of their husbands' personality change, and with marital role change.

In an attempt to further redress the methodological problems of previous studies, the present study will attempt to clearly define the head injury group, especially in regard of type of injury and severity. As the present study will rely solely on wife's reports of personality change in their spouse following head injury, it will not include couples less than a year following injury. This is to safeguard against the possibility of protracted denial following injury, and to survey women only when the chronicity of their husband's condition is evident.

A major shortcoming of literature to date relates to inadequate control groups. The present study had taken care to use men who have sustained spinal injuries as a control group so that the relative effects of physical disability and personality change on role change, marital satisfaction and spouse stress can be identified. As the personality changes which follow head injury have been consistently found to be
more deleterious to the well being of relatives than the physical sequela of head injury, it is expected that on all measures employed in the present study, the wives of closed head injured men will report more distress than the wives of spinal cord injured men.

To summarize, the present study aims to determine whether a relationship exists between husband's personality change following closed head injury, marital roles, marital satisfaction and the psychological health of their spouse. It is also hoped to discover whether other factors such as wives' personality (specifically her adaptability), and the extent of her social support network are related to her adjustment to change in her husband following closed head injury. Finally, the relative importance of task-oriented role change, as opposed to socio-emotional role change in predicting spouse burden and symptomatology will be studied.

**HYPOTHESES**


1. Wives of closed head injured men (CHI) will report more personality change in their husbands than will wives of spinal cord injured men (SCI).
2. Wives of CHI will report greater subjective burden than will wives of SCI.
3. Wives of CHI will report more symptomatology than will wives of SCI.
4. Wives of CHI will report less marital satisfaction than wives of SCI.
5a. Wives of CHI will report more role change than will wives of SCI.
5b Type of role change will be different for CHI than for SCI. While task oriented roles will change in both groups; wives of CHI will also report a change in socio-emotional roles, and will report this latter change more often than will SCI.

6 Wives of CHI are less likely to report that their husband's are their confidants than are SCI.

[B] Hypotheses concerning inter-relations

7 Personality change will be positively correlated with burden, anxiety, depression and symptomatology in the wives; and negatively correlated with marital satisfaction.

8 a Role change will be postively correlated with personality change.

8 b Role change will be positively correlated with burden, anxiety, depression and symptomatology, and negatively correlated with marital satisfaction.

8 c Socio-emotional role change will be a better predictor of well-being than will task-oriented role change.

9 Social support, especially the presence of a confidant will be negatively correlated with burden and symptomatology, and positively correlated with marital satisfaction.

10 Flexibility will be negatively correlated with subjective burden and with symptomatology, and postively correlated with marital satisfaction reported by wives.
CHAPTER 2

METHOD

Overview of Design

The present study compared the responses of two groups of wives whose husbands had suffered severe injuries at least one year prior to interview. The husbands of the first group had suffered severe closed head injuries, while those of the control group had suffered spinal injuries of comparable severity. The women were surveyed by means of a questionnaire covering a variety of areas including demographic details of both the husband and wife, information regarding the husband's accident, their personality change since the accident, symptomatology and adaptability of the wife, marital satisfaction, social support, and marital role change.

2.1 Subjects

2.1.1 Sampling Procedure

*Wives of Closed head injured men (CHI/w).* The wives of closed head injured men were married to patients who satisfied a number of criteria. The criteria were that the men should:

(1) Be aged between 20 and 50 years;

(2) Have sustained a severe closed head injury (defined as a closed head injury resulting in post traumatic amnesia† of more than 24 hours duration);
(3) Have sustained the closed head injury between 12 and 36 months prior to being surveyed;

(4) Have not sustained multiple injuries which resulted in residual physical disability;

(5) Have been married or in a stable relationship at the time of the accident, and remain in that relationship at the time of the survey;

Patients who met the above criteria were nominated by the Neuropsychology department of a large metropolitan teaching hospital (Westmead Hospital which serves a large part of western Sydney and country NSW). A measure of post-traumatic amnesia (PTA) had been recorded for each patient by the hospital's Clinical Neuropsychologist and was available on the patient's medical file.

The medical, neuropsychology, and social work files of these patients were examined to determine whether the patients were married. Consequently, while the sample cannot be considered exhaustive, it is likely that most potential subjects were identified. In two cases the Clinical Neuropsychologist denied access to

†Post Traumatic Amnesia (PTA) is a distinguishing feature of closed head injury, and represents the interval between the injury and the time at which the patient is able to store and retrieve new information. This measure arises from the observation that the last recognizable function to return during recovery from coma is anterograde (on-going) memory (Russell & Nathan, 1946), and that this recovery to full consciousness is correlated with the severity of brain damage.
potential subjects, because it was felt that the survey could interfere with ongoing therapy. In a further three instances, it was found that addresses available through medical records were no longer current. Of the remaining sample of 22, one woman decided not to participate in the survey, and another failed to return the questionnaire. Thus, the final sample consisted of 20 women.

_Wives of Spinal Cord Injured Men (SCI/w)_. The second sample was comprised of _women_ married to men who satisfied a number of criteria. The criteria were that the men should:

1. Be aged between 20 and 50 years;
2. Have sustained a severe spinal injury (nominated as 'severe' by the Director of the referring Spinal Unit, all were to be either quadraplegic or paraplegic);
3. Have sustained the spinal injury (through trauma rather than illness) between 12 and 50 months prior to being surveyed††;
4. Have not sustained a head injury;
5. Have been married or in a stable relationship at the time of the accident, and remain in that relationship at the time of survey.

†† Because of difficulties in finding enough suitable subjects in the spinal group to compare with the head injured sample, the criteria was changed to include men whose accidents were between 12 and 50 months prior to the survey. No significant correlations were found between the time since injury and the wives' symptomatology in either sample.
Subjects who met the above criteria were nominated by the Director of the Spinal Unit at a large metropolitan teaching hospital (Princess Alexandra Hospital, which serves both Brisbane and country QLD). A total of 25 patients were nominated by the Director as being suitable for inclusion in the study; the wives of 20 of these returned their questionnaires. Two of the spouses were not included in the sample. In the first case, the patient had developed a brain tumour, while the injury of the second was found to have arisen from a pre-existing degenerative spinal condition. Thus the final sample size for the spinal group was 18.

2.1.2 Sample Characteristics

The characteristics of the women and their husbands in each of the two survey groups will be outlined separately, following which the comparability of the two groups will be discussed in both textual and tabular form.

Wives of Closed Head Injured men (CHI/w)

Wives in the Closed Head Injured sample. Group 1 consisted of 20 women whose husbands had sustained severe closed head injuries. The women in this group ranged in age from 22-45 at the time of their husband's accident (M = 32.5; S.D. = 7.58). Half of the women had completed 10 years or less of formal education, a further 40% (8/20) had completed Year 11 or 12 of high school, while two women had completed further education. Mean education level was 10.9 years
At the time of the survey, ten of the wives were full time housewives. Of the remaining 10 women, seven were engaged in full time employment; the remainder worked part time. Five of the 20 women in the CHI/w group had altered their employment status following their husband's injury; one (previously a housewife) had taken up employment, a further three had ceased working, while two others had decreased the number of hours they worked. The women employed at the time of the survey were working in a variety of technical, clerical, skilled and unskilled occupations. There was an equal representation of these different occupational categories.

Years married at the time of the accident ranged from less than one year to 26 years, with the average being 10.5 (S.D. = 7.0). All but three of the women (17/20) had children at the time of survey (mean number = 2.1; S.D. = 1.21), most of whom were of primary school age (mean age = 8.69; S.D. = 5.78; mode = 6).

Husbands in the head injured group ranged in age from 23 to 48, with the average age being 35.6 years (S.D. = 7.9). The majority of husbands in the sample had completed Year 10 or less (12/20), six had completed Year 11 or 12, and two had undertaken tertiary studies. Mean educational level was 11.3 years (S.D. = 2.9). All were employed at the time of the accident, most were involved in skilled or semi-skilled employment (9/20). At the time of the survey, half of
the injured men had returned to work, while the remaining were
either unemployed or involved in ongoing rehabilitation programs. Of
the patients who had returned to work, most were working full-time
(8/10); however, two were only working part-time, while the duties
of an additional two had been downgraded since the accident.

Most of the men had sustained their head injuries in motor
vehicle accidents, while others were injured in falls, assaults or
accidents at home.

A breakdown of the sample according to severity of injury is
presented in Table 2.1, and demonstrates that the sample primarily
consisted of women whose husband's had sustained "very severe"
injuries. Time since injury ranged from 12 months to 33 months with
the average being 20.7 (S.D. = 7.8).

Table 2.1

<table>
<thead>
<tr>
<th>Severity of Closed Head Injury of the Sample as measured by PTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe (1-7 days)</td>
</tr>
<tr>
<td>Very Severe (1-4 weeks)</td>
</tr>
<tr>
<td>Extremely Severe (&gt; 4 weeks)</td>
</tr>
</tbody>
</table>
Wives of Spinal Cord Injured men (SCI/w)

Wives in the SCI/w group. The second group consisted of 18 women whose husbands had sustained a severe spinal injury. The women ranged in age from 20-41 at the time of their husband's injury, with the average age being 30.83 (S.D. = 6.79). Most of the women (67%, i.e., 12/18) had completed 10 Years or less of formal education, while the remainder (7/18) had completed Year 11 or 12, there were no subjects that had completed tertiary studies. Mean educational level of the women was 10.2 years (S.D. = 0.97). Most of the women (78%) were housewives at the time surveyed (see Table 2.2). Of the remaining four women, only one was involved in full time work. Six of the 18 women had altered their employment status following their husband's injury, with four ceasing work, and two decreasing their work hours. At the time of their husband's injury, eight of the 18 women were employed at least part of the time, half of these (4/18) were in unskilled occupations, the remaining four women worked in either clerical or skilled occupations.

Years married at the time of the accident ranged from less than one year to 22 years, with the average being 9.9 (S.D. = 7.5). All but one of the women (17/18) had children at the time of survey (mean number = 1.9; S.D. = .83). As there were a small number of adults in this group (over 18 years), the mean for the sample is high, M = 10.84;
S.D. = 7.99. Most of the children in the SCI/w group were, in fact, in early childhood (0-5 years) (mode = 4) (See Table 2.3).

*Husbands in the SCI/w group* ranged in age from 22 - 48, with the average age being 34.8 years (S.D.=8.1). The majority of husbands had completed Year 10 or less (14/18), three had completed Years 11 or 12, while one had undertaken tertiary studies. Mean educational level of the men was 9.8 years (S.D. = 0.97). All were employed at the time of the accident; most were involved in skilled or semi-skilled occupations. At the time of the survey 61% (11/18) were not working and had not worked since the accident. Of the seven who had returned to work, four had altered duties or changed jobs since their accidents.

Most of the men had sustained their spinal injuries in motor vehicle accidents (11/18), as outlined in Table 2.4. As mentioned previously, the spinal patients were nominated as 'severe' by the Director of the Spinal Unit, who was familiar with the severity criteria of the CHI group and believed that the spinal sample chosen were of comparable severity. Half (9/18) of the final sample were paraplegics and half were quadraplegics. Time since injury ranged from 12 months to 50 months with the average being 28.6 (S.D.=15.2).
Table 2.2
Occupation at time of injury

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Sample</th>
<th>CHI</th>
<th>SCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>husbands</td>
<td>wives</td>
<td>husbands</td>
<td>wives</td>
</tr>
<tr>
<td>[1] Professional/Managerial</td>
<td></td>
<td>3(15%)</td>
<td>2(11%)</td>
</tr>
<tr>
<td>[2] Technical/ Semi-Prof.</td>
<td></td>
<td>2(10%)</td>
<td>1(6%)</td>
</tr>
<tr>
<td>[3] Clerical/Sales</td>
<td></td>
<td>4(20%)</td>
<td>3(17%)</td>
</tr>
<tr>
<td>[4] Skilled/Semi-Skilled</td>
<td></td>
<td>9(45%)</td>
<td>8(44%)</td>
</tr>
<tr>
<td>[5] Unskilled</td>
<td></td>
<td>2(10%)</td>
<td>4(21%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Home duties</td>
<td></td>
<td>0</td>
<td>9(45%)</td>
</tr>
</tbody>
</table>

Table 2.3
Number and Age of Children

<table>
<thead>
<tr>
<th>Number of children</th>
<th>Age of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children</td>
<td>Age of children</td>
</tr>
<tr>
<td>CHI</td>
<td>SCI</td>
</tr>
<tr>
<td>SCI</td>
<td>CHI</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1 or 2</td>
<td>9</td>
</tr>
<tr>
<td>3 or 4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>
### Table 2.4

**Comparison of causes of Injury in each group**

<table>
<thead>
<tr>
<th></th>
<th>CHI</th>
<th>SCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor bike/motor car accidents</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Falls</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Assaults</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Home/Work</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table 2.5

**Time since injury**

<table>
<thead>
<tr>
<th></th>
<th>CHI</th>
<th>SCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-23 months</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>24-35 months</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>36-48 months</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>
2.1.3 **Comparability of the two groups**

Wives. The two groups of wives were not significantly different in terms of age, $t(36) = 0.71$, NS. There was also no significant difference in the mean level of education ($t(36) = 1.4$, NS), with the majority of women in both groups completing year 10 or less. A visual inspection of the data suggests that women in the spinal group were more likely to be housewives when surveyed than women in the head injury group (see Table 2.2), but this difference failed to reach statistical significance, $X^2(1) = 3.14$, NS. There was, however, a significant difference between the number of women in each group employed in full time work at the time of survey with seven of the wives in the CHI/w group employed full time compared to only one of the wives in the SCI/w group, $X^2(1) = 4.94$, $p < .05$. Further analysis, compared the well-being of CHI/w who were employed full time with that of CHI/w who were not employed. This analysis revealed no differences in burden, symptomatology or marital satisfaction as a function of employment ($t$ values ranged from $t(15) = .075$, NS., for marital satisfaction; to $t(15) = -1.78$, NS., for the somatic symptoms scale).

No difference was found between the two samples in regard to the average number of years married at time of accident, $t(36)= 0.25$, NS. As noted in Table 2.3, the majority of children in both groups were
primary school age or younger (78% of CHI group, and 60% of SCI group). No differences were noted between the two groups in relation to either number of children ($t (36) = .62, p > .05$ NS), or age of children ($t (74) = -.358, NS$).

**Husbands.** The two groups of husbands were not found to be significantly different in relation to age, $t (36) = 0.33, p = .74$. The average level of occupational status did not differ for the two samples, $(t(36) = -0.89, NS)$. Similar levels of employment and unemployment are found in each sample ($X^2=0.47, NS$). No significant difference was found between the two groups with regard to the mean level of education ($t (36) = 1.9, NS$)

No significant differences were found between the samples with regard to the cause of injury. The majority of injuries in both groups resulted from motor vehicle and motor bike accidents, $X^2 (1)=0.85, p > .05$. (see Table 2.4)

While there was a significant difference between the average time since accident for the two groups, $t (36) = -2.054, p<.05$; it should be noted that the distribution of the variable in the spinal sample was skewed, with no subjects in the middle time range (ie. 24-35 months) (See Table 2.5). For this reason, the median time since injury was calculated for each group, and these were found to be quite similar; 20 months in the head injury group and 22 months in the spinal group. A
median test failed to reveal a significant difference between the two groups, $X^2(1) = 0.99$, NS.

### 2.2 Measures

Measures used in the questionnaire referred to wives' subjective burden, symptomatology, and marital satisfaction; her perception of her husband's personality change and of marital role change, social support, and finally, her adaptability. The questionnaire is presented in full in Appendix B.

Reliability of a scale was assessed in the present study using Cronbach's coefficient alpha (Cronbach, 1951).

#### 2.2.1 Subjective Burden

Subjective burden of the wives was assessed by asking them to rate the degree of strain that was experienced as a consequence of changes in their husbands following injury. This measure was adapted from Brooks and McKinlay (1983). A seven point analogue scale was used ranging from 1 - "no strain" to 7 - "severe strain, with 4 marked "moderate strain" (see Appendix B).

#### 2.2.2 Symptomatology of Wives

Three separate self report scales were used to assess symptomatology of wives; (1) The General Health Questionnaire (GHQ), (2) The Delusions, Symptoms and States Inventory (DSSI-Sad), and (3) The Somatic Symptoms scale of the Symptom Check List. The first
scale was used to provide a score of general psychological health, and is well documented as a useful screening test. The second was used in conjunction with the GHQ because it differentiates between depression and anxiety, and also because this differentiation allows for comparison between the present study and previous research in the head injury literature (eg. Rosenbaum & Najenson, 1976; Livingston, Brooks & Bond, 1985). Further, unlike the GHQ which measures changes in symptomatology, the DSSI-sAD asks respondents about their current mood states only. By limiting its focus to current symptomatology, the DSSI-sAD, assesses both chronic and acute symptoms. Lastly, the Somatic Symptoms scale was used to determine if the subjects were suffering from physical ailments associated with stress.

1) General Health Questionnaire (GHQ - 30 item version, Goldberg, 1972)

The GHQ is a self administered questionnaire which is widely used as a screening measure of non-psychotic psychiatric disturbance among community samples. Scores above a recommended cutting point (5) are taken as evidence of psychiatric illness (that is, considered suitable for treatment if seen by a psychiatrist), and are labelled 'cases' (Goldberg, 1972). An Australian clinical validation study found that the misclassification rate for the 30 item version of the scale was 7.5% (Tennant, 1977). The same study found that the proportions of clinical cases, and non-cases correctly identified by the scale were
86.5% and 90%, respectively. Similar results have been found in English validation studies (e.g., Goldberg, 1972), and such results provide evidence for the validity of the scale. Goldberg (1972), reported that the split half reliability coefficient for the 30 item version of the GHQ was 0.93. He found a test-retest reliability coefficient of 0.78. Reliability (as measured by Cronbach's alpha) for the present sample was 0.96.

The scale can also be used to assess the severity of an individual's psychiatric disturbance, as indicated by their total score (Goldberg, 1972; Kinsella et al., 1988). While still valid, the scale is less efficient as an index of severity, with correlations between clinical psychiatric ratings of severity and subjects' scores on the GHQ ranging between 0.73 and 0.76 (Tennant, 1977).

In the present study the GHQ-30 was used both as a severity measure, and as a means of differentiating between cases and non-cases. The Australian adaptation of the 30 item scale, as constructed by Henderson, Byrne and Duncan-Jones (1981), was used for these purposes.

2) Delusions Symptoms and States Inventory (DSSI)/Anxiety (DSSI-a) and Depression (DSSI-d) Scales

To obtain separate scores for anxiety and depression, the Personal Disturbance Scale derived from the Delusions, Symptoms and States Inventory (DSSI-sAD) was used (Bedford, Foulds & Sheffield,
The Personal Disturbance scale is a self-report measure consisting of seven anxiety items and seven depression items. The measure focuses on recent symptomatology. Bedford et al. (1976) have claimed that it is uncontaminated by personality attributes, and that it is an economical and efficient instrument for detecting psychological disturbance in the general population. They found that the correlation between the DSSI/sAD scores and psychiatric ratings of their validation sample was 0.39 \((p<.01)\). While the scale has not been previously used in the head injury literature, it was believed to be the best choice for the present study because of the availability of Australian norms for a general population sample (Henderson et al., 1981). Reliability (as measured by Cronbach's alpha) for the present sample was found to be 0.96 for the total scale, and 0.91 and 0.92 for the anxiety and depression subscales respectively.

3) Symptom Check List (SCL-90) /Somatic Symptoms Scale

The somatization scale of the SCL-90 (Derogatis, 1977) is a self-report scale made up of 12 items which reflect distress arising from the perceptions of bodily dysfunction. Norms are available for both clinical and community samples. As with the DSSI-sAD, it has been found to be particularly useful in detecting chronic illness (Goldberg, Rickels, Downing & Hesbacher, 1976). Cronbach's alpha reliability coefficient for the current sample was 0.9.
2.2.3 Marital Satisfaction

The 10-item marital satisfaction scale developed by Bahr, Chappell, and Leigh (1983) was used in the present research. These researchers reviewed existing scales of marital satisfaction, and identified 10 items which appeared to be reliable indicators of the concept. They reported that all of the items had factor loadings greater than 0.6 on a single scale indicating that the items measured one dimension. Reliability of the scale was high, with theta being 0.89 and 0.91 for the husbands' and wives' scales respectively (Bahr et al., 1983). Reliability estimates for the present study were also high, the alpha coefficient for the scale being 0.90.

A 5-point scale accompanied each item with 1 indicating agreement with the statement and 5 indicating disagreement. The scale contained four reverse-scored items.

2.2.4 Husband's Personality Change

Brooks and McKinlay's (1983) personality adjective checklist was administered twice to assess personality change. The list consisted of 18 bipolar adjectives presented in a 6-point analogue scale. In the first presentation, the woman was asked to rate her husband as he was before the accident, while the second presentation asked her to describe the current status of her husband.

For each subject, a personality change score was calculated by determining the difference between the before accident and after
accident ratings for each of the 18 personality variables. For each subject, the mean of the resulting 18 change scores was determined, and labelled the "average personality change" for that subject. As it was believed that the presence of absolute personality change was more important than the direction of that change, the personality change score was based on absolute, rather than signed difference scores.

Although the scale has been used a number of times previously (eg. Brooks & McKinlay, 1983), no reliability measures have been published. In the present study the scale was found to have very high reliability (Cronbach's(1951) alpha coefficient = 0.93).

2.2.5 Marital Role Change

The family role paradigm developed by Nye and Berardo (1973) was used to conceptualize marital roles in the present study. This paradigm delineates ten roles as being relevant to the marital situation: the provider, housekeeper, sexual, recreation, therapeutic (emotional support), maintenance, child-care, child socialization, decision-maker and kinship (keeping in touch with relatives) roles. These roles can be grouped into two categories, socio-emotional and task-oriented roles (Terry, 1984). The socio-emotional roles are the therapeutic, child socialization, recreation and sexual roles, while the task-oriented roles are the provider, housekeeper, child-care, decision maker and kinship roles.
Role change was assessed by presenting a list of role tasks twice. Wives were asked on the first presentation to note who performed each household task before the accident, and on the second presentation to note who currently performed each task. A 5-point response scale was used for each item: (1) 'Woman always', (2) 'Woman more than man', (3) 'Man and woman equally', (4) 'Man more than woman', and (5) 'Man only'.

A change score for each role was determined by finding the absolute difference between the after accident and before accident ratings of marital role performance. In order to avoid a loss of information regarding those roles which were marked as not applicable either before or after the accident, role change was rated as two in these cases, because it was believed that the disappearance or commencement of a role represented a significant change. A role was designated as having changed if the change score was two points or more. The total role change for each subject was then designated as the total number of changed roles (maximum = 10). Role change was further divided into Socio-Emotional (SE) and Task (T) role change, each subscale consisting of 5 items.

The alpha coefficient for the composite role change scale in the present study was 0.71. The alpha coefficients for the socio-emotional and for the task-oriented role change scales were 0.61 and 0.53 respectively. The correlation between the two types of role change...
was 0.42 ($p<.05$). Despite the fact that this correlation is reasonably high, the theoretical significance of the differentiation (as discussed in section 1.5.2) was such that it was decided in the present study to consider the two types of roles separately.

2.2.6 **Social Support**

**Interview Schedule of Social Interaction (ISSI)**

Social Support was measured using an abbreviated version (Braithwaite, 1990) of the Interview Schedule of Social Interaction (ISSI) (Henderson et al., 1980). The scale was made up of two subscales, the availability of social interaction scale (AVSI), and the availability of a confidante scale (AVAT).

The AVSI scale measures the availability of diffuse relationships, such as with friends, neighbours and work associates. The AVSI scale comprises 6 items, which are presented in Appendix B. Braithwaite (1990) found the internal reliability of the scale to be satisfactory, with Cronbach's alpha coefficient being 0.71. In the present study, Cronbach's alpha was 0.73.

The availability of a confidant scale, consists of five yes/no items. This scale assesses the availability of close, confiding and emotionally intimate relationships (See Appendix B). Braithwaite (1990) reported an alpha coefficient for the scale of 0.57. In the present study the reliability was also not particularly high, Cronbach's alpha being 0.58.
In the present study, the women were also asked to name the person who provided them with the support referred to in each item of the AVAT. This was believed to be particularly important in the current research because hypotheses related not to the presence of a confidant per se, but to whether or not the woman's husband was her confidant in the years following injury. The number of times out of the five questions the husband was named as confidant was totalled to produce the husband/social support (H/SS) scale.

2.2.7 **Wives Flexibility/Adaptability**

**California Personality Inventory/Flexibility Scale (CPI-Fx)**

The flexibility scale of the California Personality Inventory (CPI-Fx) (Megargee, 1982) was used to assess the flexibility/adaptability of the women surveyed. The CPI-Fx scale was designed to indicate the degree of flexibility and adaptability of a person's thinking and social behavior. The Fx scale consists of 22 items. It is known to have a negative bias, given that only one item is scored in the flexibility direction with the remaining twenty one being scored in the opposite direction. The high scorer on this scale has a high tolerance for uncertainty and ambiguity, while the low scorer is described as cautious, methodical and rigid.

Early validation studies (Gough, 1964) assessed the scale's validity when compared with alternate rigidity scales as moderate (between -0.36 & -0.58), although more recent studies have questioned
its validity (eg., Megargee, 1972). It would seem that some caution should be exercised in the use of this scale. While the scale is negatively correlated with measures of rigidity, there is evidence that it does not relate positively to the criteria of flexibility. It is likely that this mixed evidence arises from the fact that the Fx is curvilinear with moderate elevations reflecting adaptability, but very high scores possibly indicating instability. As the hypotheses related to flexibility in the present study focus on the suggestion that rigidity (intolerance of change, ambiguity) may be negatively associated with coping following husband's head injury, rather than on suggesting that high amounts of "adaptability" are necessary for such coping, it was believed that this scale, in the absence of a better self report flexibility scale, would adequately measure the construct required. The alpha coefficient for the scale in the present study was 0.79.

2.3 Procedure

All women in the closed head injury sample were originally contacted via a letter from the hospital introducing the researcher and outlining the research study (see Appendix A). A follow-up phone call a week later was made by the researcher to determine whether the potential subject was willing to take part in the survey. The questionnaire was trialled on four subjects who were visited in their homes by the researcher. The questionnaire took approximately 50
minutes to complete. As it was found that the survey required little explanation, the questionnaire was distributed by post to the remaining 17 women, all but one of whom returned the questionnaire. A visual inspection of the response profiles of the original four women surveyed found no obvious differences between their responses and those of the women surveyed by post.

Because of a policy difference between the two survey hospitals with regard to patient contact procedures, the method employed to approach the wives of spinal patients was slightly different from that of the wives of head injured patients. All wives in the spinal sample were nominated as suitable by the Director of the Spinal Unit and were approached by the researcher by phone. As with the head injury sample, however, subjects were surveyed by post, and questionnaires were accompanied by a letter of introduction from the hospital (see Appendix A).
CHAPTER 3

RESULTS

Results will be presented in two sections; the first section focuses on the hypotheses concerning differences between the head injured and spinal samples, while the second examines the hypotheses concerning proposed inter-relations among the dependent variables.

Two subjects (one from each group) scored more than two standard deviations from the mean of their respective samples on most measures, and so were classified as outliers and deleted from the analyses.

3.1 Hypotheses concerning differences between the two groups

Except for two instances in which results were found to be not normally distributed (these will be discussed later), two tailed independent t-tests were used to address the first group of hypotheses. As all of these hypotheses predicted the direction of difference between the two samples, the use of two tailed tests was conservative.

3.1.1 Personality Change (Hypothesis 1)

Hypothesis 1 predicted that CHI/w would report more personality change in their husbands than would SCI/w. An independent
t-test was performed on the average of the absolute difference between the before accident and after accident ratings scores for each of the 18 personality characteristics.

A significant difference was found between the closed head injured wives (CHI/w) and the spinal wives (SCI/w) on their reports of personality change in their husbands, $t(33) = 2.166, p < .05$. As predicted, the CHI/w reported significantly more personality change in their husbands ($M = 1.73; \text{S.D.} = 0.92$) than did SCI/w ($M = 1.11; \text{S.D.} = 0.79$).

A series of independent t-tests was then performed between the two groups of wives on the absolute difference scores for each the 18 personality characteristics. Results are summarized in Table 3.1. The head injured group showed significantly greater change than the spinal group on six of the 18 personality characteristics, and a number of other items showed a trend in the same direction.

Significant differences were found for the following characteristics: stable/unstable, even tempered/quick tempered, reasonable/unreasonable, sensitive/insensitive, cautious/rash, and excitable/calm. In each case CHI/w reported greater change in their husbands than did SCI/w.
Table 3.1

Average Personality Change Scores for each of the 18 Personality Variables

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>Mean</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHI</td>
<td>SCI</td>
</tr>
<tr>
<td>Talkative</td>
<td>1.83</td>
<td>1.24</td>
</tr>
<tr>
<td>Even Tempered</td>
<td>2.50</td>
<td>1.35</td>
</tr>
<tr>
<td>Relies on Others</td>
<td>2.06</td>
<td>2.65</td>
</tr>
<tr>
<td>Affectionate</td>
<td>1.72</td>
<td>1.00</td>
</tr>
<tr>
<td>Fond of Company</td>
<td>1.39</td>
<td>0.77</td>
</tr>
<tr>
<td>Irritable</td>
<td>2.50</td>
<td>1.59</td>
</tr>
<tr>
<td>Unhappy</td>
<td>2.22</td>
<td>1.67</td>
</tr>
<tr>
<td>Excitable</td>
<td>1.89</td>
<td>0.65</td>
</tr>
<tr>
<td>Energetic</td>
<td>1.94</td>
<td>2.12</td>
</tr>
<tr>
<td>Down to Earth</td>
<td>1.50</td>
<td>0.77</td>
</tr>
<tr>
<td>Rash</td>
<td>1.83</td>
<td>0.70</td>
</tr>
<tr>
<td>Listless</td>
<td>1.61</td>
<td>1.53</td>
</tr>
<tr>
<td>Mature</td>
<td>1.00</td>
<td>0.77</td>
</tr>
<tr>
<td>Sensitive</td>
<td>1.33</td>
<td>0.41</td>
</tr>
<tr>
<td>Cruel</td>
<td>1.11</td>
<td>0.53</td>
</tr>
<tr>
<td>Generous</td>
<td>1.22</td>
<td>0.65</td>
</tr>
<tr>
<td>Unreasonable</td>
<td>1.83</td>
<td>0.58</td>
</tr>
<tr>
<td>Unstable</td>
<td>2.11</td>
<td>0.94</td>
</tr>
</tbody>
</table>

* p<.05
**p<.01

It is possible that the difference in scores for the two groups may have reflected different 'before ratings' for the two groups. In order to address this possibility, the before accident ratings of the groups were compared by means of a series of t-tests for each of the personality variables (see Appendix C-1 ). In fact, no significant differences were found between the two groups on the before accident
ratings. When after accident ratings were compared for the two groups (see Appendix C-2) significant differences were found on five personality variables; even tempered/quick tempered, rash/cautious, unreasonable/reasonable, stable/unstable, and excitable/calm. CHI/w rated their husbands as being significantly more quick tempered, rash, excitable, unreasonable and unstable than did SCI/w.

3.1.2 Subjective burden (Hypothesis 2)

Hypothesis 2 predicted that the wives of the CHI men would report more subjective burden/strain than wives of SCI men. As predicted, CHI/w reported significantly more strain (M = 5.0; S.D. = 1.83) than did SCI/w (M = 3.47; S.D. = 1.88) \( t(34) = 2.478, p < .05 \).

These mean scores represent moderate to severe strain, and slightly less than moderate strain respectively. Further, it was found that while 70% of the CHI/w reported severe to very severe strain (i.e., a score of 5 - 7); only 28% of the SCI/w had such extreme scores.

3.1.3 Symptomatology (Hypothesis 3)

Symptomatology was assessed with four scales, the GHQ, the DSSI - anxiety and depression subscales (DSSI-a, DSSI-d), and the SCL-90 somatization scale. In each case it was hypothesized that symptomatology would be more pronounced among the CHI/w than among the SCI/w. A summary of results obtained for each scale is
presented in Table 3.2.

Table 3.2

Symptomatology among wives of head injured and spinal cord injured men

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHQ</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHI/w</td>
<td>11.79</td>
<td>8.61</td>
<td>2.71**</td>
</tr>
<tr>
<td>SCH/w</td>
<td>4.94</td>
<td>6.18</td>
<td></td>
</tr>
<tr>
<td><strong>DSSI-a</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHI/w</td>
<td>5.42</td>
<td>4.29</td>
<td>2.21*</td>
</tr>
<tr>
<td>SCI/w</td>
<td>2.41</td>
<td>3.16</td>
<td></td>
</tr>
<tr>
<td><strong>DSSI-d</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHI/w</td>
<td>4.74</td>
<td>4.29</td>
<td>1.67(2.60*)</td>
</tr>
<tr>
<td>SCI/w</td>
<td>2.47</td>
<td>3.79</td>
<td></td>
</tr>
<tr>
<td><strong>Somat.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHI/w</td>
<td>8.79</td>
<td>6.63</td>
<td>1.85(2.37*)</td>
</tr>
<tr>
<td>SCI/w</td>
<td>5.12</td>
<td>5.06</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
**p < .01
scores in brackets refer to t-tests excluding outliers

General Health Questionnaire (GHQ30)

As shown in Table 3.2, there was a significant difference between CHI/w and SCI/w on the GHQ-30 with the CHI/w group scoring
significantly higher on the scale than the SCI/w group.

Using the standard cutting score of 4/5 to differentiate between 'cases' and 'non-cases' (Goldberg, 1972), it was found that while 80% (16/20) of CHI/w were classified as 'cases', only 41% (7/17) of SCI/w could be classified in this way. A Chi-square analysis revealed that CHI/w were more likely to be classified as cases than SCI/w, $X^2(1) = 5.89, p < .05$.

It should be noted that both groups scored above the norm when compared with general practice and community studies, which have found case prevalence to vary between 13% and 30% for women (Byrne, 1980; Hobbs, Ballinger & Smith, 1983). The prevalence of 'caseness' among CHI/w is alarmingly high, and even higher than the 59% prevalence of caseness that has been reported among the closed head injured patients themselves (Kinsella et al., 1988).

**Delusions Symptoms States Inventory/Anxiety (DSSI-a)**

The CHI/w also had higher scores than the SCI/w on the DSSI-a (see Table 3.2). The means of both groups were higher than those reported for a community sample (M. = 1.9; S.D. = 2.4) (Henderson et al., 1981). Henderson et al. (1981) noted that 16.1% of women in their general population sample scored 4 or more on the DSSI-A. In comparison, the present study found that 65% of the CHI/w scored above 4, as did 28% of the SCI/w.
Delusions Symptoms States Inventory/Depression (DSSI-d)

No difference was found between the two groups on the depression measure (see Table 3.2). However, as there was one outlier among the SCI/w ( > 2 standard deviations above the mean for this sample), the analysis was repeated after excluding this subject. The difference between the two groups attained significance following the removal of this subject, with the head injured wives reporting significantly higher scores for depression than the wives of the spinal cord injured men, $t(33) = 2.60, p < .05$.

Once again, the means of both groups in the present study were above that reported in Henderson et al.'s (1981) general community sample ($M = 1.1; S.D. = 2.1$). Henderson and his collaborators noted that 12.6% of women in his general population sample scored 4 or more on the DSSI-D. In comparison, the present study found that 55% of the CHI/w scored 4 or more, while 33% of the SCI/w had scores of this magnitude.

SCL-90/somatic symptoms

An independent t-test on the somatic symptoms scale failed to reveal a significant difference (Table 3.2), although a trend towards significance was noted, $t(34) = 1.851, p < .07$. However, once again, one SCI/w was an outlier. After exclusion of this aberrant case, a significant difference between the two groups was found,
As expected, the CHI/w group reported significantly more symptoms than the SCI/w group. Average item scores for each group (CHI/w M = 0.73, S.D. = 0.55; SCI/w M = 0.43, S.D. = 0.42), were within the normal range reported by Derogatis et al. (1974) for emergency service outpatients (M = 0.99, S.D. = 0.81), and obese normal females (M = 0.72, S.D. = 0.58).

3.1.4 Marital Satisfaction (Hypothesis 4)

The prediction that CHI/w would report less marital satisfaction than the SCI/w was supported by the data (t(34) = -2.56, p < .05). The average marital satisfaction scores were 2.90 (S.D. = 0.67) and 3.63 (S.D. = 1.02) for the CHI/w and the SCI/w, respectively.

3.1.5 Role change (Hypothesis 5a, 5b)

Role change was computed as the absolute difference between the after accident and before accident ratings of marital role performance. Hypothesis 5a predicted that CHI/w would report more total role change than SCI/w, while Hypothesis 5b predicted that this effect would be most prevalent for socio-emotional role change. To test these hypotheses, a 2 way ANOVA was performed, the full results of which are presented in Appendix C-3.

There was no difference in the total amount of role change reported for the two groups, (F(1,34) = 0.20, NS). There was,
therefore no support for Hypothesis 5a. There was also no main effect for Type of Role ($F(1,34) = 2.64, \text{NS}$). However, as depicted in Figure 3.1, there was a significant interaction between Group and Type of Role change ($F(1,34) = 7.012, p < .01$).

![Figure 3.1](image)

Amount of S-E and Task role change experienced by the two groups of subjects

Simple main effects analysis controlling for family error rate revealed a significant difference between task and SE role change for the spinal group ($F(1,34) = 9.4, p < .02$), but not for the head injured group ($F(1,34) = .53, \text{NS}$). That is, SCI/w reported more task role change than socio-emotional role change, while the levels of role change reported for the CHI/w were not significantly different for the two types of roles. These results do not support Hypothesis 5b.
To further investigate differences between the CHI/w and the SCI/w in regard to role change, a series of Chi-square analyses were carried out on each of the 10 marital roles (see Appendix C-4). The two groups were found to be significantly different on only one marital role, the therapeutic role ($X^2 = 4.68, p < .05$).

To determine whether the two groups of women differed in regard to role allocation prior to the husband's injury, a series of *t* tests were performed on each of the 20 role items as rated before the accident. These analyses did not reveal any significant differences between the two groups on any of the 20 items (See Appendix C-5).

### 3.1.6 Presence of a confidant (Hypothesis 6)

It was noted that the distribution of the scores on the Confidant scale was skewed, and so required non-parametric analysis. A Mann-Whitney *U* test was performed on the Confidant scale (ISSI-AT) to determine whether a difference existed between the two groups in their likelihood of having a confidant. No significant difference was found, ($U (37) = 116, z = -1.54, NS$). The mean scores for both the CHI/w ($M = 8.58; S.D. = 1.47$) and the SCI/w ($M = 9.18; S.D. = 1.29$), are similar to the mean score for the same scale reported by Braithwaite (1990), in her study of care-givers of the elderly ($M = 9.23; S.D. = 1.11$). Norms for the general population are not available.

The prediction that the CHI/w would be less likely to report that
their husbands were their confidants than the SCI/w was assessed by cumulating the number of times a woman named her husband as a confidant in the ISSI-AT. Once again, because the resulting distribution was skewed, nonparametric analysis was employed. A Mann-Whitney U-test found that the SCI/w were significantly more likely to name their husbands as their confidants than were CHI/w, providing support for Hypothesis 6 ($U = 94.5$, $z$ (corrected for ties) = -2.22, $p < .05$).

It is noteworthy that 90% of the CHI/w named their husband in less than half of the questions relating to the presence of a confidant (i.e., in less than two of the five questions), compared to 47% of SCI/w who named their husbands less than half the time ($X^2(1) = 7.6$, $p < .01$).

### 3.2 Hypotheses concerning inter-relations

To test the hypotheses concerning inter-relations among the variables, Pearson product moment correlations were calculated for all subjects (total) and for each of the two groups of wives separately (i.e., CHI/w and SCI/w). In all instances, it was proposed that the correlations between the predictors and the dependent variables would be similar for the two samples, except in the case of role change, where differential relations were expected between the type of role change reported by each group and symptomatology. To ascertain whether there were any differences between the correlations for the
two groups of wives, a z test comparing Fisher’s Z transformation of \( r \) correlations obtained from independent samples was utilized. Again, results of two of the dependent measures were found to be skewed and required non-parametric analyses.

3.2.1 Personality change (Hypothesis 7)

It was predicted in Hypothesis 7 that those wives who reported high levels of personality change in their husbands would also report high levels of subjective burden, and symptomatology. Correlations between subjective burden, symptomatology and personality change for all subjects, and for each group are summarized in Table 3.3. Significant correlations were found for the total group and for each group considered separately, which provides support for Hypothesis 7. Further, as predicted in hypothesis 7, personality change was found to be significantly correlated in the negative direction with marital satisfaction. No significant differences were found between the correlations for the two groups.
Table 3.3

Correlations between Personality Change and Burden, and Personality Change and Symptomatology, and Personality Change and Marital Satisfaction

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>.727**</td>
<td>.690**</td>
<td>.757**</td>
<td>.831**</td>
<td>.512**</td>
<td>-.644**</td>
</tr>
<tr>
<td>CHI/w</td>
<td>.707**</td>
<td>.645**</td>
<td>.818**</td>
<td>.902**</td>
<td>.378*</td>
<td>-.564*</td>
</tr>
<tr>
<td>SCI/w</td>
<td>.664**</td>
<td>.634**</td>
<td>.549*</td>
<td>.697**</td>
<td>.557*</td>
<td>-.650**</td>
</tr>
<tr>
<td>z</td>
<td>0.87</td>
<td>0.02</td>
<td>0.623</td>
<td>0.714</td>
<td>-0.26</td>
<td>-0.157</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* *p < .05
** p < .01

3.2.2 Role Change (Hypothesis 8a,b,c)

It was predicted in Hypothesis 8a that role change would be significantly correlated with personality change. A significant correlation was found between role change and personality change for the total group ($r = .56, p < .01$), providing support for the hypothesis. The correlation was significant for the CHI/w ($r = .74, p < .01$), but not for the SCI/w ($r = .48, NS$). Again, the correlations did not differ significantly for the two groups ($z = 0.5, NS$).
It was further predicted in Hypothesis 8b that role change would be positively correlated with burden and symptomatology, and negatively correlated with marital satisfaction. A summary of these correlations, and difference tests is presented in Table 3.4.

Only partial support for Hypothesis 8b was found. Role change was positively correlated with all measures of burden and symptomatology, and negatively correlated with marital satisfaction in the CHI/w group; however, the correlations were all nonsignificant for the SCI/w group. A significant difference between the correlations for the two groups was found for the DSSI-a scale only.

Table 3.4
Correlations between Role Change and Burden, Role Change and Symptomatology, and Role Change and Marital Satisfaction

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sample</strong></td>
<td>.387*</td>
<td>.296</td>
<td>.366*</td>
<td>.390*</td>
<td>.262</td>
<td>-.369*</td>
</tr>
<tr>
<td>CHI/w</td>
<td>.585*</td>
<td>.493*</td>
<td>.688**</td>
<td>.632**</td>
<td>.471*</td>
<td>-.602**</td>
</tr>
<tr>
<td>SCI/w</td>
<td>.294</td>
<td>.148</td>
<td>-.020</td>
<td>.066</td>
<td>.054</td>
<td>-.333</td>
</tr>
<tr>
<td>z</td>
<td>0.426</td>
<td>1.059</td>
<td>2.346</td>
<td>1.827</td>
<td>1.23</td>
<td>-.932</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td><em>p &lt;.05</em></td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
Hypothesis 8c predicted that socio-emotional (SE) role change would be a better predictor of both burden, symptomatology and marital satisfaction than task-oriented (T) role change. Correlations between each type of role change and both subjective burden and symptomatology are summarized in Table 3.5.

Table 3.5
Correlations between Type of Role Change & Subjective Burden, Symptomatology and Marital Satisfaction.

**Socio-emotional role change**

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sample</strong></td>
<td>.402**</td>
<td>.312</td>
<td>.401*</td>
<td>.433**</td>
<td>.309</td>
<td>-.443*</td>
</tr>
<tr>
<td>CHI/w</td>
<td>.534*</td>
<td>.390</td>
<td>.669**</td>
<td>.688**</td>
<td>.524*</td>
<td>-.625**</td>
</tr>
<tr>
<td>SCI/w</td>
<td>.175</td>
<td>.092</td>
<td>-.041</td>
<td>.016</td>
<td>-.021</td>
<td>-.278</td>
</tr>
<tr>
<td>z</td>
<td>0.97</td>
<td>0.87</td>
<td>2.30</td>
<td>2.25</td>
<td>1.63</td>
<td>0.306</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>p &lt;.05**</td>
<td>p &lt;.05**</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Task role change**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sample</strong></td>
<td>.245</td>
<td>.185</td>
<td>.186</td>
<td>.221</td>
<td>.105</td>
<td>-.175</td>
</tr>
<tr>
<td>CHI/w</td>
<td>.484*</td>
<td>.481*</td>
<td>.531*</td>
<td>.500*</td>
<td>.290</td>
<td>-.421</td>
</tr>
<tr>
<td>SCI/w</td>
<td>.330</td>
<td>.161</td>
<td>.010</td>
<td>.100</td>
<td>.118</td>
<td>-.287</td>
</tr>
<tr>
<td>z</td>
<td>0.51</td>
<td>0.865</td>
<td>1.41</td>
<td>1.21</td>
<td>0.48</td>
<td>0.173</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* *p < .05
** *p < .01
These results indicate that, in general, role change was correlated with symptomatology, burden and marital satisfaction for the CHI/w, but not for the SCI/w. This was particularly noticeable among the correlations for SE role change where significant differences were found between the correlations for the two groups on two of the four symptom scales (DSSI-a, DSSI-d), with a third (Somat) showing a trend toward significance. No differences were found between the groups with regard to the relationship between either subjective burden or marital satisfaction and either type of role change. There were also no significant differences between the two groups on the task role change scale, despite the fact that this variable was more likely to be correlated (5 out of 6 correlations significant) with burden, symptomatology and marital satisfaction in the CHI/w than in the SCI/w group.

To further assess this hypothesis, a series of t-tests for the significance of difference between correlation coefficients in dependent samples were used to test (separately for each group), differences in the correlation between SE role change and well being, and the correlation between task role change and well being (see Appendix C-6). In fact, no significant differences were found between the correlations for the two types of role change, for either group. There was, thus, no support for hypothesis 8c.
3.2.3 Social Support (Hypothesis 9)

Hypothesis 9 predicted that social support, especially the presence of a confidant, would be negatively correlated with burden and symptomatology, and positively correlated with marital satisfaction. Correlations were calculated between the three social support scales and both symptomatology and burden. The ISSI-SI assessed general social support, the ISSI-AT measured the presence of a confidant, while the H/SS scale measured the number of times the woman named her husband as their confidant. A summary of the correlations between general social support, symptomatology and burden is presented in Table 3.6.

Table 3.6

Correlations between General Social Support (ISSI-SI), & Symptomatology, Burden and Marital Satisfaction

<table>
<thead>
<tr>
<th>ISSI-SI (Social Support, General)</th>
<th>Burden</th>
<th>GHQ</th>
<th>DSSI-a</th>
<th>DSSI-d</th>
<th>Somat.</th>
<th>Mar.Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- .169</td>
<td>.035</td>
<td>.057</td>
<td>.006</td>
<td>.127</td>
<td>.122</td>
<td></td>
</tr>
<tr>
<td>CHL/w</td>
<td>.061</td>
<td>.219</td>
<td>.321</td>
<td>.177</td>
<td>.487*</td>
<td>-.219</td>
</tr>
<tr>
<td>SCI/w</td>
<td>-.293</td>
<td>-.026</td>
<td>-.129</td>
<td>-.091</td>
<td>-.161</td>
<td>.25</td>
</tr>
<tr>
<td>z</td>
<td>0.86</td>
<td>0.66</td>
<td>1.42</td>
<td>0.65</td>
<td>2.03*</td>
<td>-1.1</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>p&lt;.05</td>
<td>NS</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
No significant correlations were found between the general social support scale and either burden or symptomatology for the total sample, or for the spinal sample. In the CHI/w group, somatization was found to be positively correlated with general social support, and it was found that the two samples differed significantly with respect to this correlation.

Because both the Confidant Scale (ISSI-AT) and the H/SS scale were not normally distributed they were analyzed using a nonparametric analysis (Spearman Rho rank order correlation coefficient) (See Table 3.7 for correlations).

The presence of a confidant was not significantly related to either symptomatology or marital satisfaction. It was however, found that the presence of a confidant had a significant negative correlation with burden for both the total group and for the spinal group. Presence of the husband as confidant was also found to have a significant negative correlation with burden for the spinal group. The correlation for the CHI/w sample approached significance (p<.06). Marital satisfaction was positively correlated with the presence of the husband as confidant in the spinal group.
Spearman Rho correlation coefficients (corrected for ties)/Correlations between two Social Support scales (ISSI-AT & H/SS), Symptomatology, Burden, and Marital Satisfaction.

**ISSI-AT (Confidant Scale)**

<table>
<thead>
<tr>
<th></th>
<th>Burden</th>
<th>GHQ</th>
<th>DSSI-a</th>
<th>DSSI-d</th>
<th>Somat.</th>
<th>Mar Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.403*</td>
<td>-.073</td>
<td>.053</td>
<td>-.131</td>
<td>.033</td>
<td>.302</td>
</tr>
<tr>
<td>CHI/w</td>
<td>-.237</td>
<td>.036</td>
<td>.308</td>
<td>-.081</td>
<td>.273</td>
<td>.249</td>
</tr>
<tr>
<td>SCI/w</td>
<td>-.544*</td>
<td>.019</td>
<td>-.24</td>
<td>-.236</td>
<td>-.257</td>
<td>.320</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Burden</th>
<th>GHQ</th>
<th>DSSI-a</th>
<th>DSSI-d</th>
<th>Somat.</th>
<th>Mar Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H/SS (Husband social support)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.591**</td>
<td>-.288</td>
<td>-.327</td>
<td>-.345*</td>
<td>-.311</td>
<td>.588**</td>
</tr>
<tr>
<td>CHI/w</td>
<td>-.433</td>
<td>-.054</td>
<td>-.315</td>
<td>-.175</td>
<td>-.264</td>
<td>.325</td>
</tr>
<tr>
<td>SCI/w</td>
<td>-.501*</td>
<td>-.102</td>
<td>-.332</td>
<td>-.224</td>
<td>-.162</td>
<td>.573*</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01

3.2.4 Flexibility (Hypothesis 10)

Hypothesis 10 predicted that flexibility would be negatively correlated with both subjective burden and symptomatology, and positively correlated with marital satisfaction. While there was a significant correlation between flexibility and somatic symptoms for the total group, no other significant correlations for the two groups
were found (see Table 3.8). There was, therefore, only very weak support for Hypothesis 10.

**Table 3.8**

**Correlations between Flexibility & Subjective Burden, Symptomatology and Marital Satisfaction**

<table>
<thead>
<tr>
<th>GHQ</th>
<th>DSSI-a</th>
<th>DSSI-d</th>
<th>Somat.</th>
<th>Burden</th>
<th>Mar.Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>-.296</td>
<td>-.308</td>
<td>-.242</td>
<td>-.333*</td>
<td>-.253</td>
</tr>
<tr>
<td>CHI/w</td>
<td>-.014</td>
<td>-.067</td>
<td>.134</td>
<td>-.277</td>
<td>.014</td>
</tr>
<tr>
<td>SCI/w</td>
<td>-.405</td>
<td>-.404</td>
<td>-.442</td>
<td>-.262</td>
<td>-.279</td>
</tr>
<tr>
<td>z</td>
<td>1.124</td>
<td>0.98</td>
<td>1.56</td>
<td>-0.059</td>
<td>0.18</td>
</tr>
<tr>
<td>prob.</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* *p < .05
** *p < .01
3.3 Overview of Results

The findings can be summarized as follows:

Hypotheses concerning differences

1. CHI/w were found to report significantly more personality change in their husbands than SCI/w. Significant differences were found between the two groups on their average change scores for six personality variables; even tempered/quick tempered, excitable/calm, rash/cautious, sensitive/insensitive, unreasonable/reasonable, and unstable/stable. On each of these 6 variables CHI/w reported more change than SCI/w. No significant differences were found between the two groups on pre-accident ratings of husband's personality.

2. CHI/w reported significantly more subjective burden than did SCI/w.

3. CHI/w reported more symptomatology than did SCI/w. CHI/w were significantly more likely to be classified as 'cases' on the GHQ than were SCI/w. CHI/w were significantly more anxious and more depressed than SCI/w, and reported significantly more somatic symptoms.

4. (a) There was no significant difference between the two groups with regard to total role change.

   (b) No significant difference was found on either type of role change. However, a significant interaction was found between type of role change and group. It was found that SCI/w reported more task role
change than S-E role change, while no difference was found between the types of role change reported for the CHI/w. A significant difference was found between the two groups on one of the ten marital roles, the therapeutic role.

5. CHI/w reported significantly less marital satisfaction than did SCI/w.

6. While no difference was found between the two groups in their likelihood of having a confidant, CHI/w were significantly less likely to name their husband as their confidant than were SCI/w.

Hypotheses concerning inter-relations

7. Personality change was found to be positively correlated with reported burden for the total sample, as well as for each of the two groups. Similarly, each of the symptom scales (GHQ, DSSI-a & d, Somat.) was significantly correlated with personality change. In each case it was found that the greater the reported personality change in husbands, the more likely the wife was to report symptoms of psychological distress. Personality Change was negatively correlated with marital satisfaction.

8. Role change was found to be significantly correlated with personality change for the total group, and for the CHI/w, but not for the SCI/w. Role change was found to be positively correlated with symptomatology and burden and negatively correlated with marital
satisfaction for the CHI/w, but not for the SCI/w. While this difference was particularly pronounced for the correlations involving S-E role change, no support was found for the hypothesis that SE role change would be more associated with wife's well being than task role change.

9. No significant correlations were found between general social support and either burden or symptomatology for the total group or for SCI/w. For CHI/w, general social support was positively correlated with somatization. The presence of a confidant was not significantly correlated with symptomatology or marital satisfaction for the total group, or for either of the two groups. It was, however, negatively correlated with burden in the SCI/w. H/SS (how often husband named as confidant) was significantly negatively correlated with depression and with burden, and was positively correlated with marital satisfaction. These correlations were most pronounced in the spinal group.

10. Flexibility was not found to be correlated significantly with burden or symptomatology, although an isolated significant correlation was noted.
4.1. Well-Being of Wives

As predicted, the present study found that wives of closed head injured men demonstrated considerably more distress than did wives of spinal cord injured men. They complained of greater burden as a result of their husband's injury, evidenced more symptomatology and were less satisfied with their marriages than were the wives of men with spinal cord injuries.

The difference between the two groups in relation to subjective burden was striking, with over two thirds of CHI/w reporting severe strain as a result of their husband's injury, compared to less than a third of SCI/w. Similarly, results for each of the four symptom scales revealed that significantly more clinical symptomatology was reported in the CHI/w in comparison with the SCI/w. The finding that the wives of severely physically disabled patients report less burden and symptomatology than wives of closed head injured men lends powerful support to the claim that factors other than physical disability are important predictors of reported burden in the relatives of the head injured (eg. Bond, 1975; Bond, 1976; Thomsen, 1974; Oddy et al., 1978 a&b; McKinlay et al., 1981).

In regard to general psychological health, anxiety and depression, both groups tended to score higher than community
samples, with the results for CHI/w being alarmingly high. Further, it was found that CHI/w in the present study reported more burden and symptomatology than has been reported previously among relatives of the head injured.

For instance, the levels of stress reported by the CHI/w in the present study were significantly higher than those reported by McKinlay, Brooks, Bond, Martinage & Marshall (1981). Using the same measure of subjective burden as used in the present research, McKinlay and his colleagues found that 24% of their sample reported high stress a year after their relatives had sustained closed head injury. In a follow-up study on the same sample 5 years later, Brooks, Campsie, Symington, Beattie and McKinlay (1986) noted that the number of women reporting high stress had risen to 56%. It is not clear why the levels of stress identified in the present study (70%) were higher than those reported by McKinlay and his colleagues. It should be noted, however, that their sample comprised both men and women, from 16 - 60 years of age, not all of whom were spouses of the patient. Variation in stress levels are to be expected to as a function of age, sex and relationship to the patient. In order to avoid this difficulty, subject criteria for the present study were designed so as to obtain a more homogenous sample.

As with burden, the proportion of the head injured sample in the present study to suffer clinically significant anxiety and depression
scores is considerably higher than that reported by previous researchers (eg. Oddy et al., 1978a; Livingston et al., 1985 a&b).

Further, in relation to general psychological health, the prevalence of caseness among CHI/w was considerably higher in the current study than has been previously found among relatives of head injured patients by Livingston et al. (1985 a&b). The prevalence of caseness was also higher in the current study than found among the closed head injured population itself (Kinsella, Moran, Ford & Ponsford, 1988).

Only one other study to date has compared the well-being of SCI/w with CHI/w (Rosenbaum and Najenson, 1976). These authors reported significantly higher levels of depressed mood among relatives of head injured patients than relatives of men with spinal cord injuries. However, their depression measure was specifically devised for their study and was not standardized or validated. Thus, the present study is the first to compare relatives of head injured patients with relatives of spinal cord injured patients using a standardized and widely recognized depression scale.

All of the previous investigations which used objective measures to assess levels of anxiety and depression were confined to 12 months or less post injury. The present study extends the results of these previous studies, by empirically assessing anxiety, depression and general psychiatric health in relatives more than a year post
injury. It thereby provides the first evidence that along with burden, a variety of clinical symptomatology continues to present in wives of head injured men in the years following their husband's injury.

The reason for the inconsistency between the severity of symptomatology reported in the present study and those reported by previous researchers is not clear. In the case of the depression and anxiety levels, the difference may arise in part from the fact that the measures varied across the studies thus limiting direct comparison with the present study. However, as already indicated above, the possibility that symptomatology levels were generally greater in the current group is raised by the finding that higher levels of subjective burden were reported in the present study than were found in McKinlay et al.'s sample, in which the same burden measure was used.

The difference could relate to the fact that the current sample was confined to wives of head injured men whereas most other studies have interviewed a heterogenous sample of relatives comprising parents, wives, husbands and other relatives. Neither Oddy (1980), McKinlay et al. (1981) or Livingston et al. (1985 a&b) provided separate prevalence figures for spouses as opposed to parents of head injured patients. It should also be noted that very few of Oddy's sample were married, that 80% were under 25 years of age, and that there was a high drop-out rate of respondents over the year (as indicated previously, revised demographic details, i.e. marital status, severity
and age were not supplied). It has been suggested that wives of head injured patients fare worse in the years following their husbands injury than do parents of head injured men (eg. Panting & Merry, 1972; Thomsen, 1974, 1984; Rosenbaum & Najenson, 1976). The disparity between the current findings and those of previous researchers raises the question of such a difference once again, and highlights the fact that parents and spouses need to be examined separately in future research.

Another factor which may account, at least in part, for the discrepancy between the findings of this and previous studies relates to time since injury. Most of the studies cited above interviewed relatives no more than 12 months after the patient's head injury, in contrast to the present study in which 12 months post injury was a minimum requirement, and in which the average time since injury was approximately 2 years. The exception was Brooks et al. (1986), who reported that 5 years after the injury relatives reported higher levels of burden than at 1 year post injury. Several researchers have speculated that caseness does not decrease with time, but rather increases in the years following injury, despite the fact that it appears to decrease during the year following injury (eg. Brooks et al., 1983, 1986; Thomsen, 1974, 1984). This view is consistent with the clinical suggestion that 12 months post injury is a 'moment of truth' when the chronicity of the problems associated with their relatives
injury becomes evident, and must be dealt with by relatives who up to this time have usually focussed on the physical recovery of the patient (Rosenbaum and Najenson, 1976; Lezak, 1981; Romano, 1974). To date, only burden has been assessed in relatives of the head injured more than 12 months after the accident (Brooks et al., 1986). If symptomatology does increase over time, the higher incidence levels in the current study might arise as a result of the longer time since injury.

It is also possible that the greater symptomatology reported in the present study is due to a difference in available support services for relatives of the head injured in Australia compared with those in the United Kingdom (where most of the studies of this type were conducted). Alternatively, the research process itself could well be therapeutic. In both the studies conducted by McKinlay et al. (1981), and Livingston et al. (1985 a&b), relatives of the head injured were interviewed at 3, 6 and 12 months post injury. In Oddy et al.'s (1980) study, relatives were interviewed at 1, 6 and 12 months after the accident. Possibly, the interview sessions provided the relatives with some level of support and an opportunity to discuss their problems and

†As previously noted, no relationship between time since injury and wives' symptomatology was found in the present study. However, the relationship between time since injury and symptomatology may be non-linear, plateauing at around 12 months. If this were the case, significant correlations would not be expected when the range is restricted by a lower bound of 12 months.
feelings. The relatives may have been able to ask questions about the head injured patient's condition and management, and to tap into other support services should they be required. Significantly, many of the women in the present study, particularly in the closed head injured group, commented to the researcher that they had felt very alone since their husband's accident and that no-one had enquired as to how they felt or had prepared them for the changes in their husband after the accident, or advised them on management of their husband after he was discharged from hospital. Several of the women commented that they were very grateful to be asked about how they were coping, and commented that they felt that participating in the study had been helpful (eg. See Appendix D).

To investigate the possibility that the research process may be of therapeutic benefit to relatives of the head injured, a future study could compare a group of wives interviewed several times in the year following their husband's injury, with a comparable group of wives interviewed for the first time 12 months after their husband's injury. However, given the difficulties involved in obtaining adequate sample sizes of relatives of the head injured (especially when marital status, severity, and demographic criteria are defined), such a study would require access to a very large patient population.

In addition to supporting predictions regarding subjective burden and symptomatology, the data supported the prediction that CHI/w
would report less marital satisfaction than the SCI/w. While factors such as family friction (Oddy et al., 1978; Weddell et al., 1980), family cohesion (Bond, 1975) and marital disruption (Oddy et al., 1978) have been previously addressed, albeit using one item or unspecified scales, marital satisfaction following severe head injury has not been studied previously. The finding that most of the wives of head injured patients surveyed reported less than moderate levels of marital satisfaction, and that 55% reported being dissatisfied, demonstrates that a wife's marital satisfaction is seriously compromised by closed head injury in the husband. To date, the only indication of levels of marital satisfaction which could be gleaned from the literature on head injury have related to divorce rates following injury (eg. Panting & Merry, 1972; Thomsen, 1984). The finding that most CHI/w in the present study report marital dissatisfaction lends support to Lezak's (1978) assertion that divorce statistics do not adequately represent marital satisfaction following head injury, as such injury may prolong an unhappy marriage tying the spouse to the patient by bonds of guilt and fears of disapproval.

The fact that the majority of wives of closed head injured men report marital dissatisfaction is likely to have far reaching implications on all members of the family. It is possible that women who are dissatisfied with their marriages will resent the demands placed on them by their husbands, will report more symptomatology
and may perform poorly in their family roles. These factors are likely to have ramifications for the psychological well-being of the children as well as the wives. Such effects should be examined in future research.

It could be suggested that the difference in well-being between the two groups in the present study merely relates to the higher rate of full-time employment among wives of closed head injured men compared to wives of spinal cord injured men. It is likely that the relationship between a wife's employment and her well-being is a complex one, as it could potentially ease or exacerbate her levels of stress. For instance, it is possible that working could serve to buffer the women from stress by increasing her general social support network, and by giving her respite from a husband who may be very demanding as a consequence of his injury (eg. several of the women commented to the researcher that they found it very hard to keep their husband 'occupied', see Appendix D). Alternatively, working may provide an extra stress to women who already have increased their share of marital roles since their husband's accident. In fact, burden and symptomatology were not found to be related to work status in the present study, thus no support was found for this suggestion. Consequently, it may be concluded that the higher level of symptomatology in the CHI/w resulted from more direct effects of their husband's head injury.
While severity of injury was not addressed specifically in the present study, it is of note that no significant correlations were found between the duration of post traumatic amnesia (PTA) in the closed head injured men and symptomatology, burden or marital satisfaction as reported by their wives. PTA was also found to be unrelated to the four predictor variables investigated in the present study (i.e. personality change, role change, social support, and wife's flexibility) (see Appendix C-7.). These findings are consistent with those of a number of researchers who have similarly found that measures of severity of injury are rarely significantly associated with the relative's outcome (eg. Brooks et al., 1986; Oddy et al., 1976 a; Livingston, 1985 a&b; Bond, 1976 ). The current finding that PTA was not related to personality change in the husband or to well-being of the wife, vindicates the basic premise of the present study which was that factors other than severity must be most predictive of wives' well-being. On the basis of this assumption the present study investigated a number of other factors, to be discussed below.

4.2 Personality Change

As predicted, CHI/w reported more personality change in their husbands than did SCI/w. It has been suggested by McKinlay et al. (1981) that personality changes noted in the head injured may be a reaction to disability rather than a primary result of the injury. The
results in the present study, the first to use a comparison group who had suffered a comparable disability, partially support this view. The fact that wives of the spinal cord injured men reported personality change on a small number of variables suggests that personality change of some kind follows all severe injury and resultant disability. It would appear, however, that there are significant differences between the groups, not only with regard to amount of personality change recorded, but also in regard to type of personality change reported.

In particular, the closed head injured men were described as more quick tempered, rash, unreasonable, unstable and excitable than were spinal cord injured men after the accident. It is of note that all five of these personality variables relate to loss of emotional control. This finding is consistent with the results reported by both Brooks and McKinlay (1983) and McKinlay et al. (1981). These researchers found that difficulties in impulse and behaviour control were reported frequently by relatives of head injured patients. In the qualitative information provided by subjects in the present study, several of the women in the CHI/w group noted that their husband's unpredictability and sensitivity were responsible for considerable stress in the family (see Appendix D). By contrast, the greatest changes† noted among the men with spinal cord injuries in the present study appear to be relate

†Changes were viewed as 'considerable' where mean changes were above 2 points on the 6 point analogue scale, see Table 3.1.
primarily to physical injury, and to frustration rather than to lack of emotional control, or maturity. Spinal cord injured men were reported to be less energetic and more likely to rely on others following their accident than they were prior to injury. Other less considerable changes (i.e., mean change score of more than 1.5) were noted on three further personality variables; irritability, unhappiness and listlessness. These changes are consistent with the view that some personality changes will occur after a disabling injury as a function of not being able to resume normal activities and not being free from symptoms (McKinlay et al., 1981). As noted in the checklist of husband's problems since the accident (see Appendix E), several of the wives of men with spinal cord injuries commented that their husband's continued to suffer pain as a result of their injury, and that they tended to feel frustrated. These factors could account for some of the personality change noted in the spinal group.

It is also possible that the origin of the reported 'irritability' or 'sensitivity' was different for each group. For instance, irritability could be an organic sequelae of head injury, or alternatively, it could be a reaction to pain or frustration and thereby a reactive rather than an organic change. Arguably, reactive changes would be easier for wives to deal with (eg. by comforting their husband, trying to make him more comfortable). Thus, the repercussions of each type of 'irritability' on the wives' well-being are likely to vary depending on
the origin of the change. To address this ambiguity, future studies could employ more comprehensive personality scales, and examine more specifically how women cope with these changes and the effectiveness of their methods of coping. These factors will be discussed further later in this chapter.

It is possible that differences in personality change for the head injured and spinal injured groups may merely reflect differential premorbid personality characteristics. However, the fact that premorbid personality ratings did not differ for the groups suggests that this was not the case. The present results provide no support for the view of those researchers who caution against the use of retrospective data because it may be subject to bias resulting in an unduly positive evaluation of the head injured patient's premorbid functioning (eg. Godfrey et al., 1987). Nor do the present findings support the related suggestion that the more stress relatives experience, the more likely they are to idealize the patient's pre-injury personality (eg. McKinlay et al., 1981). As such, the results of the present study serve to validate the retrospective personality rating method.

As predicted, personality change was found to be associated with burden in both groups of women. The finding that burden is correlated with personality change among wives of head injured men is a finding consistent with previous research (eg. McKinlay et al.1981).
Similarly, all of the symptom scales were positively correlated with personality change. The greater the reported personality change in the husband, the more likely the wife was to report symptomatology herself. This finding is consistent with that of Oddy et al. (1978a), who noted that relatives' (both spouses and parents) level of depression was related to the extent of personality change in the patient. The relationship between personality change and general psychological health or anxiety have not been previously investigated. As such the present study is the first to identify the relationship between personality change following closed head injury and a variety of symptomatology in the patient's spouses. It would be useful for future studies to further investigate this relationship, and in particular to determine which personality characteristics are most associated with wives' reported well-being. As predicted, marital satisfaction was found to be negatively correlated with personality change, with greater marital dissatisfaction being associated with greater personality change.

Personality change following spinal cord injury has not been previously investigated. The use of SCI/w as a comparison group in the present study allowed for differentiation between those personality changes which were associated with the mental sequelae of head injury and those which could follow any serious injury and resultant disability. It is noteworthy that both groups demonstrated a
relationship between personality change and well-being, despite the fact that the pattern of personality change was different for each group. It would appear that the extent of husband's personality change is an important factor in predicting wife's well-being and her level of marital satisfaction following any serious injury in her husband. Further, it appears that extent of personality change is a better predictor of wives' well-being and marital satisfaction than are purely physical changes in their husbands.

4.3 Role change

The hypothesis that CHI/w would report more marital role change than SCI/w was not supported. Analysis of type of role change is less clear, with a significant interaction being found between type of role change and group. Further analysis revealed that SCI/w were significantly more likely to report task than socio-emotional (SE) role change, but no difference between task and SE role change was noted in CHI/w. It is most likely that this difference merely reflects the physical disability of spinal cord injured men, as task roles involve physical activities, such as mowing lawns and house maintenance. As with personality change, no difference was found between the two groups with regard to role allocation prior to injury, thus lending support for the retrospective rating method used to assess role change.
The prediction that role change would be correlated with personality change was only partially supported. Such a correlation was present for the CHI/w, but not for the SCI/w. Similarly, a significant correlation between marital role change and burden, symptomatology and marital dissatisfaction was found in the CHI/w, but not the SCI/w. It would appear that, while the two groups were not found to differ with regard to overall amount of role change, role change affected the two groups in different ways. This discrepancy could reflect a difference in type of role change, a difference which must be more complex than the task/socio-emotional division employed in the present study, and which appears to relate to those factors which contribute to role change.

To discuss these findings in more detail, the data suggests that role change associated with physical disability is less of a strain on relatives than role change associated with personality change or other mental sequelae of head injury. A number of explanations may underlie this difference. It could be that the sheer visability of physical disability may encourage others outside the family to offer assistance, and to assume roles which the husband can obviously no longer carry out, thus directly decreasing the load on the wife. For example, other family members or neighbours may assist with tasks such as house maintenance. Alternatively, given the visability of his injury the wife may be encouraged to perform these tasks herself. Performing these
sort of tasks for the spinal cord injured husband may be a practical way that she, and family members can assist him. Thus, completing these tasks could result in the woman experiencing some degree of personal satisfaction. It is also likely that she may receive some expression of gratitude from her husband as well as external acknowledgement of her efforts. These factors may indirectly decrease the perceived burden for the wife.

In contrast, task role change among the closed head injured most probably arises, not from physical difficulties, but from the mental sequelae of head injury; specifically factors such as lack of motivation, inability to plan and carry out tasks, and personality change. The latter is reflected in the fact that personality change was significantly correlated with role change in the CHI/w group. These mental sequelae of head injury are often subtle in presentation, and to unprepared observers could be invisible or else misinterpreted as obstinacy or laziness on the part of the husband. As the closed head injured appear physically able to carry out many of these task oriented roles, their wives are likely to receive few outside offers of help or support, and may themselves be more likely to resent the extra burden that these roles place on them. It is also probable that wives of men with closed head injuries do not receive the same level of gratitude and acknowledgement for the marital roles which they assume, either from their husband or from outsiders.
Analysing each of the 10 roles individually, it was found that the two groups were significantly different on only one role; the therapeutic role. This role is one of the socio-emotional roles and involves offering emotional support to the spouse (i.e., listening to problems and giving reassurance to the spouse). It could be that this role is pivotal in predicting well-being of the wife following her husband's injury, and that the change in this role in the closed head injured group is responsible for increased symptomatology and burden, and decreased marital satisfaction in the CHI/w. While there are problems in drawing causal inferences from correlational data, such a hypothesis is consistent with the literature on role theory and marital satisfaction. Nye (1976) noted that the relationship between the therapeutic role and satisfaction in marriage is greater than for most of the other family roles. Similarly, research by Nye and McLauglin (1976), Brinley (1975) and Chadwick, Albrecht, and Kunz (1976) indicates that the judged quality of a partner's performance on the therapeutic role is related to marital satisfaction in both males and females.

Although the difference between the relationship of SE role change and symptomatology, and that of task role change and symptomatology was not significant, a trend was noted for correlations between symptomatology and role change in the CHI/w group to be greatest among socio-emotional roles. Therefore, only
weak support was found for the prediction that SE role change would be more associated with symptomatology and marital dissatisfaction than would task oriented role change.

While the findings of the present study regarding role change are not conclusive, they highlight the need for further research in this area. It is of note that, the current study is the first to empirically measure role change. As such, the finding that role change is significantly correlated with measures of well-being for the CHI/w is an important one. These findings provide the first experimentally derived evidence to assess the suggestions of Lezak (1978), Thomsen (1974) and Rosenbaum and Najenson (1976), who asserted, (on the basis of clinical rather than empirical evidence), that the greater the number of role changes following severe injury, the greater the distress reported by relatives.

The findings of the present study indicate that the relationship between role change and wives' well-being is more complex than was suggested by previous researchers. It appears that the extent of role change per se is not as important a predictor of wife's well-being following her husband's head injury, as is type of role change, and origins of role change. Role change associated with personality change appears to cause wives more emotional distress than role change associated with physical disability. It would appear that future research may need to divide roles according to a number of other
dimensions, to further investigate the factors which most affect well-being of relatives of the head injured.

4.4 Social support

The prediction that general social support would be negatively correlated with burden and symptomatology and positively correlated with marital satisfaction was only weakly supported. A correlation was noted between diffuse social support and somatic symptoms in the CHI/w. However, it was in the opposite direction to that predicted. It might be suggested that women with many general social contacts are likely to be employed, and that the stress associated with employment in combination with caring for a closed head injured man could lead to somatic symptoms. However, as already discussed, this explanation is discounted by the fact that no significant association was found between employment status and burden or symptomatology in the closed head injured group. It is more likely that the correlation between diffuse social support and somatic symptoms represents a type 1 error, and should not be taken seriously until replicated.

Interestingly, no difference was found between the two groups in the present study in relation to availability of a confidant. As predicted, however, wives of closed head injured men were significantly less likely to name their husbands as their confidants than were wives of men with spinal cord injuries. The difference
between the two groups was striking, with SCI/w naming their husbands as their primary confidants twice as often as CHI/w.

It is likely that the personality changes and other mental sequelae of head injury will render the closed head injured man incapable of providing his wife with emotional support. Such a suggestion was made by Elsass and Kinsella (1987), in their study of social support among head injured patients. They noted that while the head injured population reported deficient availability of both central and more diffuse social relationships, they reported that they were satisfied with the current levels of both. Elsass and Kinsella offer a number of explanations for this apparent anomaly.

They suggest that the head injured may be either cognitively unable to experience the intimate confiding relationships that they once shared with spouses or girlfriends, or alternatively that they are satisfied with the quality of their reduced interpersonal interactions, as a function of having lowered their expectations of relationships. With regard to the former, Elsass and Kinsella suggest that cognitive changes such as loss of insight and increased egocentricity may affect the person's perception of a relationship to the point where the exclusion of intimate relationships may not be missed by them. Alternatively, the personality and cognitive sequelae of head injury may mean that the head injured are no longer able to cope psychologically with the intensity of confiding relationships, and so
prefer more superficial social contacts.

While the head injured may, according to Elsass and Kinsella, lack a confiding relationship, wives of head injured patients did not, in the present study, report a lack of a confidant and were comparable to the spinal group and to Braithwaite's (1990) group of carers of the elderly in this regard. However, it appears that the wives of closed head injured men must look outside their marriage for this form of relationship.

While the literature on social support does not consider differences in perceived quality of intimate social support as a function of the source of the support, the findings of the present study suggest that this is an important consideration which should be addressed in future research. An explanation for the importance of the confidant being one's spouse can be found in the literature on role theory and marital satisfaction already discussed. Such an explanation suggests that looking for an intimate confiding relationship outside of marriage runs counter to marital role expectations. In situations where emotional support is provided by a source other than the spouse, it is to be expected that wives will report low levels of marital satisfaction.

Contrary to predictions, the presence of a confidant was for the most part not related to symptomatology, burden or marital satisfaction in either group. A significant negative correlation was
noted, however, between burden and the presence of a confidant for the spinal group only. Presence of a confidant per se did not appear to be important to CHI/w, a finding at variance with the buffering model of social support (eg. Brown & Harris, 1978; Henderson, Byrne & Duncan-Jones, 1981; Brown, Bhrolchain & Harris, 1975). It should be noted, however, that a general community sample would have to be included in future research to assess the broader theoretical implications of this finding. As both groups in the present study were drawn from clinical populations, they would be expected to report more stress than the general community, and so cannot be seen as adequately assessing the buffering model, where it is necessary to have subjects suffering from both low and high levels of stress.

The present study provides some support for the suggestion that the extent to which the women named their husbands as their confidants was associated with their reported level of marital satisfaction, burden, and symptomatology. It was found that whether or not the husband was named as the confidant (H/SS) was correlated with burden for the SCI/w and that this relationship approached significance for the CHI/w group. A similar pattern was noted for marital satisfaction. It could be concluded, therefore, that while the presence of a confidant per se is not associated with wives' reported well-being or marital satisfaction, whether or not the woman's confidant was her husband was associated with her reports of both
burden and of marital satisfaction. However, it does not appear that whether or not the husband was the person to provide an intimate confiding relationship was associated with wives' symptomatology. The reasons for this anomaly are unclear, but suggest that the relationship between presence of a confidant (and more specifically the identity of reported confidant), and symptomatology is a complex one. It is possible that a wife's reaction to lack of intimate social support within her marriage is mitigated by other factors, some of which may not yet have been investigated in research into the impact of closed head injury on the spouse. One such factor may be the wife's personal resources, her ability to cope and the style of coping which she adopts. Coping resources as a possible focus of future research will be discussed later in this chapter.

Overall, the findings of the present study indicate that the relationship between social support and the wife's well-being following closed head injury in their spouse is a complex one. The current study, which is the first to investigate spouse's social support following closed head injury, provides evidence that while both diffuse social support and presence of a confidant per se are unrelated to wife's well-being, the presence of the husband as her confidant is related to both marital satisfaction and reported burden. The fact that the current study employed a control group of men who had suffered physical disability, makes it possible to conclude that the differences
in likelihood of the women in each group naming their husband as their confidant is probably related primarily to the mental sequelae of head injury. These findings highlight the need for further research in this area, and underline the importance of such studies including the extra dimension of H/SS described in the present study.

4.5 Wife's personality/flexibility

Contrary to predictions, the personality variable of flexibility was not found to be associated with burden, symptomatology or marital satisfaction for either group. For the total group, however, significant correlations were noted for both somatic symptoms and marital satisfaction. It is not clear why these correlations were present for the total group, although the nonsignificant correlations for each group could result from the fact that there was a restriction of range in scores on the flexibility scales. The pattern of results was, however, different for both samples. The scores of the CHI/w clustered toward the inflexible end of the scale, while the scores of the SCI/w clustered around the medium to high flexibility region. In fact, after exclusion of an outlying score in the CHI/w group (i.e. > 2 S.D.'s from the mean), a comparison between the groups indicated significantly greater flexibility in the SCI group.†

†  \( t(34) = -2.44, p < .05. \) ( CHI/w  \( M = 8.06; S.D. = 2.49; \) SCI/w  \( M = 11.59; S.D. = 5.58 \).
No difference between the two groups was predicted, and the fact that such a result was found raises the question of direction of causality. It could not reasonably be expected that the husbands of inflexible women are more likely to suffer closed head injuries as opposed to spinal cord injuries, than are the husbands of women who score in the medium to high range on this personality variable. A more probable explanation of the current finding is that CHI/w become less flexible or adaptable as a result of the nature of their husband's injury. The cognitive and mental sequelae of closed head injury, specifically such personality factors as unpredictability, irritability and lack of emotional control; and cognitive factors such as inability to plan or sustain activity, and compromised ability to perform tasks which require new learning, may be best dealt with by establishing routine and predictability in the patient's environment. As such, adaptability, which may be a useful coping strategy following spinal cord injury in one's husband, may actually exacerbate the negative effects of the sequelae of closed head injury on the family.

Such a suggestion raises a number of possibilities for future research. Firstly, it could suggest that the relationship between the changes which accompany head injury (specifically personality changes) and wife's well-being and reported level of marital satisfaction is a straightforward one. Specifically, the more personality changes noted in the husband following injury, the more
burden, symptomatology and marital dissatisfaction the wife will report, irrespective of her own personality characteristics (notably flexibility).

Alternatively, other factors may determine the wife's reaction to her husband's injury. One such factor, as yet uninvestigated in the literature on closed head injury is the wife's coping resources. The suggestion that the existence of stress may be less important to well-being than how the individual copes with this stress has been the subject of considerable research in the last twenty years (e.g., McCubbin, Joy, Cauble, Comeau, Patterson, & Needle, 1980; Aldwin & Revenson, 1987).

Most recent research into coping and mental health notes that the relationship between these variables is complex. Some recent findings appear to have specific relevance to the current study. Firstly, it has been found that a mutually reinforcing causal cycle may exist between maladaptive coping strategies and mental health. Thus, more emotional distress tends to be associated with more severe problems, and an increased likelihood that individuals will employ maladaptive coping strategies, possibly increasing their emotional distress (Felton & Revenson, 1984; Aldwin & Revenson, 1987). As such, because the personality changes associated with head injury are more severe than those associated with spinal injury, CHI/w may suffer more emotional distress and consequently employ less adaptive coping
strategies in response to these changes, thereby further increasing their distress.

Another issue examined in the coping research is the perceived efficacy of coping strategies. For instance, Aldwin & Revenson (1987) found that when the coping strategy of negotiation was used and perceived to be successful, it markedly reduced symptoms. However, when it was used but not perceived to be successful, it increased emotional distress. It is likely that the sequelae of closed head injury make the success of certain coping strategies (such as negotiation) less feasible than they would be when used to deal with primarily physical disability. The very changes which cause most stress among wives of men with closed head injury (e.g. personality changes relating to emotional control), may also render their husbands cognitively incapable of responding favourably to their wives attempts to cope with these changes, thereby decreasing the efficacy of the coping strategies employed.

4.6 Clinical Implications of findings

The findings of the present study indicate that wives of men who have sustained severe and disabling injuries, especially the wives of men with closed head injuries are at considerable risk of developing symptomatology, and of reporting marital dissatisfaction in the years following their husband's injury.
The extent of symptomatology reported among women whose husbands had suffered closed head injuries was such that these women must be considered as a patient group in themselves, and be offered a variety of preventative and clinical services accordingly. Very few of the women surveyed felt that they had received the level and type of support that they required from health agencies following their husband's accident. Women in both groups expressed a desire to be involved in their husband's rehabilitation, to be advised on management when he is discharged from hospital, and advised of possible personality and other changes and their resultant problems. They also expressed the need for joint counselling for themselves and their husbands, both while their husbands were in hospital, and in the years following.

Health agencies need to provide a variety of services to wives of men who have sustained closed head injuries. Firstly, as the women themselves pointed out, they need information. Specifically, they need to be warned of the possible sequelae of head injury, especially of the more subtle personality and behavioural changes, as such changes are consistently found to be detrimental to wives' well-being. They need to be aware of the fact that despite apparent physical recovery, their husbands may not be able to perform many of the marital roles which they had previously carried out. The distribution of household tasks could be discussed in counselling and more complex tasks could
be reassigned to the wife, children or to outside helpers. While such a
group reassignment of tasks may not always be possible, at least the
wife would be psychologically prepared for such a redistribution of
tasks. This preparation could prevent the distress which can arise as a
consequence of the wife's resentment of her task over-load, or from
her frustration at trying to enlist her head injured husband to perform
his pre-injury task-load.

Secondly, the women need to be taught the skills required to
effectively manage the mental and behavioural sequelae of closed head
injury (eg. behaviour modification, learning when to withdraw from
conflict). Such training would equip them with effective coping
strategies, and so minimize the escalation of distress that is produced
by maladaptive or ineffective coping strategies.

Thirdly, the women need support, both from medical and related
health agencies and from self help groups. The nature of this support
would change over time, but results of the present study indicate that
this support must continue, if not be escalated, once the husband
leaves hospital. The present findings indicate that the personality
changes which accompany closed head injury cause most distress in
spouses, and that these personality changes are related to marital role
changes and also to a loss of emotional support from the husband.
Given such changes, it is not surprising that wives of closed head
injured men report little marital satisfaction. As these women
become aware of the chronicity of changes in their husbands, it would be expected that they would experience some level of grieving for the relationship they had with their husband prior to his injury. The women need to be supported through ongoing grief counselling. Her efforts to cope with her husband's personality changes also need to be acknowledged and supported.

It is clear that the wives of severely injured men (particularly CHI) need to be offered ongoing support services long after their husband is discharged from hospital. Interestingly, while a support group for relatives of the head injured exists in Australia (Headway), few of the women were aware of its existence and none were involved in the group. The women tended to be advised of support services in the early period after their husband's accident, at a time when they were probably overloaded with information, concentrating on their husband's physical recovery and maintaining optimism for his future recovery. It would appear more useful, considering the results of the present study, to re-advice women of available support services some time after their husbands have returned home.

Finally, health agencies need to focus on the family as a whole as a unit of treatment following closed head injury. Specific sequelae of head injury such as loss of emotional control or sensitivity to noise are likely to have important repercussions for the whole family. Further, given the fact that closed head injury has been shown to
compromise not only the patient's post injury functioning but also put the spouse at increased risk of developing clinical levels of symptomatology, children whose fathers have suffered closed head injury must be considered an 'at risk' group. It is likely that some level of grief is felt by children following closed head injury, as they notice that their father is 'different' and their mother unhappy. Childrens reactions to this loss will vary, but it is possible that increased behavioural problems, acting out, depression and regression to an earlier developmental stage may occur. These problems are likely to place further stress on the wife of the head injured man and thereby begin a cycle which exacerbates problems within the family system. As such cycles can become quickly entrenched, family interventions (eg. family counselling ) soon after head injury serve a vital preventative function, as well as forming part of a comprehensive ongoing support network.

4.7 Conclusions

The present study makes a number of unique contributions to research into the impact of closed head injury on the patient's relatives. It both extends the scope of previous research in the area and addresses some of the methodological shortcomings of previous studies. Such studies have typically failed to employ truly comparable control groups, criteria for inclusion in the head injury group has often been so broad as to limit the interpretation of obtained results, and
measures of relative's outcome have rarely been psychometrically acceptable. The present study employed a control group matched for severity and chronicity of injury. Criteria for subject inclusion was specified so that each of the two groups were internally homogenous in regard to age, severity and type of family relationship.

Significantly, this is the first investigation to focus on spouses of the head injured, and to examine in any detail the impact of head injury on the marital relationship. Furthermore, the use of widely recognized and accepted symptom scales, enabled the prevalence of clinical symptomatology among the wives of closed head injured men to be compared with that of a clinical comparison group, and with a community sample.

The present study demonstrates that a high level of clinical symptomatology in relatives of the head injured persists beyond a year post injury. Most previous studies, and certainly those using psychometrically sound measures of symptomatology, do not extend beyond a year post injury.

Marital satisfaction, marital role change, social support and wives' adaptability have not been previously empirically investigated. Accordingly, the results of the present study provide valuable insights into the predictors of well-being in wives of closed head injured men, and suggest directions for future research. While husband's personality change was found to be clearly associated with wives'
well-being, the relationship between wives' well-being, marital role
change and social support appears to be more complex, and warrants
further investigation. As such, the current findings highlight the need
for future research to be based in a wider theoretical context, and to
take into account other possible predictive factors, such as the wife's
personal and coping resources. Given that many of the variables
included in this study have not been previously investigated, the
results require replication, preferably using larger sample sizes,
before firm conclusions can be drawn. Nevertheless, the current study
should form a useful basis for future research.

The findings of the present study carry important clinical
implications. They underline the fact that living with a spouse who
has suffered a closed head injury is very stressful. Once the head
injured patient is discharged from hospital, the ongoing burden of
caring for them is usually left to their family. Given the pressures the
sequelae of head injury can place on a family, all members of the
family are 'at risk' of developing clinical symptomatology. As such,
the family as a whole needs to be monitored and given access to a
variety of support services. Support from health and welfare agencies
should be offered to families of head injured patients early in the
rehabilitation process, and more importantly, should be continued
beyond the patients' hospitalization, and sustained in the years
following.
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Panting, A. & Merry, P. H. (1972) The long term rehabilitation of severe head injuries with particular reference to the need for social and medical support for the patient's family. *Rehabilitation.* (Bonn), 38, 33-37.


Dear 

As you probably remember I was involved in the treatment of your husband following his injury. I am writing to introduce Mary McGrath who is undertaking research at the Australian National University.

She is studying the impact of husband's severe injury on families, in an effort to find out what factors, if any, produce most problems for wives in the months following their husband's injury. We hope that finding out this sort of information will help provide the most appropriate sort of support services for wives of injured men in the future.

In the past many wives have felt left out of their husband's rehabilitation process, despite the fact that they provide most post-hospital care for their husbands. We believe that wives can provide important insights into the problems associated with severe injury, the changes it produces in that patient and the changes these impose, if any, on family life in general. As such, we are very interested in your experience of and your opinions on these issues.

Mary has constructed a questionnaire which covers topics such as changes associated with injury, family stress and health matters. It takes about an hour to complete and your responses will be absolutely confidential. She would greatly appreciate your participation in her research, which will involve only an hour of your time.

Mary will call you next week to find out whether you are willing to participate in her study.
If you have any queries please contact Jenny Batchelor on 635-0333.

Yours sincerely,

JENNY BATCHELOR
Clinical Neuropsychologist
Dear

Please find enclosed the questionnaire which we discussed on the phone last week. As you will see some of it relates to you and your health and some to your husband's health and to changes in your family since your husband's accident. It should only take about 50 minutes to complete, as there is no need to spend much time on each individual question.

If you feel any important issues have been left out or that you would like to add any comments please do so on the back of the last page. As I am trying to gain a thorough picture of what it is like for wives after their husband's injury any additional comments you may have would be appreciated (eg. what you found particularly hard about his time in hospital and his return home, or what helped you cope).

If you have any queries about the questionnaire please leave a message for me with Tina Holt on (02) 635 0333 and I will get back to you. An envelope has been enclosed for you to return the completed survey to me and if you could return it as soon as possible it would be greatly appreciated.

Once again, thank you for your participation, I am confident that the findings of this research will help us to try to improve support services for wives of men who have had severe injuries by giving us a better idea of what life is actually like after the men return home.

Yours sincerely,

Mary McGrath
Dear

As you probably remember, I was involved in the treatment of your husband, following his injury. I am writing to introduce Mary McGrath who is undertaking research at the Australian National University.

She is studying the impact of husband's severe injury on families, in an effort to find out what factors, if any, produce most problems for wives in the months following their husband's injury. We hope that finding out this sort of information it will help provide the most appropriate sort of support services for wives of injured men in the future.

In the past many wives have felt left out of their husband's rehabilitation process, despite the fact that they provide most post-hospital care for their husbands. We believe that wives can provide important insights into the problems associated with severe injury, the changes it produces in that patient and the changes these impose, if any, on family life in general. As such, we are very interested in your experience of and your opinions on these issues.

Mary has constructed a questionnaire which covers topics such as changes associated with injury, family stress and health matters. It takes about 3/4 hour to complete and your responses will be absolutely confidential. She would greatly appreciate your participation in her research, which will involve only an hour of your time.

Mary will call you next week to find out whether you are willing to participate in her study. If you have any queries please contact me on 240 2657.

Yours sincerely

Vernon Hill
Director
SPINAL INJURIES UNIT
Dear Mrs,

Let me tell you a little about the questionnaire which we have enclosed. As you will see some of it relates to you and your health and some to your husband's health and to changes in your family since your husbands accident. Please answer each question, even if you feel it doesn't relate to your situation. The survey takes about 50 minutes to complete, and there is no need to spend much time on each individual question. If possible please try to find some time alone to fill out the questionnaire.

If you feel any important issues have been left out or that you would like to add any comments please do so on the back of the last page. As I am trying to gain a thorough picture of what it is like for wives after their husband's injury any additional comments you may have would be appreciated (eg. what you found particularly hard about his time in hospital and his return home, or what helped you cope).

If you have any queries about the questionnaire please leave a message for me with Dr. Hill's secretary on (07) 240 5061 and I will get back to you. An envelope has been enclosed for you to return the completed survey to me and if you could return it as soon as possible it would be greatly appreciated.

Once again thank you for your participation,

Yours sincerely,

Mary McGrath
Appendix B

Questionnaire

[Demographics]

Thank you for participating in the present research. The following questionnaire relates to your present health, and to your perceptions and opinions regarding your marriage.

Please try to answer all questions. In cases where you are unsure, put the answer which is most correct, most of the time. Remember, there are no right or wrong answers. (Please be assured that your responses will be kept confidential. Once your answers have been matched to your husband’s medical data, your name will be removed from the answer sheet.)

Name: ...............................................

Age: .........................

Address: ............................................................

........................................................................

Phone No. (home).................................

(work) ..........................................

Occupation: ....................................................... 

Full time or part time? .........................

Hours worked per week/which days? ..................

Have your occupation or working hours changed since your husband’s accident? ........

If yes, what was your previous job? ......................

Working hours/days? ..............................

How many years of schooling have you completed? ........

Do you have any children? ...........

If yes, list their names and ages: ..................................................

........................................................................

Are there any other members of your household? If yes, list their names and relationship to you. ........................................................................

........................................................................
Has anyone moved in with you, or left your home since your husband's accident?
If yes, explain. ............................................................................................................

How many years had you and your partner been living together prior to his accident? ..............

How many years have you been together now? ..............

As a couple, which income bracket are you and your husband in?

- less than $10,000 per year ..............
- $10,000 - $15,000 per year ..............
- $15,000 - $20,000 per year ..............
- $20,000 - $30,000 per year ..............
- more than $30,000 per year ..............

Please fill in the following background information about your husband/ partner.

His name: ......................... Age: .........................

How many years of schooling did he complete? .........................

What was his occupation before his accident? .........................

How many hours a week did he work? .........................

Which days? (eg. Mon-Fri or Mon- Sat) .........................

Detail his work history since the accident (please list jobs, approximate hours per week). If he is currently working underline his present job.

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

When was your husband's accident? .........................

What type of accident was it? (eg. car accident) .........................

Is there an insurance claim pending? .................

Has your husband received compensation? (list approx dates and % of income)
........................................................................................................................................
Below are a list of problems which are often associated with severe injury. Please tick those which you believe your husband/partner suffers from as a result of his accident.

Memory problems
Language problems
Physical problems
Tiredness
Trouble concentrating
Intellectual (thinking) problems
Personality change
Anxiety
Depression
Restlessness
Moodiness
Other (please list)

(1) Do you believe your husband has changed since the accident? (circle)

yes no

(2) If you believe your husband has changed, how much strain have these changes been on you?

Please circle your response,

1 2 3 4 5 6 7

no moderate strain severe strain
We would like to know if you have had any medical complaints, and how your health has been in general, *over the past few weeks*. Please answer the following questions simply by circling the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

**HAVE YOU RECENTLY:**

1. - been able to concentrate on whatever you're doing?  
   - Better than usual  
   - Same as usual  
   - Less than usual  
   - Much less than usual

2. - lost much sleep over worry?  
   - Not at all than usual  
   - No more than usual  
   - Rather more than usual  
   - Much more

3. - been having restless, disturbed nights?  
   - Not at all than usual  
   - No more than usual  
   - Rather more than usual  
   - Much more

4. - been managing to keep yourself busy and occupied?  
   - More so than usual  
   - Same as usual  
   - Rather less than usual  
   - Much less than usual

5. - been getting out of the house as much as usual?  
   - More than usual  
   - Same as usual  
   - Less than usual  
   - Much less than usual

6. - been managing as well as most people would in your shoes?  
   - Better than most  
   - About the same  
   - Rather less well  
   - Much less well

7. - felt on the whole you were doing things well?  
   - Better than usual  
   - About the same  
   - Less well than usual  
   - Much less well

8. - been satisfied with the way you've carried out your task?  
   - More satisfied  
   - Same as usual  
   - Less satisfied  
   - Much less satisfied

9. - been able to feel warmth and affection for those near you?  
   - Better than usual  
   - About same as usual  
   - Less well than usual  
   - Much less well

10. - been finding it easy to get on with other people?  
    - Better than usual  
    - About same as usual  
    - Less well than usual  
    - Much less well

11. - spent time chatting with people?  
    - More time than usual  
    - About same as usual  
    - Less than usual  
    - Much less than usual

12. - felt that you are playing a useful part in things?  
    - More so than usual  
    - Same as usual  
    - Less useful than usual  
    - Much less useful

13. - felt capable of making decisions about things?  
    - More so than usual  
    - Same as usual  
    - Less so than usual  
    - Much less capable
<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. felt constantly under strain?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
</tr>
<tr>
<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>15. felt you couldn't overcome your difficulties?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
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<tr>
<td>16. been finding life a struggle all the time?</td>
<td>Not at all</td>
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<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<tr>
<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>17. been able to enjoy your normal day-to-day activities?</td>
<td>More so than usual</td>
</tr>
<tr>
<td></td>
<td>Same as usual</td>
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<tr>
<td></td>
<td>Less so than usual</td>
</tr>
<tr>
<td></td>
<td>Much less than usual</td>
</tr>
<tr>
<td>18. been taking things hard?</td>
<td>Not at all</td>
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<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>19. been getting scared or panicky for no good reason?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
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<tr>
<td>20. been able to face up to your problems?</td>
<td>More so than usual</td>
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<tr>
<td></td>
<td>Same as usual</td>
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<tr>
<td></td>
<td>Less able than usual</td>
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<td></td>
<td>Much less able</td>
</tr>
<tr>
<td>21. found everything getting on top of you?</td>
<td>Not at all</td>
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<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>22. been feeling unhappy and depressed?</td>
<td>Not at all</td>
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<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
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<tr>
<td>23. been losing confidence in yourself?</td>
<td>Not at all</td>
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<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
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<tr>
<td>24. been thinking of yourself as a worthless person?</td>
<td>Not at all</td>
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<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>25. felt that life is entirely hopeless?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
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<td></td>
<td>Rather more than usual</td>
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<tr>
<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>26. been feeling hopeful about your own future?</td>
<td>More so than usual</td>
</tr>
<tr>
<td></td>
<td>About same as usual</td>
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<tr>
<td></td>
<td>Less so than usual</td>
</tr>
<tr>
<td></td>
<td>Much less hopeful</td>
</tr>
<tr>
<td>27. been feeling reasonably happy, all things considered?</td>
<td>More so than usual</td>
</tr>
<tr>
<td></td>
<td>About same as usual</td>
</tr>
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<td></td>
<td>Less so than usual</td>
</tr>
<tr>
<td></td>
<td>Much less than usual</td>
</tr>
<tr>
<td>28. been feeling nervous and strung up all the time</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
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<tr>
<td></td>
<td>Rather more than usual</td>
</tr>
<tr>
<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>29. felt that life isn't worth living?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
</tr>
<tr>
<td></td>
<td>Rather more than usual</td>
</tr>
<tr>
<td></td>
<td>Much more than usual</td>
</tr>
<tr>
<td>30. found at times you couldn't do anything because your nerves were so bad?</td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>No more than usual</td>
</tr>
<tr>
<td></td>
<td>Rather more than usual</td>
</tr>
<tr>
<td></td>
<td>Much more than usual</td>
</tr>
</tbody>
</table>
HERE IS A LIST OF QUESTIONS ABOUT HOW SOME PEOPLE FEEL FROM TIME TO TIME. PLEASE CIRCLE THE NUMBER WHICH MOST NEARLY REPRESENTS HOW DISTRESSING YOU HAVE FOUND EACH OF THESE THINGS IN THE PAST FEW WEEKS.

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recently I have worried about every little thing.</td>
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<tr>
<td>2. Recently I have been so miserable that I have had difficultly with my sleep.</td>
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<tr>
<td>3. Recently I have been breathless or had a pounding of my heart.</td>
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<tr>
<td>4. Recently I have been so &quot;worked up&quot; that I couldn't sit still.</td>
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<tr>
<td>5. Recently I have been depressed without knowing why.</td>
<td></td>
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<td></td>
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<tr>
<td>6. Recently I have gone to bed not caring if I never woke up.</td>
<td></td>
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<tr>
<td>7. Recently, for no good reason, I have had feelings of panic.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8. Recently I have been so low in spirits that I have sat for ages doing absolutely nothing.</td>
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</tr>
<tr>
<td>9. Recently I have had a pain or tense feeling in my neck or head.</td>
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<tr>
<td>10. Recently the future has seemed hopeless.</td>
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</tr>
<tr>
<td>11. Recently worrying has kept me awake at night.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Recently I have lost interest in just about everything.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Recently I have been so anxious that I couldn't make up my mind about the simplest thing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Recently I have been so depressed that I have thought of doing away with myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Instructions**

Below is a list of problems and complaints that people sometimes have. Read each carefully, and circle one of the numbered descriptors that best describes HOW MUCH DISCOMFORT THAT PROBLEM HAS CAUSED YOU DURING THE PAST TWO WEEKS INCLUDING TODAY.

**HOW MUCH WERE YOU DISTRESSED BY:**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Headaches</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Pains in the heart or chest</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Pains in the lower back</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Nausea or upset stomach</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Soreness of your muscles</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Trouble getting your breath</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Hot or cold spells</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Numbness or tingling in parts of your body.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. A lump in your throat</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Feeling weak in parts of your body.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Heavy feelings in your legs</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Faintness or dizziness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
[Personality profiles]

Instructions. Below are a series of pairs of opposite adjectives. We would like you to describe what your husband was like before his accident. (Whether or not you feel your husband has changed at all in recent times.) Please do this by rating how much each of the adjectives described what he was generally like. For example if he was usually very affectionate, then you would circle:

1  2  3  4  5  6
Affectionate Cold

However, if he was slightly cold then you would circle:

1  2  3  4  5  6
Affectionate Cold

Do this for all the items on the page, and remember try to rate him as he was before his accident.

{1}  1  2  3  4  5  6
Talkative Quiet

{2}  1  2  3  4  5  6
Even-Tempered Quick tempered

{3}  1  2  3  4  5  6
Relies on others Does things himself

{4}  1  2  3  4  5  6
Affectionate Cold

{5}  1  2  3  4  5  6
Fond of company Dislikes company

{6}  1  2  3  4  5  6
Irritable Easy-going

{7}  1  2  3  4  5  6
Unhappy Happy

{8}  1  2  3  4  5  6
Excitable Calm
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Energetic</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Lifeless</td>
</tr>
<tr>
<td>10</td>
<td>Down to earth</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Out of touch</td>
</tr>
<tr>
<td>11</td>
<td>Rash</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Cautious</td>
</tr>
<tr>
<td>12</td>
<td>Listless</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Enthusiastic</td>
</tr>
<tr>
<td>13</td>
<td>Mature</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Childish</td>
</tr>
<tr>
<td>14</td>
<td>Sensitive</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Insensitive</td>
</tr>
<tr>
<td>15</td>
<td>Cruel</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Kind</td>
</tr>
<tr>
<td>16</td>
<td>Generous</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Mean</td>
</tr>
<tr>
<td>17</td>
<td>Unreasonable</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Reasonable</td>
</tr>
<tr>
<td>18</td>
<td>Stable</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Unstable</td>
</tr>
</tbody>
</table>
Below is the same series of adjectives, please read each as before except rate them this time according to which best describe what your husband is like now. If you are not sure because of different behavior in different situations, please try to rate according to what he is like most of the time.

Remember, we want you to describe what your husband is like now, it is important that you do not refer to your previous answers.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Talkative</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Quiet</td>
</tr>
<tr>
<td>2</td>
<td>Even-Tempered</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Quick tempered</td>
</tr>
<tr>
<td>3</td>
<td>Relies on others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Does things himself</td>
</tr>
<tr>
<td>4</td>
<td>Affectionate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Cold</td>
</tr>
<tr>
<td>5</td>
<td>Fond of company</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Dislikes company</td>
</tr>
<tr>
<td>6</td>
<td>Irritable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Easy-going</td>
</tr>
<tr>
<td>7</td>
<td>Unhappy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Happy</td>
</tr>
<tr>
<td>8</td>
<td>Excitable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Calm</td>
</tr>
<tr>
<td>9</td>
<td>Energetic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Lifeless</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Out of touch</td>
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<td>11</td>
<td>Rash</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Cautious</td>
</tr>
<tr>
<td>12</td>
<td>Listless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Enthusiastic</td>
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</tr>
<tr>
<td>13</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<td>Childish</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Sensitive</td>
<td></td>
<td></td>
<td></td>
<td>Insensitive</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
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</tr>
<tr>
<td></td>
<td>Cruel</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<tr>
<td></td>
<td>Generous</td>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
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<tr>
<td>17</td>
<td>1</td>
<td></td>
<td></td>
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<td>5</td>
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<tr>
<td></td>
<td>Unreasonable</td>
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<td>Reasonable</td>
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<tr>
<td>18</td>
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<td></td>
<td></td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Stable</td>
<td></td>
<td></td>
<td></td>
<td>Unstable</td>
<td></td>
</tr>
</tbody>
</table>
Below are a list of household tasks. Who did what in your household before your husband's accident? Please circle the appropriate number for each item. Remember, please answer according to who performed each task *before the accident.*

<table>
<thead>
<tr>
<th>Task</th>
<th>Woman always</th>
<th>Woman more than man</th>
<th>Woman and man equally</th>
<th>Man more than woman</th>
<th>Man only</th>
<th>Not applicable (don't do)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Grocery Shopping</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2. Earning Money</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>3. Disciplining children</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>4. Expressing physical affection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>5. Mowing lawns</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>6. Changing nappies/preparing older children's meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>7. Organizing vacations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>8. Listening to problems of family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>9. Making decisions on large purchases such as a new car</td>
<td>1</td>
<td>2</td>
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<tr>
<td>10. Telephone/write to wife's parents</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>0</td>
</tr>
<tr>
<td>11. Cleaning the house</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>0</td>
</tr>
<tr>
<td>12. Dealing with bank managers etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>13. Teaching children the difference between right and wrong</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>14. Accepting physical affection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>15. Doing repairs around the house</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>16. Staying at home with a sick child</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>17. Arranging social activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>18. Giving reassurance to family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>19. Deciding how to organize financial affairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
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<tr>
<td>20. Telephone/write to husband's parents</td>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>
Below is the same list of tasks. This time please answer according to who performs each task most of the time, now. Please circle the appropriate number as before and remember this time state who *currently* performs each task.

<table>
<thead>
<tr>
<th>Task</th>
<th>Woman always</th>
<th>Woman more than man</th>
<th>Woman and man equally</th>
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<td>2</td>
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<td>4</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>
[Marital Satisfaction]

Below are some questions about your marriage, please circle the response which best describes how you feel about your marriage as it is at the moment.

{1} How rewarding is it being a wife/partner?

1  not at all rewarding
2  moderately rewarding
3  very rewarding

{2} I was much happier before I was married than I am now.

1  yes, much happier
2  about the same
3  no, I am happier now

{3} In relation to the marriages of my friends and associates, I would say that my marriage is -

1  much more satisfying
2  as satisfying
3  much less satisfying

{4} If you were to marry again, would you want to marry the same person?

1  No, probably not
2  unsure
3  yes, definitely

{5} Does your husband seem to understand you and your problems?

1  yes, always
2  sometimes
3  no, never

{6} Do you confide your inner thoughts and feelings to your husband?

1  no, never
2  sometimes
3  yes, always

{7} Are there many things that you enjoy doing with your husband?

1  no, very few
2  quite a few
3  yes, lots of things
8. Do you feel that you can depend on your husband for support and encouragement when you really need it?

1  no,  
2  unsure  
3  yes,  
4  definitely not  
5  always

9. Do you and your husband have many of the same kinds of interests?

1  yes,  
2  Some  
3  lots of them  
4  no,  
5  no common interests

10. Which of the following best describes the degree of happiness in your marriage?

1  very happy  
2  in between  
3  very unhappy
[Social Support]

These questions have to do with people you are close to or have other contacts with. (Please note that family members are included and that 'contact' means speak with.)

(1) In an ordinary week, how many people whom you know would you say you have contact with?

Number please........................

(2) These days, how many people with similar interests to you do you have contact with?

Number please........................

(3) Are there people around from whom you can easily ask small favours? Such as people you know well enough to borrow tools or things for cooking?

Number please........................

(4) How many friends do you have who can come to visit you at any time and take things as they find them: e.g. They wouldn't be embarrassed if things were untidy?

Number please........................

(5) Among family and friends, how many people are there whom you can contact at anytime and talk to frankly, without being guarded?

Number please........................

(6) How many people are there who depend on you particularly for help, guidance, or advice in day-to-day life?

Number please........................
(7) Is there any particular person you feel you can lean on? (circle one number)

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Who is this? (note relationship)

(8) Do you feel there is one particular person who feels very close to you? (circle one number)

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Who is this? (note relationship)

(9) When you are happy, is there any particular person you can share it with - someone you know will feel happy simply because you are?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Who is this? (note relationship)

(10) Do you have someone you can share your most private feelings with?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Who is this? (note relationship)

(11) Do you have someone who comforts you by giving you a hug?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Who is this? (note relationship)
Below are a series of statements. Please read each one, and decide whether the statement is true about you. If so, answer TRUE by circling T. If the statement is not true about you, answer FALSE by circling F.

<table>
<thead>
<tr>
<th>Statement</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often wish people would be more definite about things.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. It is annoying to listen to a person who cannot seem to make up their mind as to what they really believe.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. A well ordered life with regular hours suits me best.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. It is hard for me to sympathize with someone who is always doubting and unsure about things.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I often start things that I never finish.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Our thinking would be a lot better off if we would just forget about words like &quot;probably,&quot; &quot;approximately,&quot; and &quot;perhaps.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I never make judgements about people until I am sure of the facts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. A strong person will be able to make up his mind even on the most difficult questions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. For most questions there is just one right answer, once a person is able to get all the facts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I like to have a place for everything and everything in its place.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I don't like to work on a problem unless there is the possibility of coming out with a clear-cut and unambiguous answer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. It bothers me when something unexpected interrupts my daily routine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Most of the arguments or quarrels I get into are over matters of principle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I don't like things to be uncertain and unpredictable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Once I have my mind made up I seldom change it.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I think I am stricter about right and wrong than most people.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I am in favor of a very strict enforcement of all laws, no matter what the consequences.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I always make sure that my work is carefully planned and organized.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. The trouble with many people is that they don't take things seriously enough.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I set a high standard for myself and I feel others should do the same.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. People who seem unsure and uncertain about things make me feel uncomfortable.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Additional Results

#### C-1: Before accident personality ratings

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>mean CHI</th>
<th>mean SCI</th>
<th>t score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talkative</td>
<td>2.94</td>
<td>2.59</td>
<td>0.718</td>
</tr>
<tr>
<td>Even Tempered</td>
<td>2.39</td>
<td>2.36</td>
<td>0.079</td>
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<tr>
<td>Relies on Others</td>
<td>5.28</td>
<td>5.59</td>
<td>0.936</td>
</tr>
<tr>
<td>Affectionate</td>
<td>2.33</td>
<td>2.18</td>
<td>0.355</td>
</tr>
<tr>
<td>Fond of Company</td>
<td>2.10</td>
<td>2.12</td>
<td>0.170</td>
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<tr>
<td>Irritable</td>
<td>5.00</td>
<td>5.10</td>
<td>0.140</td>
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<td>Unhappy</td>
<td>5.33</td>
<td>5.30</td>
<td>0.145</td>
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<td>Excitable</td>
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<td>Energetic</td>
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<td>Down to Earth</td>
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<td>Rash</td>
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<td>4.24</td>
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<td>Listless</td>
<td>4.72</td>
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<tr>
<td>Mature</td>
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<td>Sensitive</td>
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</tr>
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<td>Cruel</td>
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<td>0.290</td>
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<td>1.78</td>
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<td>0.951</td>
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<td>Unreasonable</td>
<td>4.89</td>
<td>4.77</td>
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<tr>
<td>Unstable</td>
<td>1.50</td>
<td>1.71</td>
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</table>

*p<.05*

*p<.01***
### C-2: After accident personality ratings

<table>
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<th>mean CHI</th>
<th>mean SCI</th>
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</thead>
<tbody>
<tr>
<td>Talkative</td>
<td></td>
<td>3.78</td>
<td>3.71</td>
<td>0.123</td>
</tr>
<tr>
<td>Even Tempered</td>
<td></td>
<td>4.89</td>
<td>3.71</td>
<td>2.414*</td>
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<tr>
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*p<.05*

**p<.01**
### C-3: 2 factor ANOVA. Group and Type of Role Change summary table

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C-4: Chi-square analyses of each of the 10 marital roles

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<td>Decision-maker</td>
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* p<.05  
**p<.01
# C-5: Average Role item Scores for each group /before accident ratings

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<td>Earn</td>
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<td>Discip. children</td>
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<td>Give Affection</td>
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<td>Mow lawns</td>
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<td>Nappies</td>
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<td>Vacations</td>
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<td>Listen probs.</td>
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<td>Decisions</td>
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<td>Bank</td>
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<td>Accept Affection</td>
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<td>Org. Finances</td>
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<td>Phone h'parents</td>
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* p<.05
**p<.01
C-6: Correlations between type of role change within groups and wives' well-being

### CHL/w

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<tr>
<th></th>
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<th>GHQ</th>
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<th>M.Sat</th>
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<tr>
<td>SE</td>
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\( df = 17 \)

### SCI/w

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<th>Somat</th>
<th>M.Sat</th>
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<tbody>
<tr>
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<td>.092</td>
<td>-.041</td>
<td>.016</td>
<td>-.021</td>
<td>-.278</td>
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<tr>
<td>Task</td>
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<td>.161</td>
<td>.010</td>
<td>.100</td>
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<tr>
<td>( t )</td>
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<td>0.18</td>
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<tr>
<td>( p )</td>
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<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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\( df = 15 \)
C-7: Correlations between Severity of Injury (length of PTA) and wives' well-being.

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<tr>
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<th>M.Sat.</th>
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<td>PTA</td>
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<td>-.062</td>
<td>-.211</td>
<td>-.065</td>
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</table>

* p<.05  
**p<.01
Appendix D

Wives Additional Comments

Many of the women in both samples took the opportunity to write further comments on the back of the questionnaire. These are presented verbatim below (except when editing was necessary to maintain confidentiality).

Wives of closed head injured men

CHI/w -1

I find myself being very careful about what I say and how I say it, because his temper is very bad. We get into arguments very easily and since his accident he gets violent over the slightest things. *I find now I cant say what I feel in case he gets upset.*

We don't go out to socialize together because he gets very jealous and he walks out and leaves me wherever we are.

CHI/w -7

Thank you for giving me the chance to do this - the one thing I really felt after the accident was that no-one really cared how I felt or how much strain xxxx was putting on our family by his behaviour. The doctors only seemed interested in his physical recovery and his ability to be able to do computer games in his therapy sessions. Nobody appeared to care that his mental state was so bad or that he had changed so much. Also nobody offered me any support or told me what to expect or how to handle situations, I wasn't at all prepared for the personality changes.

Whilst things may appear as though I'm not handling things too well, I feel that I'm getting it all together and slowly realizing that I've just got to take a stronger stand on behalf of myself and the children's rights around our home, and I'm slowly learning to accept that this is the way it is, now.
Some of the questions I felt were not easy to answer by just saying yes/no true/false, sometimes I felt I needed to be able to say maybe or sometimes, but otherwise I thought it was very comprehensive and wonderful to be heard for once.

CHI/w - 13

1] *Because of xxxx's inability to tolerate noise, there is alot of friction created in our home that would otherwise not be there.* So much so, that I prefer life at home when xxxx is out at work, although I do like to see him - basically I do still love him - but the tension that is created by his insisting the children be quiet is very unfair. I sometimes feel we are a great burden to him.

2] I'm not at all happy with the way in which our lives have changed since the accident, I am a wife and mother and *had no intention of returning to the workforce.* It was impossible for xxxx to stay in his job, he seems to have lost all ability to learn new processes. Alot of my tension is created by trying to find the time to run the household, the family, work, and to do them all well.

CHI/w - 15

We found it very difficult financially at the time xxxx was off work, I feel there should be more help in that respect. We still have our house, car etc etc to pay off as well as living from day to day and even though xxxx was out of work for only 3 months, I reckon it put us about 2-3 years behind.

I found it extremely hard coming home to a small country town and all the talk, but it really helped me talking to people that didn't know any of us or our families (eg. the social worker at Westmead and the nursing staff helped alot).
I feel that more provisions should be made in society to make people like my husband feel he is accepted and not useless eg. sheltered workshops & work brought to the home (it is hard to keep him occupied).

A support group should be set up for wives like victims of rape or alcoholics anonymous.

The following things which I have listed so you can clearly see what life is now like for myself and my family.

1] The night of the accident which is like a nightmare to the children and I.
2] The next 3 days when xxxx's condition deteriorated and he had to be moved to a different hospital.
3] Day 4 when he had a second lot of emergency surgery when I waited not knowing if he would survive till 1.40 a.m.
4] My discovering he had a brain injury 3 weeks later when he talked to me.
5] Discovering he couldn't read.
6] Watching him at therapy when he didn't know colours, didn't know how to sit on the floor or how to get up again.
7] The endless driving to and from the hospital for 16 weeks altogether.
8] The disappointments as more problems were discovered over time.
9] The stay in Rehab with the other patients where you are faced with how bad it all is.
10] The day to day living with so many changes, difficulties and "being all alone in all this".
11] The marvellous support through all by hospital staff and some friends, some new friends who have come like new life out of the ashes.
Wives of spinal cord injured men

SCI/w - 7

If I had to answer the questionnaire a year ago, my answers would have been very different, at that time I felt that life wasn't worth living. I have now put my worries in God's hands.

SCI/w - 10

I feel that it should be compulsory for husbands and wives, or for that matter if it is a single person and their parents, to go through some sort of counselling together and be told on things that might happen during the stay at hospital eg. mood swings or irritability and has to handle it, or when at home after the hospital be told some of the adjustments that need to be made as a family. And advice on how to handle situations that might arise between husband and wife or father and child. *I think some sort of back-up counselling in say 1 years time, after release from hospital, to see how both are coping with the situation.*

With my experience I found it a little tough, when xxxx came home from hospital as we had a young baby. But I have never despaired because things can only get better and they are starting to already.

SCI/w - 15

The first 18 mths after the accident were the worst, the accident changed us both and I quite frankly didnt like the different personality my husband had then. Now after things have settled down he's more like the man he was prior to the accident.

His feelings of insecurity are still hard to handle at times. For a long time he was very angry with the world except no one else saw it, and he couldn't accept the changes in his personality. *His close family had to cope and it seemed alone with his behaviour at home.* His standard answer to anything was " that we didn't
understand". But in reality we knew about how he was feeling and we were trying
to make him more independent. Their physical independence may be achieved
whilst in hospital but their mental independence is only achieved once they are
discharged and I really dont think alot of lay people know how to help them
through this period. I was fortunate I understood the grief process and could
understand his physical problems and help him with these but I was in no way
prepared for the problems we had once he came home. To top it all off we had a
small baby who also had medical problems. xxxx was unable to give me any
support at this stage. I had to put on a brave face so to speak and soldier on and I
considered if I had to do it why couldn't he. We weren't communicating anymore
and were like 2 separate people living different lives in the same house, with small
children who couldn't understand what was happening.

Now a few years later, things have settled down. xxxx still has feelings of
insecurity and gets very frustrated at times, the children have grown up more and
he is more involved with them now. Things have improved. But we had to work it
out ourselves.

SCI/w - 16

I believe the wife should be more involved in the rehab. at the hospital. To
know what goes on and why and how she can best cope with the husband when
he is eventually discharged. Remembering that the family usually has no prior
experience in spinal injuries either.
Checklist of husband's problems since the accident

<table>
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<td>16</td>
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</table>

* $p < .05$
** $p < .01$

df=1

† rude socially (rubbishing people, loses alot of business contacts this way); explosive, not patient, cranky very easily; jokes alot more, annoying, temper-shorter and worse, cries alot when depressive, moods change quickly; general personality problems, hard to pinpoint, just not the same anymore; impatience; impatience, very demanding, selfish, cannot tolerate criticism; social life; low tolerance to noise; doesnt like stress; cannot stand loud noises, temper, double vision, no consideration, no allowances for others and so on; planning problems, balance, coordination problems.

‡‡ pain;
severe pain due to spasms;
pain;
impatience;
boredom;
frustration;
frustration;
phantom heat feelings.