

Psychosocial Impact of Head Injury in Families:  
The Wife's Perspective

by



Lois C. Peters

A dissertation  
presented to the University of Manitoba  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy  
in  
Department of Psychology



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LOIS C. PETERS

A thesis submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
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## ABSTRACT

Clinically, it is apparent that the marital relationship of head injured patients faces initial disruption as well as long-term stress in adjustment to disability. However, with the exception a few studies, there is little empirical data to substantiate this observation. In this study, three groups of head injury patients (mild, N=10; moderate, N=25; and severe, N=20) and their wives were assessed to focus on two poorly researched questions: (1) What is the psychosocial impact of a severe head injury on the healthy spouse? and (2) Are there specifiabale factors which can predict this impact? All couples were interviewed and assessed using a battery of measures within a time range of several months to eight years following the accident. Spouses in the severe group reported significantly more depressive symptomatology, were less able to come to a mutual agreement with their husbands, perceived less affectional expression within their marriages, and experienced less overall dyadic adjustment than the wives in the other two groups. In general, spousal depression was related to a more severe injury and a husband with poor psychosocial adjustment. Marital maladjustment was also associated with more severe injuries, and lower patient psychosocial outcome, as well as increased family financial strain. The findings were interpreted using fami-

ly systems theory, and implications for systemic interventions were highlighted.

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## INTRODUCTION

Health professionals and others have long recognized that the presence of a chronic illness can have a profound effect on family life. To date, however, the literature on illness and disability in adults has focused primarily on how chronically ill adults react to their disorder (Krupp, 1976). Methods of research and mental health intervention are dominated by a focus on the individual patient, whereas systematic study of the influence that a disabled adult may have on the rest of the family following hospital discharge and re-entry into the home has been largely ignored. This lack of attention is puzzling, since families of patients must attempt to cope with at least three major psychosocial stressors: (1) family activities must be reorganized to take into account the limitations and special needs of the patient member, (2) the potentially adverse effects of the illness/disability on the patient's physical and social functioning must be considered, and (3) changes in the patient can have potentially adverse effects upon the entire family's security and future. It might in fact be argued that the instrumental and emotional strain faced by the patient's family may be even more intense and demanding than that faced by the patient. Head injury is one disability which has only recently received growing attention in clini-

cal and scientific literature. Unlike other chronic illnesses (e.g. chronic renal failure), the family of a head injured patient must deal with physical and neuropsychological as well as emotional fall-out from the direct effects of the injury.

Unfortunately, despite tremendous advances which have been made in the trauma/neurosurgical resuscitation and treatment of the severely head injured, few such advances can be claimed for the treatment and rehabilitation of the patient in longer term care.

The consequent result has been a saving, and then prolonging of life, but with little attention paid to the quality of such life, that which most profoundly effects patients, their families, and the social network they are immersed in (Stambrook, 1984, p.34).

Clinicians/theoreticians have emphasized the value of viewing the family as a system (Minuchin, 1974) when assessing the impact of a variety of mental and physical disorders. In keeping with the systems approach, an examination of the psychosocial impact of disability, specifically head injury, should include the patient's family. Based on his work on childhood chronic illness, Whitt (1984) has stated that a conceptual framework of adaptation to chronic illness must encompass multiple developmental factors, illness variables, and social transactions.

Drotar, Crawford, and Bush (1984) have highlighted the importance of a family-centered approach which recognizes

the family's position as a powerful context of socialization and support for the ill member. Their framework also considers the emotional impact of illness-related stress on the well family members and appreciates the potential of preventive interventions for the enhancement of family life. While individual head injury patient programs are highly sophisticated and successful, health care professionals are beginning to acknowledge the need for intervention at the family level. In fact, the psychological reactions to physical disability most likely depend on an interaction between: (1) the physical stress of the illness per se, (2) the host's characteristics, and (3) situational or environmental factors (Verboerdt, 1972). Unfortunately the research on chronic illness, and more specifically on head injury, has not kept abreast with theory, and few methodologically sound studies exist, either which examine the family system as a whole or the couple subsystem. Given the paucity of research in this area, intervention programs for families of the head injured are poorly developed and attempts at appreciating systemic ramifications lack coordination between professionals (e.g. nurses, physicians, psychologists).

Given theoretical claims and clinical observations, it seems that basic research on the psychosocial impact of head injury should be carried out at all systems levels (e.g. family, couple, children, and spouse). The specific focus

of this present study was to explore the psychosocial impact of head injury on the spousal level. The purpose of this research was twofold: (1) to examine stress-related adjustment problems in spouses of severe head injury patients, and (2) to examine the role played by a number of variables in predicting the level of stress-related adjustment problems among these spouses. The conceptual research model was systems oriented and developmentally structured in that head injury influences, individual and social moderators, and multidimensional outcome were considered. Therefore this present study investigated the prevalence of psychopathology, psychosomatic symptoms, marital satisfaction and marital intimacy (indicators of stress-related adjustment problems in the spouse) in conjunction with a number of variables (medical/patient, spousal/adaptive, and family stressor) which may prove useful in predicting the severity of adjustment difficulties and in indicating who is most "at risk". The focus will be on the psychosocial outcome for wives of head injured males.

Generally, the results of this research provide evidence that there is a need to be more holistic on a professional level, taking into account the "big picture" of patient and family. More specifically, spouses who are more vulnerable to the effects of stress of head injury and who experience greater degrees of stress related problems were identified. These results can be used to more easily determine those

spouses requiring more intensive support and attention following injury. Literature and research relevant to the present research is reviewed below as follows: physical disability and its impact on the individual; the specifics of closed head injury; families of head injured patients; and the implications of a systems oriented approach to the neuropsychology of traumatic brain injury.

### The Physically Disabled Individual in Context

Disabled individuals face unique challenges in their day-to-day lives, the effects of which may certainly impact on significant others. Knowledge of the prevalence of disability, as well as the issues each disabled person must confront can provide the reader with a greater appreciation of the problems family members may need to work through, either with the disabled member or at a personal level.

Physical disability is a phenomenon with complex and multiple effects on human functioning (Sigelman, Vengroff, & Spanhel, 1984). The patient may be faced with long standing emotional conflicts, physical adjustment, and psychosocial situations to which he or she must adapt (Abram, 1972). Life style almost certainly must undergo radical alterations as the disability may place many restrictions on the patient and effect his/her relationship with others. Coping with physical disability may involve dealing with chronic pain, loss of function of a particular body part(s), disfigura-

tion, role redefinition at home and at work , and redirection of personal goals (Kiely, 1972; Lawrence & Lawrence, 1979).

Epidemiological studies (e.g. Bennett & Garrad, 1970; Haber, 1971) highlight the prevalence of disability in adults. Based on data obtained from a survey done for the American Social Security Administration, Haber (1971) reported that 17.5 million noninstitutionalized persons aged 18 to 64 years were classified as disabled. This number would be substantially greater if institutionalized individuals had also been sampled. Disability was defined as "limitation in kind or amount of work lasting more than six months resulting from a chronic health condition or impairment."

In a British prevalence study of disability, 18,347 persons between the ages of 37 and 74 years were sampled (Bennett & Garrad, 1970). The criterion for disability in this study was an inability to perform defined activities essential to daily life without assistance. An individual's performance was evaluated in four areas: mobility, self-care, domestic duties, and occupation. The prevalence rates found were 7.2% for men and 9.7% for women. These rates would in fact be even higher if a wider age range had been sampled. Thus there is a substantial proportion of the general population suffering from major physical disability resulting in significant impairment in their daily lives.



There have been many theoretical attempts to understand how an individual copes with a physical disability. For example, Lawrence and Lawrence (1979) suggested that the disabled victim passes through three stages of adjustment: (1) shock and disbelief, (2) developing awareness, and (3) resolution of loss. Others have hypothesized various different stages of adjustment which include expectancy of recovery, grief, mourning and depression, reactions against dependency, and the establishment of a new identity (Matson & Brooks, 1977; Russell, 1981). Verboerdt (1972) has suggested that psychopathological behavior may occur in response to physical disability if the individual does not successfully resolve the loss and establish a new identity.

Much attention has in fact been paid to psychological disturbances in persons with disabilities, and many theories have been proposed regarding their origin. Shontz (1984a) has reviewed the literature in this area and reported that in early writings, maladjustment of patients was viewed as the direct result of the disability itself. Over time, the focus broadened to include certain aspects of the afflicted individual him or herself (e.g. premorbid personality characteristics). The relationship however between specific disability, and individual characteristics (i.e. personality), and how these were related to psychological disturbance, remained too simplistic. More recently, as Shontz documents, there has emerged a growing awareness that the

individual's environment (e.g. network of supports, acceptance in the workplace, and architectural barriers) might be significantly related to his or her rehabilitation, both physical and emotional. Shontz (1984b) in fact concluded that "environmental factors are at least as important in determining psychological reactions to disabilities as are the internal states of the persons who have the disabilities" (p. 129).

This analysis of psychological adjustment to physical disability is in keeping with a systems perspective which also underscores the importance of attending to factors within the individual himself/herself while at the same time appreciating the interactive effects of other systems impacting on the individual. While there are many different schools of thought within family systems theory, each shares the view that the family is a system characterized by a set of interacting, interrelating members arranged in a hierarchical fashion. These members in turn function in relation to the broader sociocultural context that evolves over the life cycle (Walsh, 1982). The systems view proposes that causes and effects within and outside the system are interchangeable, that is, there is circular causality. In the case of the family with a disabled member, systems theorists would advocate that the change in the victim will lead to changes in the rest of the family, while these changes will impact back on the victim and so on, creating a series

of deedback loops. A complete analysis of the impact of disability must therefore include an examination of the patient's family system. One can then have a more complete understanding of the direct and indirect effects of the disability on the patient him or herself, the patient's parents or spouse, and children.

Family systems theorists (e.g. Carter & McGoldrick, 1980) have also highlighted the role played by family life cycle stage in appreciating the impact of individual illness on other family members. The stages of the family life cycle which Carter and McGoldrick (1980) have outlined include: (1) the unattached young adult, (2) the newly married couple, (3) the family with young children, (4) the family with adolescents, (5) launching children and moving on, and (6) the family in later life. At each stage, certain emotional and structural changes are required for the family to proceed developmentally. The onset of physical disability at any of these life cycle stages may pose a serious threat to successful task accomplishment for individual members and family, and may hinder progression from one stage to the next.

In this present study, the focus was on the young to middle aged adult family in which the husband had sustained a closed head injury. The primary developmental goals for young adults, be they single or married, are: differentiation from family of origin, the formation of mature intimate

interpersonal relationships, and the establishment of self in a vocation (Glueckauf & Quittner, 1984; Sutkin, 1984). The onset of physical disability during this stage can create serious complications in the accomplishment of these goals due to the victim's uncertainty in his/her new role and due to his/her medical condition. Patients face substantial changes in their social environments in the areas of: (1) public attitudes toward the disabled, (2) different behavior patterns of the able-bodied toward the disabled, (3) embarrassing social situations related to specific medical disorders, and (4) reinforcement of dependent behaviors by health care professionals, family, etc. (Glueckauf & Quittner, 1984). Intimate relationships may be difficult to establish and maintain under conditions such as these. Furthermore, the young adult patient may end up relying more on family of origin than was the case prior to the injury.

Other difficulties facing the disabled occur in the area of vocational functioning. Potential problems for the disabled may be located in a restricted range of job opportunities, transportation and architectural barriers, financial disincentives, and limited vocational rehabilitation services (Stambrook and Peters, 1988). In addition, the married disabled victim has another struggle to face when he/she returns to his or her family of commitment, that of renegotiating the implicit marriage contract (e.g. family roles). If there are young children, reallocation of roles becomes

even more stressful given the heavy demands of child-rearing, and limitations in role substitutions. Sexual adjustment may also be hampered due to physiological changes in sexual functioning, side-effects of drug therapy, and changes in body image.

As the young adult ages and moves toward the mid-life portion of the life span, the tasks seem to change in nature. Rustad (1984) specifically identified these five tasks: (1) assisting teenage children to become responsible and happy adults, (2) developing adult leisure time activities, (3) relating to one's spouse as a person and companion, (4) accepting and adjusting to the physiological changes of middle age, and (5) adjusting to aging parents. Difficulties in accomplishing any of these tasks may ensue following the onset of disability. For instance, "children who are about to leave or have already left the parental home may experience conflict because of their own desire for freedom and independence and parental demands for physical and emotional support" (Rustad, 1984, pp. 228-229). As well, the patient him or herself may have difficulties developing leisure time activities given the new physical restrictions imposed on him or her by the disability. Potential difficulties within the marital relationship may occur as a function of the spouse moving into a "caretaker" as opposed to "companion" role. Other problems may arise resulting from the fact that the disabled person may no

longer be able to provide the supports necessary for aging and infirm parents.

Unfortunately, the empirical literature has not been very useful in pinpointing the specific family challenges that face disabled adults and their families (Ireys & Burr, 1984). That is, systematic study of the influence that a disabled adult of a specific age group may have on the rest of the family following hospital discharge and re-entry into the home has been largely ignored. In the limited empirical literature which is available on adult disability, subjects are rarely divided into age-groups consonant with a developmental life-span perspective (Ireys & Burr, 1984), and with necessary attention to the assessment of the family's handling of developmental tasks.

It is evident that the disabled adult is confronted with the major task of adjusting to physical disability in the context of the normal age appropriate life cycle tasks. The successful or unsuccessful negotiation of these tasks has serious implications for the personal and social development of the disabled and their families. One injury already mentioned which occurs during young adulthood, and to a lesser extent in the mid-life years, is closed head injury, the focus of the present study.

### Closed Head Injury

Traumatic head injuries (open and closed) are among the most common forms of brain damage (Lezak, 1983). Open head injuries differ from closed head injuries in that in the former, the skull is penetrated (e.g. gunshot wound), whereas in closed head injury, the damage to the brain occurs either as a result of rapid deceleration when the moving head comes abruptly to rest, or the acceleration when a stationary head is struck. Closed head injury, as examined in this study, is the most common form of traumatic head injury.

Potter (1967) has concluded that

more and more disabled persons, salvaged because of a more efficient treatment, [are] bringing home the truth that a major head injury can be a disaster not only to the victim but also to his family and dependents, as well as being a heavy charge on the community and its overstrained hospital services (p. 576).

Just what then is the magnitude of the problem of head injury? Several investigators in North America and Great Britain have attempted to assess the incidence of head injury.

It has been estimated that in Britain, head injuries account for half of all acute pediatric surgical admissions, a quarter of adult male general surgical admissions, and over a third of acute male surgical admissions (Galbraith, Murray, Patel, & Knell-Jones, 1976; Jennett, 1975). Potter (1967) estimated that one person in 200 per year needs

treatment for head injury of some kind although the vast majority of these cases are mild and uncomplicated. Others have reported that, in Britain, approximately 1,000 new "lamebrains" are created in a year (Lishman, 1973; London, 1967).

The incidence of head injury in the United States is approximately 4/1,000, with 25% of these cases considered to be serious (i.e. 1/1,000 [O'Shaughnessy, Fowler, & Reid, 1984]). In another study, Kwentus, Hart, Peck and Kornstein (1985) reported that head injury, sufficiently severe to cause residual disability, is afflicted on 60,000 persons per year in the U.S. In one recent Canadian study, Parkinson, Stephensen and Phillips (1985) reviewed 3,000 consecutive patients with head injury admitted to the Health Sciences Centre, Winnipeg, Canada. They reported an annual incidence of 2.2/1,000 for the catchment population, with an overall male to female ratio of 2.19:1. Of all cases examined, cerebral damage was more extensive than just concussion in 426 patients (i.e. cranial surgical procedures were required and the patient was in coma). These figures are actually an underrepresentation of the number of head injuries in the province as cases from another primary health care institution in the city, St. Boniface General Hospital, were not included. Based on these results and considering all the significant others in the social network these patients interact with, one can begin to appreciate the seriousness of the problem.



Currently, the most common cause of head injury is that of road-traffic accidents (Potter, 1967). In the accident, a blow to the head may result in a focal injury to the brain (in these cases there is a high mortality rate), a more diffuse injury to the brain (in these cases individuals are likely to sustain serious and permanent neurological injuries), or a combination of focal and diffuse injuries (Saskatchewan Co-ordinating Council on Social Planning, 1984). The brain lesions resulting from injuries to the head can affect behavior in three ways: (1) a total or partial loss of function(s) may occur, (2) there may be a release of function(s) (e.g. the perseveration of a behavior or the appearance of new behaviors), and/or (3) the disorganization of functions.

Recovery of the head injury patient can be characterized by two stages. In the recovery from shock phase, there is a brief arrest of function in the areas of the brain associated with the damage, whereas in the second phase of recovery, an increasing resumption of function of the damaged area is noted (Saskatchewan Co-ordinating Council on Social Planning, 1984). During the initial phase of recovery, there are three generally agreed upon prognostic indicators of severity and outcome of brain injury. These include: (1) depth of coma at hospital admission, (2) duration of unconsciousness or coma, and (3) length of post-traumatic amnesia (Teasdale & Mendelow, 1984). In addition, other factors

related to recovery are the nature of the injury (e.g. impact of blow, location and amount of brain tissue damage, and presence of secondary and/or complicating factors), the characteristics of the individual, the domestic or family environment, and the availability and quality of rehabilitation services.

Of practical concern, however, is: what types of symptoms can one expect to observe in the head injury patient? This is a difficult question to answer as there is a peculiar problem with head injury patients in that there is a tremendous range of mental after-effects which can occur (Lishman, 1973). For instance, one can find organic intellectual impairments, change of temperament and personality, psychotic illness, and a variety of neurotic disturbances. Linge(1980), a practicing clinical psychologist who experienced severe head injury himself reported that "the results of the damage were: impaired short-term auditory and visual memory, lessened emotional control, and a greater tendency towards depression" (p. 6).

More generally, some potential changes which Bond (1984) has outlined are: (1) an impaired capacity for social perceptiveness (e.g. powers of self-criticism are diminished with an increase in egocentricity and loss of empathy), (2) impaired capacity for control and self-regulation, (3) stimulus bound behavior and increased dependency (loss of personal ability to initiate and plan activities of daily liv-

ing), (4) emotional changes (silliness, irritability, lability, apathy, and increase, decrease or absence of sexual drive), and (5) inability to learn from social experience. Some of the psychiatric complications of head injury range from schizophrenia to affective disorders to organic personality disorder. Apparently up to 15% of patients with psychosis experience a significant head injury prior to their first psychotic episode, and up to 9.8% of head injury patients develop a time limited schizophrenia-like psychosis (Kwentus et al., 1985). Major depression is the most common form that affective disorders take in head injury victims.

Other features may also appear such as frontal lobe syndromes and dementia (Bond, 1984). The typical features of frontal lobe syndromes are disinhibition, euphoria, blunting of emotional responsiveness, irresponsibility, lack of tact and concern, and childishness. Dementia is characterized by an acquired decrement in intelligence, impairment in memory, impairment in abstract thinking, impairment in the capacity to learn new skills and process novel and complex information, a change in personality style, impaired judgment, and impaired expression of emotions and impulses. Although there may be resolution of some of these defects over time, frequently permanent sequelae are apparent that contribute greatly to these patients long-term social dependency (Stam-brook, 1984).

In the area of cognitive deficits following head injury, Brooks (1984a) reported that marked and persistent defects in various areas of cognitive functioning occur, but most particularly in learning, memory, and speed. Van Zomeren, Brouwer, and Deelman (1984) confirm that there is a slowing down of information processing even after minor head injury. Accident victims may also experience selective memory impairment (Kwentus et al., 1985).

It is difficult to separate out the cognitive from the emotional effects of head injury. It may be that the emotional changes directly follow from cortical damage, or the emotional disturbance occurs as a reaction to physical and/or cognitive loss, or that the cortical damage may disrupt the ability to interpret the world appropriately leading to disturbed and inappropriate emotional responses (Newman, 1984). To date, the cause and effect relationship remains unclear. There is, however, some empirical research documenting various changes post-head injury.

In one study, 70 head injury patients (50 inpatients, 20 outpatients) were administered the Brief Psychiatric Rating Scale (Levin & Grossman, 1978). All patients were classified as mildly, moderately, or severely injured based on their duration of coma. Maximal differentiation of the three levels of severity were found on the scales measuring emotional withdrawal, conceptual disorganization, motor retardation, unusual thought content, blunted affect,

excitement, and disorientation. For those in the mild severity group there was little evidence of behavioral disturbance. For those in the most severely injured group, scores were significantly higher on emotional withdrawal, conceptual disorganization, motor retardation, unusual thought content, blunted affect, and disorientation than in the mild and moderate severity groups. In another study of 27 head injury patients, profound intellectual impairment (assessed by the WAIS) was found in the severely disturbed group (determined by Glasgow Coma Scale scores and duration of coma [Levin, Grossman, Rose, & Teasdale, 1979]). Mild anxiety and depression was also noted for all patients (determined by the Brief Psychiatric Rating Scale).

In some studies, relatives have rated the mental changes in the patient following injury. In one such study, the relatives of 55 head injury patients were interviewed at three, six and 12 months post injury (McKinlay, Brooks, Bond, Martinage, & Marshall, 1981). All subjects were between the ages of 16 and 60 with severe head injury (post-traumatic amnesia of at least two days). The most frequently reported changes in the patient were mental rather than physical. Such changes reported were slowness, tiredness, irritability, and poor memory. Emotional changes were also frequently reported.

Social recovery of the head injury patient is another important area that has been studied. In particular, inves-

tigators have focused on two aspects of social recovery, vocation and leisure. Oddy, Humphrey and Uttley (1978a) assessed 54 head injury patients (16 to 39 years) at one, six, and 12 months post-injury. After one year following injury, only 22 had returned to work full-time. Similarly, Weddell, Oddy and Jenkins (1980) interviewed 44 head injury patients two years post-injury and they reported that a mere five patients had returned to their former jobs; 11 were working full-time but in a reduced capacity; and 20 were unable to work at all (the remaining eight patients were either between jobs, housewives, or employed on a part-time basis). In Newman's (1984) review of the social and emotional consequences of head injury, he concluded that unemployment is positively correlated with the severity of the injury (post-traumatic amnesia or length of coma).

With respect to leisure activities, the majority of research suggests that there is a reduction in head injury patients' participation in leisure activities (Oddy et al., 1978a; Newman, 1984). The number of social contacts the head injury patient makes is fewer than before the accident and the quality of their interpersonal relationships is reduced. Loneliness is a problem of great concern to the head injury victims themselves (Oddy, Coughlan, Tyerman, & Jenkins, 1985). In Weddell et al.'s (1980) study, the non-working head injury patients had fewer leisure activities and were more frequently bored. These studies confirm the

clinical observation that unlike other chronic illnesses (e.g. chronic renal failure), the head injury patient and family must deal with the physical and neuropsychological fall-out from the direct effects of the injury.

The findings of several studies examining post-head injury symptoms over the long-term have suggested that the post-injury behavioral problems are chronic and perhaps even permanent (Fahy, Irving, & Millac, 1967; Klonoff & Costa, 1984; Oddy et al., 1985; Walker, 1972). Head injury patients rated by relatives on the Katz Adjustment Scale-Relatives Form, two to four years post-injury were significantly more belligerent, slowed motorically, socially withdrawn, negative, depressed, suspicious, helpless, confused, talkative and restless when compared with age-matched normative data (Klonoff et al., 1984). Fahy, Irving and Millac (1967) followed up 26 survivors of head injury six years post-injury. Only five of the 32 patients were judged to be free of psychiatric sequelae (based on a standard psychiatric interview with the patient and in the presence of a suitable informant). In a seven year follow-up of head injury patients, Oddy et al.'s (1985) general impressions were that the disabilities and social relationships of the patients changed little from an initial interview held at two years post-injury. Thus it appears that relatives and close friends of head injury patients will be faced with enduring behavioral, emotional and social dysfunction in the patient.

The results of these studies must, however, be viewed in light of several specific methodological issues that arise in studies of social, emotional and behavioral sequelae of head injury. There are sampling problems (e.g. the criteria for inclusion is sometimes duration of post-traumatic amnesia, sometimes duration of coma, Glasgow Coma Scale score, or various combinations); the age distributions of the patients often vary widely; patients are followed up for different intervals of time following injury; and often each study employs a different assessment tool which makes between study comparisons difficult (Oddy, 1984). Other difficulties are that accounts given by patients and relatives may differ, and control groups are seldom employed making it problematic to separate the psychological sequelae specific to head injury from effects common to other forms of traumatic injury (McKinlay & Brooks, 1984). Despite these methodological flaws, the research is consistent in concluding that sequelae of head injury can permanently affect a wide range of patients' functioning. One would also expect changes in the family of the head injury patient resulting either directly or indirectly from the injury.



### Families of Head Injured Patients

To date, the literature is replete with speculative, theoretical, and anecdotal accounts about the effects of illness and disability upon the family system (e.g. Anthony, 1970; Blazuk, 1983; Bruhn, 1977; Patterson & McCubbin, 1983; Romano, 1974; Williamson, 1985). While firm conclusions cannot be drawn from reports of this nature, one common theme throughout this literature is that the family of the ill or disabled faces adversity and hardship. For instance, Patterson and McCubbin (1983) have summarized nine hardships which may be experienced by families who have a chronically ill child: (1) strained family relationships, (2) modification in family activities and goals, (3) burden in increased tasks and time commitments, (4) increased financial burdens, (5) need for housing adaptation, (6) social isolation, (7) medical concerns, (8) differences in school experiences, and (9) grieving for the loss of a healthy child. With the exception of the latter two, these hardships could potentially be experienced by a family in which one of the spouses was physically disabled.

Drotar, Crawford and Bush (1984) have suggested that there are four major problems which face families of the disabled. The concrete demands which they outline are problems related to: (1) the allocation of emotional resources to ill versus well members, (2) the sharing of responsibilities concerning a treatment regimen, (3) managing trans-

actions with physicians and other health care personnel and (4) coping with hospitalizations and anxieties concerning the patient's present and future state. Beyond these concrete demands, the experience of disability, particularly acute onset disability, forces family members to confront personally troubling issues pertaining to the meaning of the illness. For example, why did this accident happen to my husband?; or if only I had done things differently, this might not have happened. Personal issues such as a sense of powerlessness, anger, guilt, fear and vulnerability may also arise (Mailick, 1979).

More specific to the physical disability head injury, Lezak (1978) has outlined several areas that may create adjustment problems for brain injured patients' families: (1) the head injury patient's impaired capacity for social perceptiveness may result in self-centered behavior in which empathy and self-reflective or self-critical attitudes are diminished, (2) an impaired capacity for control and self-regulation may give rise to impulsivity, random restlessness and impatience, (3) the stimulus-bound behavior of the head injury victim can appear as social dependency, difficulty in planning and organization, and decreased or absent initiative, (4) common emotional alterations occur such as apathy, silliness, lability, irritability and increased or loss of sex drive, and (5) the inability to learn from experience, limits their capacity for social learning. Lezak (1978)

hypothesized that each of these factors could be a potential source of stress for the family of the head injury patient. In addition, she maintained that the "stresses in the family created by the patient's altered behavior tend to be compounded by family members' unrealistically optimistic expectations" (Lezak, 1986, p. 242).

Based on clinical observation, Lezak (1986) has conceptualized the family's reaction to head injury as a process of moving through six different stages. In stage one, family members notice few differences in the head injury victim as they are happy the patient is home again and tend to be absorbed in helping him or her out. The second stage is characterized by bewilderment, anxiety and frustration on the part of the family members. They have a growing awareness that the patient is different and that the condition seems to be lasting an extremely long time. In the third stage family members become discouraged and blame themselves for the lack of improvement in the patient. At stage four there appears to be full awareness that the patient's deficits and altered behavior is chronic. Family members may now experience depression, anger and despair. The fifth stage is a period of active mourning. The hope that the patient's premorbid personality will return is relinquished. In the last stage, family members may begin to reorganize their lives and emotionally disengage from the head injury member. Detachment and reorganization may help the rest of

the family to rebuild a meaningful and satisfying life for themselves.

While there is limited empirical data to support Lezak's proposed stages of adjustment to head injury, or knowledge as to their applicability to families in various life cycle stages, taking a developmental viewpoint seems to be crucial in investigating the impact of head injury on the family, as psychosocial adjustment may differ at each stage of resolution of the accident and its sequelae. Stambrook & Peters (1988) have suggested that the head injury patient and family must confront at least three major developmental crises with attendant changes in psychosocial supports: (1) the head injury itself, (2) discharge from in-patient hospitalization, and (3) discharge from out-patient therapies. Consideration of the time course is vital in assessing the impact on other family members. For more reliable answers to questions about head injury patients and their families, empirical as well as theoretical reports should be reviewed. A review of the empirical literature in this area follows.

In an early study, Fahy et al. (1967) followed up a group of 32 (28 male, 4 female, mean age of 31 years) head injury patients six years following injury. They carried out standard psychiatric interviews in the presence of a "suitable informant" (typically a close relative of the patients). Only five of the 32 patients were judged to be free of psychiatric sequelae. While the patients themselves dismissed

any physical or mental impairments they had, the relatives complained that the patients had difficulties in intellect, memory and speech. What was most disturbing, as reported by these relatives, was the marked changes in temperament in the head injury victims.

Panting and Merry (1972) reported a similar clinical study in which 30 severe head injury patients were followed up as long as seven years after injury. Information was also obtained from both patient and a close relative. Their results were consistent with those of Fahy et al.'s (1967) in that the emotional disturbances in the head injury victim were much more difficult for relatives to deal with than physical deficits. The relatives reported that the accident and the presence of the injured patient had put a great strain on the family. In fact, 60% of the relatives were taking some kind of supportive treatment in the form of tranquilizers or sleeping pills (not used before the injury).

In another study focusing on the head injury patient and family, Thomsen (1974) interviewed 50 severely head injured patients (37 males, 13 females) and their relatives an average of 30 months post-injury. Again the relatives did not complain of troubles connected with motor dysfunctions, but rather identified neuropsychological sequelae, specifically personality changes as being highly burdensome. The most common symptoms which Thomsen (1974) found in these patients

were irritability, hot temper, aspontaneity, restlessness, emotional regression, emotional lability, and stubbornness.

Oddy, Humphrey and Uttley (1978a) employed a sample of 54 patients (aged 16 to 39 years) who had sustained a head injury and experienced post-traumatic amnesia greater than 24 hours. A close relative was also used to obtain information. The relative completed the Katz Adjustment Scale and Wakefield Depression Inventory during the first four weeks after the accident to assess the patients' pretraumatic behavioral and social adjustment, and relatives' mood. The patient and relative were then both seen again at six and 12 months after injury. At each data collection point the patients were given a cognitive test, a scale for activities of daily living and a symptom checklist. The relatives again completed the Katz Adjustment Scale, the Wakefield Depression Inventory and a symptom checklist.

At the six month follow-up, many of the patients had returned to work, and had resumed their social activities. There was no significant amount of family or marital friction reported. However, if those patients with post-traumatic amnesia of greater than one week were examined separately, marked social disruption was present six months post-injury.

At 12 months after injury there was no significant association found between a mood disturbance in the relative and

the severity of the injury (Oddy, Humphrey, & Uttley, 1978b). Two alterations in the patients' personality were, however, associated with depression in the relative: confusion and verbal expansiveness were positively correlated with Wakefield Depression scores. The relatives reported that the main sources of stress they experienced referred to either some aspect of the patient's current functioning or concern about the patient's future. Subsequently, these patients were seen again at 24 months post-injury (Oddy & Humphrey, 1980). The results revealed that those patients with post-traumatic amnesia greater than seven days were slower to recover and exhibited greater social and behavioral impairments than those with shorter post-traumatic amnesia.

Weddell, Oddy and Jenkins (1980) reported a very similar study employing 44 severe head injury patients and their relatives (post-traumatic amnesia greater than seven days). Interviews were carried out approximately two years post-injury. These index group patients had all attended a rehabilitation centre and were compared to the pre-injury behavior of a group of severe head injury patients who had just recently sustained their injury (control group). Of the 36 patients who had previously worked full-time, five patients had returned to work, 11 patients worked full-time but in a reduced capacity, and 20 patients were unable to work at all. The non-workers had fewer leisure activities, were

more frequently bored, more dependent on their family, and had a higher incidence of both memory and personality disturbances than those who worked. The index group had fewer interests and hobbies, fewer friends, made and received fewer visits, and dated less frequently than the comparison group (pre-injury). More family friction was noted in the index group than in the control group.

More recently, McKinlay, Brooks, Bond, Martinage and Marshall (1981) investigated the short-term outcome of severe blunt head injury as reported by the relatives of the injured persons. Fifty-five patients (46 males, 9 females, aged 16 to 60 years) with severe head injury (post-traumatic amnesia of at least two days) and their relatives were interviewed at three, six and 12 months post-injury. Some of the most frequently reported changes in the patient were mental rather than physical and included slowness, tiredness, irritability and poor memory. The emotional changes were viewed seriously by the relatives and they indicated that they experienced moderate stress. There was a trend that the higher the subjective burden the relatives experienced, the more changes they reported in the head injury patient. These changes were in the direction of increasing negative or unpleasant personality alterations (Brooks & McKinlay, 1983). In fact, the relationship between the relative's felt burden and the patient's personality disturbance increased over time. Brooks and McKinlay (1983) sug-



gested that either it may be that the relative becomes increasingly aware of the pervasive nature and effects of the head injury, or that as time goes on, the relative shows a decreasing ability to accept or cope with the markedly negative changes in the patient. Alternatively, it is possible that the patient's unfavorable behavior escalates over time. To date, none of these possibilities have been scientifically investigated.

Klonoff and her colleagues have made recent significant contributions to the literature by using a multivariate analysis of quality of survival after head injury (Klonoff, Costa & Snow, 1986; Klonoff, Snow & Costa, 1986). While other researchers have emphasized that it is the personality changes and not the physical disability per se which play a more prominent role in quality of life post-injury, Klonoff, Costa and Snow (1986) concluded that motor dysfunction is in fact a variable influencing eventual quality of life. Although relatives of the head injury patients were interviewed in Klonoff's research, the focus was on obtaining information regarding the adjustment of the patient and not the relative.

Unfortunately, while a number of researchers have distinguished somewhat between the marital and parental relationship, and have examined the impact of head injury separately within the two situations, others have failed to make the distinction when assessing family strain. In the studies

just reviewed, the "relative" who was interviewed was sometimes a parent, a spouse, or other close relative. One would expect family strains would differ to some degree if the head injury victim were returning after hospital discharge to his or her family of origin as opposed to his or her family of commitment.

Fahy, Irving and Millac (1967) and McKinlay et al. (1981) for instance, did not examine their results according to the relationship of the relative informant to the patient. Panting and Merry (1972) and Thomsen (1974), however, were both of the opinion that the husband-wife relationship was less stable under the stress of head injury than the parent-child relationship. Of 10 patients, married at the time of accident, three became divorced and a fourth separated (Panting & Merry, 1972). Weddell, Oddy and Jenkins (1980) reported divorce or separation in three of the eight married patients in their study. Contrary to these results, Oddy et al. (1978a) found that of 12 married couples, the marital relationship was reported to be appreciably worse in only one case. They sampled a group of head injury patients who had sustained a relatively mild injury to the head, thus possibly adding little to no stress on their spouse and marriage. It is not yet clear whether the marital relationship of severe head injury patients is particularly vulnerable to break-up. It is difficult to form conclusions based on these studies as the sample sizes are extremely small, con-

trol groups were not employed, and of course the relationships may have been unstable prior to the accident. At the present time, the only conclusion that seems merited is that head injury can present an undesirable strain on family relationships.

There has been some speculation as to why the marital relationship may be less stable under the stress of head injury than the parental relationship. Panting and Merry (1972) suggested that in the case of a head injury victim returning to his or her family of origin, there are two people, mother and father, to share the burden and support each other. In the case of returning to the family of commitment however, the burden imposed by the injured patient falls solely on the spouse. Thomsen (1974) felt that parents of head injury victims more easily accepted the role change to that of caretaker than spouses, as this had been their primary role throughout most of their relationship to the patient.

In the case of couples in which one partner is a head injury victim, multiple stresses may be experienced. The major characteristic of this catastrophe is its sudden onset, leaving victim and spouse with no time to prepare. In addition, it is a new experience for the survivor in which sources of support and guidance are few in number and poor in quality. The other characteristic feature of the crisis of head injury is that the previously healthy victim

is abruptly removed from the home, hospitalized for several months, and then returned to live with the family having the physical, emotional, and mental sequelae of the injury.

Lezak (1978) has suggested that the spousal role is an especially difficult one as the spouse is basically in social limbo. He/she does not have a partner to participate with in social activities, nor is he/she free to get one. Lezak speculated that the spouse cannot mourn effectively as the head injury patient is still alive and the prevailing social attitudes strongly oppose divorce from the disabled or ill. But what do we know so far about the impact of head injury on the intact marriage and what are the kinds of strains which the healthy spouse experiences?

Rosenbaum and Najenson (1976) conducted a study concerned solely with the impact on the spouses of 10 head injury patients who were all injured in military service. Some of the main conclusions drawn from their research were that wives of head injury patients reported depressed mood, associated with drastic life changes; the interpersonal relationships were tense in head injury families; the wives felt lonely and isolated; and they had to assume the husband's role in the family. The severity of the wives' depressed mood was highly correlated with the degree of reduction in marital sharing and care of the children, and with their perception of their husbands' childlike dependency. While this study is one of the few which has specifi-

cally explored the impact on the spouses of head injury patients, the results were based on a small number of cases of Israeli men suffering a head injury sustained during military action. Most head injury patients are victims of traffic accidents, and thus it is difficult to know just how far one may generalize from these results. The results do, however, indicate that wives of head injury patients may experience fairly adverse effects such as loneliness, isolation, depression, and increased responsibility in the home.

More recently, Livingston, Brooks, and Bond (1985a) reported on a study they carried out with the intention of answering the following three questions:

- (1) Do relatives of severe head injury victims suffer significant psychiatric disturbance?
- (2) Is the relative's social functioning related to the severity of the injury?
- (3) Which relationship, marital or parental, is more vulnerable? (p. 870).

Forty-two male severe head injury patients and their relatives were interviewed at three months post-injury. These patients had post-traumatic amnesia greater than 48 hours and a Glasgow Coma Scale score of less than eight on admission to hospital (i.e. these patients were unconscious on arrival at hospital). Wives, mothers or daughters of the victim were seen. A control group of mild male head injury admissions and their female relatives were also interviewed. Mild head injury was defined as those requiring hospitalization for less than 48 hours for injury to the head. Patients were assessed for symptomatic complaints, physical

outcome, activities of daily living, cognitive functioning, personality change and occupational status. Relatives were assessed for psychiatric and social functioning and their perception of the burden of living with the patient. They completed the General Health Questionnaire-60, the Leeds General Scales for anxiety and depression, Weissman's Social Adjustment Schedule, and a specially formulated perceived burden scale.

The relatives of the severe head injury group appeared to suffer more psychiatric disturbance than the relatives of the mild head injury group. The major disturbance in the relatives of the severely injured was anxiety based rather than depression. In addition, relatives of the severe head injury patients had higher scores on anxiety/insomnia, social dysfunction, and perceived burden than relatives of the control group. Marital functioning and family unit functioning were significantly worse for relatives of the severely injured than the mildly injured, indicating poorer adjustment in social roles performed in the family home.

Of the 42 relatives of the severely injured, 22 were wives of patients, 16 were mothers, and three were daughters. Within the severe head injury group no differences were found for scores on the General Health Questionnaire and Leeds Scales between wives and mothers. Comparing mothers scores' between the two groups, the only significant difference was found on the Leeds Anxiety score with mothers

of the severely injured scoring higher than mothers in the control group. Within the wives' group, wives of the severely injured had significantly higher General Health Questionnaire scores and Leeds anxiety scores than wives of the mildly injured. They did not differ in social adjustment. Based on these results there seems to be a measurable psychiatric and social impact on the relatives of severe head injury victims three months after injury. There also is some evidence that wives of the severely injured are more psychosocially handicapped than wives of the mildly injured. There were little to no differences on psychosocial impact between wives and mothers of the severely injured.

Livingston, Brooks and Bond (1985b) interviewed these same patients and relatives again at six and 12 months after injury to determine what developmental changes in psychosocial impact on relatives occur over the year and to assess what features of the patients were predictive of the relatives' psychosocial functioning. For relatives of the severely injured patients, high scores on the General Health Questionnaires and the Leeds Anxiety scale persisted throughout the year. In fact as many as 40% of the relatives had a high probability of having psychiatric dysfunction. Relatives also perceived a high burden over the course of the 12 months after injury. The results on social adjustment indicated that there was a gradual development of social maladjustment between three and six months which

remained steady at 12 months. The scores were in general, lower than normative data with marital functioning evidencing the greatest differences.

There were no significant differences between wives' and mothers' scores for psychiatric symptomatology or perceived burden. Interestingly, however, a trend emerged in that the wives' perceived burden of injury sequelae increased over time while the mothers' perceived burden decreased or improved with time. At the 12 month data collection point, the difference between wives' and mothers' perceived burden approached statistical significance. A linear regression analysis was used to assess whether any patient measures were predictive of the relatives' psychiatric and social functioning. The level of subjective complaints voiced by the patient emerged as the most predictive of the relatives' psychosocial functioning.

The results of this study indicated that the relatives of a group of severe head injury patients had significant psychological difficulties throughout the year following injury. The relatives' social functioning was lower in all roles (e.g. work, family, marriage) when compared with U.S. community norms, with marital functioning deteriorating the most. Relatives perceived a high level of burden throughout the year. The degree of dysfunction did not differ significantly when the scores of wives and mothers of the head injury victims were compared. There was, however, a trend



suggesting that the wives' perceived burden may increase over time while the mothers' perceived burden decreases. Unfortunately, these results may not be directly generalizable to a North American population of head injury patients and their wives as this research was carried out in the United Kingdom. Between study comparisons are also difficult to make as the investigators used measures less well-known in Canada and the United States.

With the exception of the few studies just reviewed, there is no clear picture of the impact of head injury on the spouse. To summarize, one can say that the marital relationship of the head injury patient may be vulnerable to stress; the wives of head injury patients experience psychosocial dysfunction the year following the accident; and they perceive a high level of burden imposed by the head injury. One consistent theme runs throughout all the studies reviewed;

what is virtually certain is that the mental sequelae outstrip the physical as a cause of difficulty with rehabilitation, hardship at work, and social incapacity generally, and in terms of the strain thrown on the families to whom the head injured patients return (Lishman, 1973, p. 304).

In addition to the paucity of research on the impact of head injury on the spouse, the current research designs are simplistic and they do not account for multivariate causation.

In the majority of studies, changes in the patient as reported by the relative (primarily personality changes)

have been viewed to be causally linked to the subjective stress in the relative (e.g. Brooks & McKinlay, 1983). Results of such studies indicated that the greater the number of perceived personality changes in the patient, the greater the stress in the relative. McKinlay and Brooks (1984) have subsequently expanded this model to include the relative's personality (level of neuroticism). They reported that relatives' neuroticism scores (assessed by a short form of the Eysenck Personality Questionnaire) were positively correlated both with the amount of stress which they reported experiencing and with their reports of emotional/behavioral changes in the patients. While this latest effort was certainly an advance over past models, the stress-related adjustment problems in relatives of head injury patients are most likely related to more factors than simply their personality and their perceived adjustment of the head injury patient and may be moderated by other factors such as family stressors, social supports, and patient neurological/neuropsychological data.

Also, unfortunately, the majority of research to date in this area suffers from serious methodological flaws. The anecdotal and limited empirical information available does however suggest that a more rigorous multivariate analysis of the impact of head injury on the spouse might prove fruitful. In light of the potentially adverse consequences of head injury on the spouse, research in this area would be

of great importance to the clinician, as well as other hospital and health care workers in identifying intervention and prevention strategies.

A serious and common shortcoming of this literature is that the relative informant who is interviewed is sometimes mother, spouse, daughter or other close relative (e.g. Brooks & McKinlay, 1983; Fahy et al., 1967). More consistency is needed in this area as perceptions of family functioning, patient adjustment and felt stress might vary substantially between for example, the father of a head injury patient and the patient's spouse. In addition, some of the results are based on interview data or specially designed rating scales for which reliability and validity information is unknown (e.g. Thomsen, 1974). Standardized reliable and valid measurement instruments should be employed more frequently. Other methodological problems include small sample sizes, failure to obtain a third party's assessment of the head injury patients' current level of functioning (cognitive and emotional), use of inappropriate control groups, failure to use a prospective, developmental approach to assess the longer term impact of head injury on the spouse, and reliance on relatives' memory to assess premorbid psychosocial functioning of the head injury patient.

In addition to these major methodological weaknesses, important issues have failed to be addressed. For instance, no attempt has been made to identify a comprehensive set of

factors which predicts the level of stress-related adjustment problems in the spouse. There may be many factors which either allay or aggravate the potential adverse effects of having a head injury family member. (e.g. other family stressors, and the number of coping strategies the spouse employs).

In summary, while in the main, quality of life outcome research following head injury is provocative, it can be criticized because of its anecdotal nature, the lack of standardization of outcome measures, unknown psychometric qualities of instruments used, a lack of clarity about who the informants were, small sample size, and incomplete descriptions of patients regarding the nature of their injuries and nature of other injuries. These criticisms were kept in mind when designing this present study.

While the focus of this present study is on the spouse of the head injured patient, systems theory offers a structured framework for assessing the impact of disability on individual subsystems as well as the whole family. The systems perspective recognizes the importance of all the subsystems (e.g. the couple, siblings, individual family members) that constitute the larger family unit and supports research at all systems levels. Therefore a systems analysis of disability may provide further insight into the psychosocial impact on the spouse.

### Implications of a Systemic Perspective

Based on the literature review thus far, it appears that the impact of chronic illness or handicap is a rather complex biopsychosocial process necessitating a conceptual model reflecting the balance among medical/illness influences, individual adaptational resources/coping capacities, and social transactions/stressors. The systems or family-centered approach seems to fulfill this mandate. In their review on the effects of childhood illness on the family, Tritt & Esses (1986) traced the progress of a family-centered framework in this area and referred to the introduction of this approach in health care intervention as "an exciting recent application of family systems theory" (p. 111). Others have likewise emphasized the value of viewing the chronically ill individual within his or her social context (e.g. Drotar, Crawford & Bush, 1984; Stambrook & Peters, 1988), both from a clinical and research point of view. Of critical importance to the clinician however, is that the systems oriented approach to comprehensive health care recognizes the potential of "preventive interventions for enhancement of family life, coping, and stress management throughout the course of the illness" (Drotar et al., 1984, p. 104). The present research is based on the family-centered model as it makes unique contributions in allowing health care professionals to identify patients, spouses, and or families at risk and in distress. Early identification

of those "at risk" can lead to early preventive work in assisting members in coping with the inevitable emotional and instrumental stress inherent in accepting illness, dealing with illness-related demands at various stages and adapting to the necessary changes that have occurred in their own lives.

At the most basic level, the systems approach is founded on an interactive model that emphasizes the interplay of stimuli and responses between the system components. That is, focusing on the family system of a head injury family, the spouse must adjust to and cope with the head injury, but it may also be the case that the patient learns strategies of coping and adaptation to his or her disability through transactions with his or her spouse. This intrafamilial coping may be a critical component of the patient's ability to negotiate the stressful demands of illness-related regimens, socialization, independence in activities of daily living, and effective functioning in the work force (Tritt & Esses, 1986). Unfortunately, this interactional relationship between spousal functioning and patient adjustment is limited and for the most part speculative since there is little documented research based on a systemic perspective.

The occurrence of an accident in which the husband experiences a serious blow to the head may be considered an idiosyncratic problem which creates changes in the family system as a whole. In general, one of two possibilities can

occur. One possibility is that stress incurred may have detrimental long-term effects on the individual members psychological well-being and on the integrity of the family as a whole. Alternatively, the possibility exists for the crisis to lead to the promotion of personal as well as family growth leading to increased family cohesion and enhanced coping skills.

The impact of the illness/disability at any one point in time will likely be dependent in part on the structural and interactional shifts the family has made to accomodate and adjust to the crisis. Theoretically speaking, the functional family unit will be flexible enough to make the necessary structural and interactional shifts to accomodate and adjust to the onset of disability in a family member. "An adequately organized family can meet the multiple emotional needs of its members and deal with the stresses and uncertainties of life" (Versluys, 1984, p. 102). Some examples of such a family resolving stress include: (1) temporarily decreasing one's own personal needs and ambitions to deal with the family crisis, (2) working out new role patterns to carry on family functions, and (3) developing collective goals during the time of emergency and working towards them cooperatively. An inadequately organized family may be vulnerable to crisis because the flexibility to reorganize or to role share in an emergency is lacking (Versluys, 1984). Such families may have difficulty making consistent

commitments and in supporting the patient. The role of the family in patient adjustment and rehabilitation is crucial as patients do not make accommodations to disability independent of their families (Versluys, 1984). Thus, effective family functioning may be a prerequisite for the patient's successful adjustment to disability.

Given that the psychosocial sequelae of head injury appear to be long term, permanent structural shifts seem to be necessitated. As Minuchin (1974) has suggested, responding to the new demands resultant from onset of illness or disability in a family member requires a constant transformation of the interactions of family members in relation to one another so the family system can adjust to and achieve new equilibrium. Lezak (1986) has stated that in the case of head injury, there may be several months to years of instability following the crisis of the accident before the family forms new, stable, adaptive patterns of functioning.

While rigorous research endeavors should be carried out at all levels of the family system (i.e. individual members, sibling, couple, etc.), this research project has focused on the adjustment of the spouse to head injury. Clinical experience has suggested that this is an underserved group which experiences considerable upheaval and disruption in their lives post-injury and, in the longer term, must deal on a day-to-day basis with the more permanent changes in their life situation secondary to the accident.



Initially, following the trauma of the head injury, during coma, and as level of consciousness increases, patient/medical factors are strongly influential. At this critical stage, the patient may need intensive medical attention with the possibility of neurosurgery. The spouse is also in great need at this time for concrete and specific information about the nature of the injury and may be in dire need of psychological support. The spouse who does not have a social network to rely on, or who chooses not to involve significant others, may experience considerable stress at this time with no outside supports. As well, the spouse with inadequate information regarding her husband's current physical condition and prognosis may be functioning under misassumptions, false information, misbeliefs, and unrealistic expectations. These can have repercussions for the family unit as a whole as it is often the wife who becomes solely responsible for decision making within the family while the husband is in hospital.

As the coma lifts, the patients often go through stages where there may be marked confusion, disorientation, restlessness, agitation, delusions, hallucinations, and sometimes aggression. Due to the severe disruptions in information processing and cognitive functioning that are present at this time, the family and treatment team can become increasingly important in the management of the patient to provide a structured and predictable environment, supply

reality testing, and reality orientation, minimize environmental stress, correct distortions, ease anxiety, and provide simple, concrete and repetitive instruction and conversation (Stambrook & Peters, 1988). Few family members expect these behavioral problems and at times the stresses associated with the patient's altered behavior may be compounded by the individual's unrealistically optimistic expectations. Of course the type and severity of the patient's behavioral and psychological problems will be closely related to the location and severity of the trauma to the brain. As the initial threat of death subsides, the spouse must struggle with maintaining a decent life for themselves and other family members while still figuring prominently in the recovery of the patient.

Part of this struggle involves finding a balance between physical and emotional energy devoted to self, patient, and other well family members (e.g. children). Time spent at the hospital inevitably takes time and attention away from healthy family members, in this case likely children, and can change child rearing patterns, leaving the potential for dysfunctional family coalitions and decreased family cohesion. On the other hand, time spent with the well members can create real emotional and physical divisions between the head injury patient and the rest of the family. Another likely difficulty is the lack of respite time for the wife resulting in an individual who is physically and mentally overburdened.

Over time as the patient improves and hospital discharge approaches, the importance of the treatment team diminishes somewhat and in many ways the spouse/family becomes most influential. It is post-discharge that the patient and spouse are forced to confront the reality of the new situation without the support from hospital personnel that was available earlier. To a certain degree, the actual presence of the head injured patient at home can now provide a convenient means of deflecting attention from other family problems. Other family difficulties or important issues may be ignored as everyone's attention is focused on the ill member.

Throughout the course of hospitalization and then following discharge the spouse may be vulnerable to the effects of the injury. Stress reactions can vary from individual to individual, and may take the form of psychological distress, somatic concerns, or interpersonal difficulties. The marital relationship may particularly suffer given that the wife may no longer have a husband with whom she can engage in a mutually satisfying and fulfilling relationship. Each wife will likely react differently given the specific medical / behavioral changes in her husband, her personal adaptive resources, and other stressors which may occur at that time.

It should be noted that although the bulk of this discussion has focused on the adverse effects of head injury on

the family and the spouse in particular, as previously mentioned there is potential for personal and family growth. Hence the thrust of this research project is to obtain an awareness of characteristics/factors which are associated with spousal adjustment/maladjustment which could lead to more effective and comprehensive care of those spouses "at risk" for adaptational problems. The sections which follow provide a more in-depth discussion regarding variables which may potentially predict or moderate the impact of head injury on the spouse.

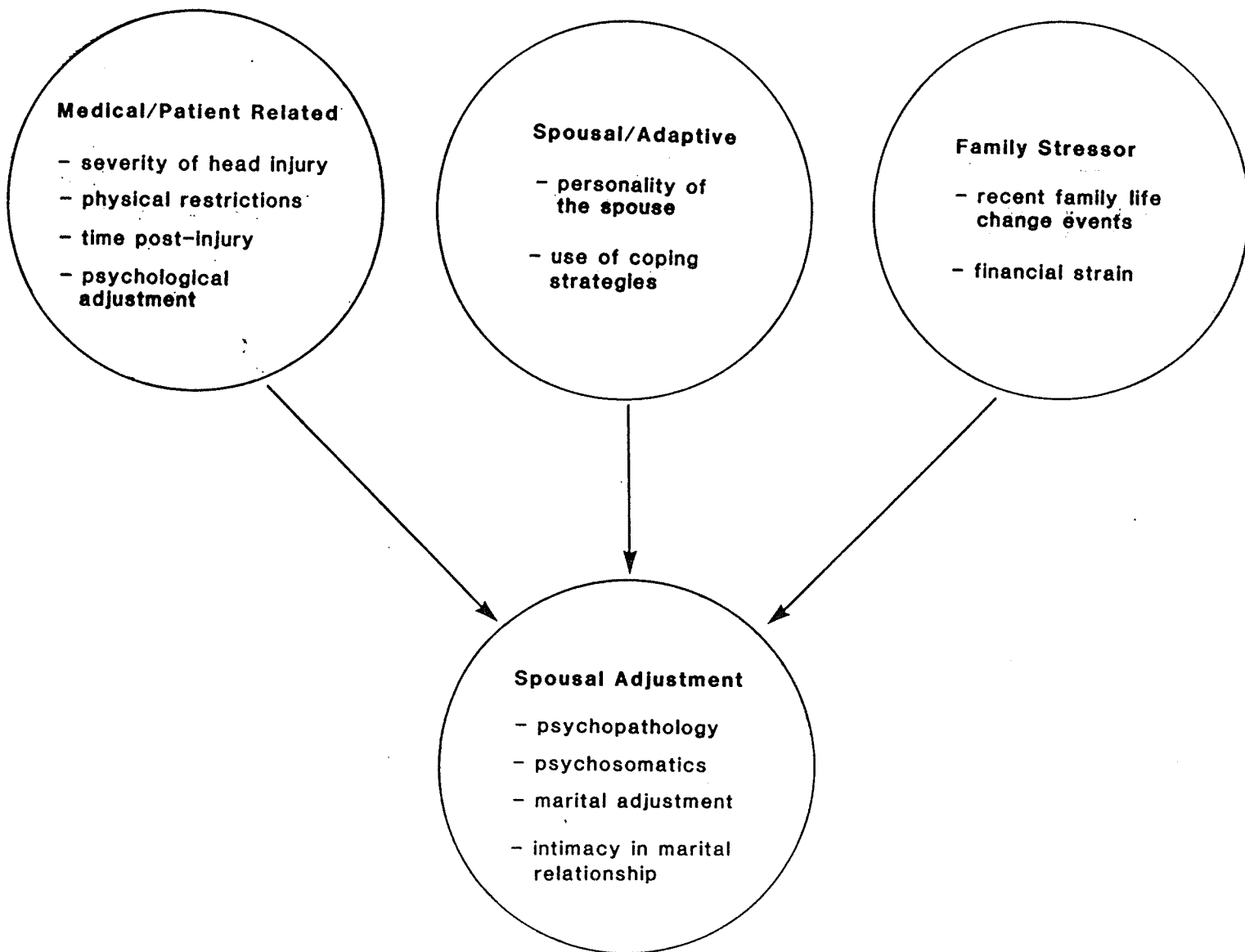
### Predictor Variables

As previously mentioned, one area which has not yet been fully explored is that of identifying a comprehensive set of factors which predict the level of stress-related adjustment problems in family members, the spouse in particular, of head injury patients. The most recent research in this area has been by McKinlay and Brooks (1984) and the predictor variables they used were reported emotional/behavioral changes in the head injury patient and the relative's personality type or level of neuroticism. They found, however, that the extent of the influence of the family member's personality was not overwhelming, leaving room for the possibility that there are likely other variables which may be related to the level of stress experienced by the spouse of a head injury patient.

In the present research, an attempt was made to select predictor variables which have already been identified in the literature while ensuring comprehensiveness by including patient variables, (i.e., medical/neurological, neuropsychological, and neurobehavioral), individual based spousal variables, (i.e., personality and characteristic coping strategies), and recent stressors, (i.e., life change events and financial strain). Specifically, predictor variables included: severity of the head injury, physical restrictions of the patient, time post-injury, current adjustment of the head injury patient, personality of the spouse, the number of coping strategies employed by the spouse, recent family life change events, and financial strain. These predictor variables take into account the current situational stressors, spousal coping abilities and the family demands or pile-up of stressors, all factors which should shape the course of spouse adjustment and adaptation over time. Figure 1 pictorially depicts the conceptual model for this research project. While some of these variables have been investigated in previous research, a multivariate approach such as this has not been reported.

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Insert Figure 1 about here  
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Figure 1: Schematic representation of predictors and outcome of spousal adjustment to head injury.



### Medical/Patient Related Variables

**Severity of the Head Injury.** In the case of head injury, one can assess its overall severity based on indices such as Glasgow Coma Scale (GCS) ratings, duration of coma and length of post-traumatic amnesia. When considered in combination, these measures can provide early estimates of the severity of the injury. Lower GCS, longer coma and protracted periods of post-traumatic amnesia yield an increasingly poor prognosis for the patient in terms of long term deficits in physical, cognitive, and social functioning. Unfortunately, in the medical records reviewed for this study, documentation of length of post-traumatic amnesia and duration of coma was frequently unreliable or unavailable, hence, the most reliable index of severity of head injury was GCS on admission to hospital.

**Physical Restrictions of the Head Injury Patient.** In addition to the emotional, cognitive and social sequelae of head injury, victims are often left with physical handicaps which impair their ability to carry out activities essential to daily living (e.g. walk stairs, use public transportation and washroom facilities, etc.). While the results of past research strongly suggest that it was the mental rather than the physical changes which presented the biggest problem to the family (Lishman, 1973), there was an exception in Klonoff's work which indicated that physical restrictions are also associated with quality of life post-injury. In

the majority of these studies, only these two variables, physical changes and mental changes in the head injury patient, were examined to determine their influence on a relatives' well-being. It may be that when entered into a multivariate analysis, differences in the impairment of physical functioning between head injury patients may produce significant differences in the degree to which spouses experience stress-related adjustment problems.

**Time Post-injury.** Lezak (1986) and Stambrook and Peters (1988) have both concluded that consideration of the time course is vital in assessing the impact of head injury on other family members. Most research to date has limited its scope to 12 or 24 months (e.g. Livingston et al., 1985a; Livingston et al., 1985b; McKinlay & Brooks, 1984). Lezak (1986) hypothesized that family reorganization can take at least 18 to 24 months or longer. Using a longer time frame post-injury would provide the much needed empirical documentation as to specific developmental changes and reactions to a brain damaged spouse. So far, based on the work of Brooks and McKinlay (1983), relatives of severe head injury patients reported experiencing an increase in subjective burden over the course of 12 months after injury. Whether this trend continues or translates into readily observable somatic or psychiatric disorders over the longer term has yet to be empirically tested.



**Current Adjustment of the Head Injury Patient.** In the case of head injury, one can assess its overall severity (based on such indices as duration of post-traumatic amnesia, Glasgow Coma Scale ratings, and duration of coma), the physical impairment imposed by the injury, as well as concomitant psychosocial sequelae. The current adjustment of the patient refers to the individual's psychosocial adjustment. As previous research has shown over and over again, the relatives of head injury victims report that they have the most difficulty in dealing with the psychosocial changes in the patient and that these changes are associated with subjective stress in the relative (Brooks, 1984b). To date, it is this variable which has figured most prominently in the literature on head injury and stress in relatives. A multivariate approach however, has never been taken, leaving the possibility open for an association between other variables and stress in relatives.

### **Spousal Variables**

**Personality of the Spouse.** McKinlay and Brooks (1984) have been the only researchers to examine the influence of relatives' personality on their reporting of changes in the head injury patient and their personal felt stress. Their results indicated that relatives' N scores (neuroticism) were positively correlated with the amount of stress they reported experiencing. Significant correlations were not

found between stress and the relatives' P (psychoticism) or E (extroversion) scores. In addition, relatives' N scores were positively correlated with their report of emotional/behavioral changes in the patients. They concluded that while the association between the relatives' personality and their felt stress was not overwhelming, attention should be paid to personality factors when assessing the psychosocial outcome of the relatives of head injury patients.

**Coping Strategies Employed by the Healthy Spouse.**

According to systems theory, a change in one part of the system triggers change in other parts of the system. When a change occurs of crisis proportions, as in the case of one member sustaining a severe head injury, the family must shore up its resources and try to make the necessary shifts to adapt to the crisis situation. Some of the familial responses will be dysfunctional, in that members' needs will not be met, whereas other responses can be viewed as functional problem-solving strategies wherein members' needs are being met. Effective coping strategies within the family system can promote maintenance of satisfactory internal conditions for communication and family organization, family member independence and self-esteem, maintenance of family bonds of cohesion and unity, and maintenance and development of social supports (McCubbin, Larsen, & Olson, 1985).

In coping with a problematic or difficult situation, family members may rely on resources within the nuclear system

and/or outside the nuclear unit. Some actual coping strategies the healthy spouse might employ are: acquiring support from friends, relatives and community resources; redefining or reframing the stressor event in terms that make it more manageable; seeking out spiritual support; and accepting the crisis as part of life. McCubbin, Larsen and Olson (1985) hypothesized that families who employ more coping behaviors, relying on both internal and external resources, will adapt to stressful situations more successfully. Based on these theoretical assumptions, the number of coping strategies the spouse of a head injury patient uses may be significantly related to the degree of stress-related adjustment problems he or she experiences. Research in the area of the impact of head injury has so far failed to assess coping behaviors in relatives.

### **Family Stressor Variables**

**Recent Family Life Change Events.** The concept of "stress" has recently become a popular topic. Much time and effort has been devoted to the study of stress in both the popularized media and the scientific literature. According to McCubbin and Patterson (1983), the majority of research on stress has been based on the premise that stress, arising from a pile-up of life events, is a key factor in the etiology of various somatic and psychiatric disorders, often referred to as stress-related adjustment problems. They

have attempted to quantitatively document the impact of family life events and changes on the family system and individual members.

Family life changes are viewed as additive, so when a stressor event occurs, the family's response will be influenced not only by the original stressor but additionally by the accumulation of other life events they have experienced (McCubbin et al., 1985). A family struggling with other life change events may lack the capabilities to cope with any additional stressors. While the focus of McCubbin et al.'s (1985) work is on the relationship between life change events and family functioning, they have acknowledged that cumulative family life changes will also be associated with negative correlates in individual members. Based on this conceptualization of stressors and life change events, one would expect that the spouse of a head injury patient who has experienced numerous life change events would be especially vulnerable to developing stress-related adjustment problems given the crisis of the accident and its long term consequences. To date, there has been no empirical investigation of this relationship.

**Financial Strain.** The perception of financial strain within the family might certainly be another factor which could influence the degree to which the spouse of a head injury patient experiences stress-related adjustment problems. This variable may be especially pertinent, for if it

is the husband who has sustained the injury, as in this present study, the family may have to experience a drastic cut in income if he does not return to work or resumes work in a reduced capacity. Financial strains might also be experienced due to the cost of specialized medical care. Lin, Dean and Ensel (1981) evaluated the relationship between various types of support, stressful life events, and depression. They reported that the association between objective support, that is, income, and depression, was much stronger than between stressful life events and depression. They found that as income increased, depression in adults decreased. A higher income may alleviate some of the strains regarding financial concerns in the healthy spouse.

### Stress-Related Adjustment Problems

Based on the family systems literature, when a family fails to make the necessary and appropriate shifts in its interaction and structure in response to a crisis situation, symptomatic behavior may appear in one or more members. The symptoms are viewed both as a response to stress within the family system and as a factor that is necessary in maintaining the balance of the family system (Okun & Rappaport, 1980). To date, a major focus of the studies on families has been to identify certain interactional or structural patterns which are associated with a specific symptom or disorder in a member. For example, in a review of family

systems theory, Kerr (1981) stated that the early work in the family therapy literature was done almost exclusively on "schizophrenic" families . Such concepts as the schizophrenogenic mother, and double bind were born at this time. So far, however, clear and distinct familial patterns have not been consistently connected to specific symptomatic behaviors in family members. Likewise in the stress literature, it is still an enigma as to why under similar circumstances, one individual develops ulcers, another experiences a major depression and yet another is plagued with generalized anxiety.

Given such unique and individualized responses to stress, a multitrait approach in the assessment of stress was taken. That is, a diversity of stress-related adjustment problems may accompany stressor events such as spousal head injury. Spouses of head injury patients may experience both psychological and physical disorders, along with social disturbances including difficulties in their marital relationship. There is currently no research available which has examined stress-related adjustment problems in spouses of head injury patients with estimates of the frequencies and severities with which these problems occur. Nor is there a single study in which marital adjustment or distress has been measured empirically. Thus there is clear need for the most basic of data concerning these three dimensions of adjustment and the impact of head injury.

### Overview and Hypotheses

As the literature review has indicated, the potential for head injury to impose several severe psychosocial stressors upon the spouse of the victim has long been recognized. Despite this widespread recognition, however, very few controlled studies appear to have been published. One major stumbling block may be that the problem requires an interdisciplinary approach, in which several types of information and expertise are required. A thorough understanding of the emotional and psychosocial impact of head injury on patient and significant others requires detailed knowledge concerning: (1) the neurological and medical features of the disability insofar as these have been hypothesized to introduce direct influences upon the psychological state of the individual, (2) psychosocial theories of family stress, coping, and adaptation and the ways in which these can be applied to a disabled population, and (3) specialized methodological expertise regarding research design requirements which must be considered in attempting to generate useful findings. This proposed study is an attempt to incorporate these three dimensions.

The advantages of this research project over others are several. This project represents a systematic attempt to examine in detail spousal reactions to head injury which is grounded on a theoretical base of growing literature (i.e. family systems theory). Although the design is cross-sec-

tional, head injury couples were interviewed who were a few months to eight years post-injury. This provided the much needed empirical documentation for the developmental changes that occur over a longer period of adjustment from the acute crisis of the accident to more long-term adaptation to changes in functioning. Mild, moderate, and severe groups of head injury couples were used to make meaningful between-group comparisons. In addition, in this study there was a uniform informant (the spouse), relatively large sample size, a multitrait-multivariate approach was taken in assessing stress in the spouse and its predictors, and standardized measures were employed. The findings of this study should provide useful information for those in the health professions working with head injury patients and their families of determining who is "at risk" for developing adverse stress reactions. Based on the available empirical and theoretical systems literature, the following hypotheses were advanced:

#### **Hypothesis 1**

Spouses of severe head injury patients will report experiencing a significantly higher level of stress-related adjustment problems (i.e. a large number of health symptoms/conditions, high level of psychopathology, low marital adjustment or satisfaction, and low marital intimacy) than spouses of mild or moderate head injury patients.



**Hypothesis 2**

For the non-head injured spouses, stress-related adjustment problems will be positively associated with severity of head injury, physical restrictions of the head injury patient, current adjustment of the head injury patient, time post-injury, neuroticism, number of recent life change events, and financial strain, and negatively associated with coping strategies used by the spouse.

## METHOD

### Subjects

Three groups of potential couples were identified for this study through the records of the Health Sciences Centre and the St. Boniface General Hospital, Winnipeg. Information including patient demographic data, as well as neurological and medical data specific to the head injury was collected (see Appendix A). All participant couples met the following inclusion criteria : (1) the husband must have been admitted to hospital after suffering injury to the head, according to the International Classification of Diseases - 9th Edition - Clinical Modification Diagnosis (ICD-9-CM), with loss of consciousness for a minimum of five minutes, and (2) the couple must have been living together prior to the head injury and following hospital discharge. The couples need not be legally married. The time since the accident varied from recent, a few months, to longer term, eight years.

Patients were categorized into mild, moderate, and severe head injury groups based on their level of consciousness on admission to hospital and results of Computerized Tomography (CT) of the head. Figure 2 indicates the decision tree

for subject classification. Based on this schema, patients in the severe group were comatose on admission to hospital, (i.e. GCS score less than or equal to 8) regardless of CT findings or neurosurgery; patients in the moderate group had a GCS score from 9 to 12 regardless of CT findings and no neurosurgery, or GCS score of 13 to 15 with abnormal CT findings or required neurosurgery; and patients in the mild group had a GCS score of 13 to 15 with normal CT findings and no neurosurgery required. This categorization system is based on the work of several eminent researchers in the area of the head injury patient (Klonoff, Costa, & Snow, 1986; Levin, High, Goethe, Sisson, Overall, Rhoades, Eisenberg, Kalinsky, & Gary, 1987; and Parkinson, Stephenson, & Phillips, 1985).

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Insert Figures 2 and 3 about here  
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Figure 2.

Decision Tree for Classification of Patients as Mild, Moderate, or Severe Head Injury.

Obtain or Calculate GCS  
from Chart

Is patient in coma on  
admission or  $3 \leq \text{GCS}$   
 $\leq 8$  regardless of CT  
findings and neuro -  
surgery ?

YES SEVERE GROUP

N O

$9 \leq \text{GCS} \leq 12$

YES MODERATE GROUP

N O

$13 \leq \text{GCS} \leq 15$  and  
CT findings normal  
& no neurosurgery

YES MILD GROUP

N O

$13 \leq \text{GCS} \leq 15$  and  
CT findings abnormal  
& / or neurosurgery

YES MODERATE GROUP

Figure 3.  
The Subject Selection Process Outlined In Detail

Total Number of Charts pulled as per ICD - 9 - CM (males only)	938
409 single males	
119 patient died	
105 inaccurate diagnoses, no CHI	
39 charts not found/unavailable	
21 patients lived too far away to contact	
2 charts incomplete	
2 court cases pending / charts sealed	
697 rejected	- 697
potential married male subjects	241
45 did not meet criterion for inclusion upon further review	
45 rejected	- 45
subjects sent letters	196
64 could not locate	
10 no longer married	
9 patient (7) or wives (2) died	
5 cannot speak English	
88 nonparticipants	- 88
potential participants	108
33 refused to participate	
20 partial data only, refused further participation	
53 nonparticipants / incomplete data	- 53
full data collected	55

Figure 3 indicates more precisely the process of subject selection. In total, 938 charts were reviewed as per ICD-9-CM diagnosis. Upon initial chart review, 697 cases were rejected, leaving 241 potential male and married subjects. Upon subsequent chart review, another 45 did not meet the inclusion criteria. The remaining 196 subjects were sent letters describing the study (see Appendix B). Further follow-up by mail or telephone determined that 88 subjects either could not be located, or did not meet inclusion criteria. Of 108 potential participants who were contacted, a full complement of data was collected on 55 couples, partial data was collected on 20 couples, and 33 couples refused to participate. All results and discussion yet to follow are based on the full set of data gathered from the 55 couples.

Based on the decision tree for the classification of the severity of the head injury there were 10 in the mild group (18.2%), 25 in the moderate group (45.5%), and 20 in the severe group (36.3%). Table 1 provides a summary of the final sample of subjects. It is likely that the inclusion criteria skewed the sample towards the older age range given that only married patients were accepted for participation in this study. The Blishen occupational codes (Blishen, 1967) represent a socioeconomic index based on an occupations' salary and educational requirements. That is, the higher the income and amount of education required, the

higher the code. While the three groups have relatively similar codes pre-injury, both the moderate and severe group's mean codes decreased post-injury. This drop in mean socioeconomic status represents a job requiring less formal education or training requirements and most likely, a drop in income.

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Insert Tables 1 and 2 about here  
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Table 1

Characteristics of the Final Sample of Subjects

Variables	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Age (years)			
Mean	46.8	54.6	40.6
Range	30 -- 77	27 -- 84	23 -- 64
Years Married			
Mean	19.9	23.7	17.3
Range	8 -- 46	2 -- 50	2 -- 39
Number of Children			
Mean	2.2	2.7	1.6
Range	0 -- 5	0 -- 8	0 -- 3
Pre-injury Family Income (in thousands \$)	25 -- 30	20 -- 25	20 -- 25
Post-injury Family Income (in thousands \$)	25 -- 30	20 -- 25	15 -- 20
Pre-injury Blishen Occupational Code	47.1	40.0	44.4
Post-injury Blishen Occupational Code	47.6	31.4	26.6



Table 2

Accident Characteristics of the Final Sample of Subjects

Variables	Group		
	Mild	Moderate	Severe
	(N=10)	(N=25)	(N=20)
GCS (mean)	14.2	13.7	6.9
Modal Type of Accident	MVA	MVA/Fall	MVA/Fall
Level of Head Injury	Cerebral	Cerebral	Cerebral
Length of Hospital Stay (days)	11	39	57

At the time of hospital admission, the mean GCS scores for the mild, moderate and severe groups were 14.2, 13.7, and 6.9 respectively (see Table 2). Within the mild group, the most frequent type of accident responsible for the head injury was motor vehicle accidents, whereas in the moderate and severe groups the injury was equally as likely to have occurred as the result of a motor vehicle accident or fall. Across all three groups, the level of the head injury was cerebral. The mean duration of hospitalization in days for the mild group was 11, 39 for the moderate group, and 57 for the severe group.

Given the relatively small sample sizes for each of the three groups, matching on demographic variables such as age, family income, and number of children was not done for the sake of maintaining an adequate sample size. It was felt that such a matching procedure would overly restrict the sample size.

### Procedure

The couples who indicated a willingness to participate in this study were contacted by telephone to arrange an interview. Both the head injury patient and wife were included. The majority of couples were interviewed at the Health Sciences Centre. In order to maximize participation, a small number of couples were also interviewed in their own homes, or by telephone. Couples who were interviewed at the hospi-

tal were offered reimbursement to cover parking expenses. All interviews were conducted by a trained research assistant (male) or the author (female). The interviews took a mean time of 2 hours. To mitigate against the effects of fatigue, the participants were given the option of having a short break during the completion of the questionnaires. Upon completion of the study, all participants were provided with a summary of the results (see Appendix C).

An extensive battery of questionnaires was developed for this study, some of which were self administered for the spouse or patient to complete, and others of which were administered by the interviewer to either spouse or patient. Table 3 summarizes the measures used, who provided the information, and whether the questionnaire was self-administered or researcher administered. An overview and discussion of the psychometric properties of each of these questionnaires follows.

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Insert Table 3 about here  
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Table 3

Psychometric Instruments Used In Present Study


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Researcher Administered-Head Injury Patient Respondent

- Questionnaire on demographic / premorbid data
- Garrad and Bennett Activity Schedule  
(Garrad & Bennett, 1971)

Researcher Administered-Spouse Respondent

- Open-ended questions regarding impact of injury

Self-Administered-Head Injury Patient Respondent

- Sickness Impact Profile  
(Bergner, Bobbit & Pollard, 1976)
- Ways of Coping  
(Folkman & Lazarus, 1980)
- Profile of Mood States  
(McNair, Lorr & Droppleman, 1971)

Self-Administered-Spouse Respondent

- Symptom Checklist-90-Revised  
(Derogatis, 1977)
- Health Symptoms/Conditions Inventory  
(Schwab, Ferral & Warheit, 1979)
- Dyadic Adjustment Scale  
(Spanier, 1976)
- Personal Assessment of Intimacy in Relationships  
(Schaefer & Olson, 1981)
- Eysenck Adult Personality Questionnaire  
(Eysenck & Eysenck, 1976)
- Family Inventory of Life Events and Changes  
(McCubbin & Patterson, 1983)
- Katz Adjustment Scale-Relatives Form  
(Hogarty & Katz, 1971)
- Family Crisis Oriented Personal Evaluation Scales  
(McCubbin, Larsen, & Olson, 1985)

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Note. The Self-Administered-Head Injury Patient Respondent questionnaires were included to accomodate another research project and will not be discussed in this paper.

### Measures of Stress

The following measures of stress were selected to obtain a broad and diverse perspective on the psychosocial impact of head injury on the spouse. Thus the measures assess the following dimensions: psychopathology, physical complaints, marital adjustment and marital intimacy.

#### Psychopathology

The Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1977) was employed to assess level of psychopathology in the head injury patients' spouses (see Appendix D). Current psychopathology is characterized by nine primary symptom dimensions and three global indices of distress. The primary symptom constructs are somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, psychoticism, phobic-anxiety, and paranoid ideation. The global indices are comprised of: the global severity index which provides information on the number of symptoms and intensity of distress, the positive symptom distress index, a pure intensity measure, and the positive symptom total, a pure numbers measure.

Derogatis and Cleary (1977) conducted a large scale study (N=1002) to assess the construct validity of this scale. Using factor analytic techniques they demonstrated high empirical validity for the rational-theoretically derived

scales, with the exception of the psychoticism scale which was moderate. The instrument is widely used as a screening device for psychopathology and emotional distress.

### Physical Complaints

The Health Symptoms/Conditions Inventory (Schwab, Fennel, & Warheit, 1979) was used to assess the frequency of physical complaints most often identified with stress, for example, ulcers and hypertension (see Appendix E). Respondents were asked to indicate frequency of occurrence (regularly, occasionally, or not at all), of 11 symptoms/conditions that they may have experienced in the past year. A higher score indicates poorer health or greater prevalence of psychosomatic complaints than a lower score. The test-retest reliability is .69 (Schwab et al., 1979).

### Marital Adjustment

The marital or dyadic adjustment of the couple was examined using the Dyadic Adjustment Scale (DAS) developed by Spanier (1976; see Appendix F). The scale was carefully constructed, taking into account content, criterion-related and construct validity. The scale assesses a dyadic relationship on four dimensions: dyadic satisfaction, dyadic consensus, dyadic cohesion, and affectional expression. The test-retest reliability of the scale was found to be  $r = .96$  (Spanier, 1976). Norms for married and divorced groups are available.

### Marital Intimacy

The Personal Assessment of Intimacy in Relationships (PAIR; Schaefer & Olson, 1981) is a 36-item instrument that assesses five types of intimacy: emotional, social, sexual, intellectual, and recreational (see Appendix G). This inventory was employed to assess the feelings of closeness or sharing in these five areas among head injury couples. Also included in the inventory is a conventionality scale which indicates the extent to which an individual is "faking good". The inventory has good validity and each scale has a split half reliability coefficient of at least .70 (Schaefer & Olson, 1981).

### Predictor Variables

#### Medical/Patient Related Variables

Severity of the Head Injury. The severity of the head injury was based on the patient's Glasgow Coma Scale score (Teasdale & Jennett, 1974) upon admission to hospital. The scale provides scores ranging from 3 to 15, or in deep coma to alert and responsive. A patient is assessed in three areas, eye, motor, and verbal responsivity. A score of 15 indicates that a patient is spontaneously opening his/her eyes, obeys verbal commands, and is oriented and conversant. On the other hand however, a score of 3 indicates no spontaneous eye opening (not even to deep pain), no motor response even in the presence of a painful stimulus, and no verbal

sounds whatsoever (see Appendix H). The scale has been widely used to assess severity of head injury and when doing retrospective research appears to be a more reliable index than duration of post traumatic amnesia.

**Physical Restrictions of the Head Injury Patient.** The physical restrictions or limitations of the head injury patient were assessed using a structured interview schedule developed by Garrad and Bennett (1971; see Appendix I). They considered the severity of a physical illness as limitation of the performance of an individual when compared with a "fit" person. In other words, they viewed disability as a restriction of performance in activities which are essential basic components of daily living and that an inability to perform such activities necessitates dependence on another person (e.g. walking, feeding, dressing, preparation of food, etc.). The schedule evaluates an individual's performance in four areas: mobility, self-care, domestic duties and occupation. The questionnaire has been tested for its meaningfulness, intelligibility and acceptability to both inpatient and outpatient groups (Garrad & Bennett, 1971). Interrater reliability was found to be .80. The validity of the schedule was measured by comparisons with clinical assessments. In all cases (N=52) the patient's disability status was correctly described (Garrad & Bennett, 1971).



Time Post-Injury. Time post-injury was measured in months from the date of the accident.

Current Adjustment of the Head Injury Patient. The current adjustment of the head injury patient was assessed from the point of view of the spouse. The spouse completed the Relatives Form of the Katz Adjustment Scale (KAS-R; see Appendix J). The KAS approaches the problem of defining and assessing normality or adjustment by placing emphasis on the individual's interaction with his or her social environment (Hogarty & Katz, 1971). The Relative's Form relies on an informed observer (the spouse in this case) for a description of the subject's behavior. The scale yields information on 12 measures of symptomatic and social behavior: belligerence, verbal expansiveness, negativism, helplessness, suspiciousness, anxiety, withdrawal and retardation, general psychopathology, nervousness, confusion, bizarreness, and hyperactivity. Other variables represented on the scale include performance on expected role activities, the relative's expectation of role performance, the subject's performance of and the relative's satisfaction with recreation and free-time activities, and finally, a dissatisfaction measure or the difference between the subject's role performance and the informant's expectations. This scale has been used in earlier research with a head injured population (Klonoff & Costa, 1984).

## Spousal Variables

Personality of the Spouse. The Eysenck Adult Personality Questionnaire (EPQ; Eysenck & Eysenck, 1976) assessed the basic personality type of the head injury patients' spouses (see Appendix K). The EPQ was developed to measure Eysenck's three dimensions of personality: extroversion, neuroticism, and psychoticism. A fourth scale, a dissimulation or lie scale was also included in the questionnaire. The EPQ has been widely used and validated in many studies and is highly reliable ( $r = .80$  to  $.90$ ; [Eysenck & Eysenck, 1976]).

Coping Strategies Employed by the Spouse. The coping strategies employed by the spouse of the head injury victim was evaluated using The Family Crisis Oriented Personal Evaluation Scales (F-COPES; McCubbin, Larsen & Olson, 1985; see Appendix L). This scale was created to identify effective problem-solving and behavioral strategies utilized in difficult or problematic situations. The scales include: acquiring social support, reframing, seeking spiritual support, mobilizing family to acquire and accept help within the community, and passive appraisal. The test-retest reliability for the total scale is  $r = .81$  (McCubbin et al., 1985).

## **Family Stressor Variables**

**Family Life Change Events.** Recent family life change events or pile-up of stressors were assessed using the Family Inventory of Life Events and Changes (FILE; McCubbin, Patterson, & Wilson, 1983; see Appendix M). The FILE is a 71-item self-report instrument designed to record normative and nonnormative demands that a family may experience within a year. The items were factor analysed and nine subscales emerged: inter-family stress, marital strain, pregnancy and childbearing strains, finance and business strains, work-family transitions and strains, illness and family care strains, family losses, family transitions in and out, and family legal strains. The inventory has good reliability (test-retest reliability across five weeks is .80) and validity, and norms are available on 1140 couples who represent seven different stages of the life cycle (McCubbin et al., 1983).

**Financial Strain.** The degree to which a couple experienced financial strain was evaluated using a 5 point Likert-type scale ranging from none to profound. The spouse provided the rating.

**Open Ended Questions.** All spouses were also asked to answer a series of open-ended questions (see Appendix N). The responses to these questions were not used in the final data analysis as they were designed simply to elicit ideas

and generate hypotheses for future research in this area. However, the major themes of their responses are outlined in the results section.

## RESULTS

A oneway multivariate analysis of variance was initially performed to assess comparability of demographics for mild, moderate, and severe head injury groups. Another series of oneway multivariate analyses of variance was then performed to determine whether there were between groups differences on the SCL-90-R, DAS, PAIR, EPQ, KAS-R, FILE, and F-COPES. A oneway analysis of variance was completed to assess for between group differences on the Health Symptoms/Conditions Inventory, and for the Garrad and Bennett Activity Schedule. Significant differences were followed up with Bonferroni pairwise multiple comparisons. Stepwise multiple regression analyses were then performed to assess the linear relationship between the spousal dependent or outcome measures and the moderator or predictor variables. The .05 level of significance was used for all analyses unless otherwise stated.

### Between Group Differences

Sample Comparability for Demographics. A oneway multivariate analysis of variance was conducted to determine whether there were significant differences between the mild, moderate, and severe head injury groups using the demographic variables of age, pre-injury occupational status (based

on Blishen's [1967] socioeconomic index system), the number of years the couple was married or living together, and the number of children in the family, as dependent variables. Significant differences were not found based on this analysis, suggesting that in terms of the patients age, pre-injury socioeconomic status, number of years married, and the number of children in the family, the three groups were relatively homogeneous. Table 4 presents a summary of the multivariate analysis of variance and Table 5 provides the means and standard deviations for each group on the demographic variables.

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Insert Tables 4 and 5 about here  
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Table 4.

Summary Table for Multivariate Analysis of Variance for  
Sample Comparability on Demographics.

Wilk's Lambda	Degrees of Freedom			F-statistic
.80	2	1/2	23 1/2	1.47

Table 5.

Group Means and Standard Deviations for Demographic Variables.

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Age	46.8 (15.1)	54.6 (16.1)	40.6 (12.4)
Preinjury			
Occupation	47.1 (17.0)	40.0 (20.8)	44.4 (14.9)
Years Married	19.9 (11.2)	23.7 (14.3)	17.3 (10.0)
Number of			
Children	2.2 (1.2)	2.7 (1.9)	1.6 (0.8)



### Hypothesis 1

According to Hypothesis 1, there would be a significantly higher level of stress-related adjustment problems in the wives of severe head injury patients than for the wives of mild or moderate patients. A series of oneway multivariate analyses of variance were used to statistically evaluate whether there were any between group differences on level of psychopathology, marital adjustment, and marital intimacy. A oneway analysis of variance was employed to assess between group differences on the number of health symptoms/conditions the wives reported experiencing.

The overall multivariate test of significance using the SCL-90-R subscale scores as the dependent variables was highly significant ( $p < .01$  [see Table 6]). Table 7 provides a listing of all group means and standard deviations for the SCL-90-R subscales. The Bonferroni multiple comparison technique was then used to specifically identify which of the subscales the groups differed significantly. Based on the Bonferroni confidence interval technique, the wives of the severe head injury patients had significantly higher scores on the depression subscale than the wives in either the moderate or mild group. All other between group mean differences were nonsignificant.

-----  
Insert Tables 6 and 7 about here  
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Table 6

Summary Table for Multivariate Analysis of Variance for  
SCL-90-R Subscales

Wilk's Lambda	Degrees of Freedom		F-statistic
.43	23	21	2.59 **

Note. \*\* denotes  $p < .01$

Table 7

Group Means and Standard Deviations for SCL-90-R Subscales

Subscale	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Somatization	2.9 (3.8)	7.3 (6.7)	4.5 (4.1)
Obsessive /			
Compulsive	7.2 (7.1)	6.4 (5.8)	5.1 (4.6)
Interpersonal			
Sensitivity	5.5 (4.6)	4.8 (4.0)	5.1 (4.1)
Depression	7.8 (7.1)	7.8 (6.2)	15.4 (8.7) b,c
Anxiety	3.7 (3.2)	5.4 (6.0)	7.1 (4.9)
Hostility	2.5 (2.5)	2.4 (2.4)	4.1 (3.2)
Phobic Anxiety	1.0 (1.8)	1.3 (2.1)	1.1 (2.0)
Paranoid			
Ideation	1.6 (1.8)	1.8 (2.1)	2.5 (2.6)
Psychoticism	2.1 (2.5)	2.5 (2.9)	4.3 (4.1)

Note. a denotes mean differences for groups 1 & 2 are significant

b denotes mean differences for groups 1 & 3 are significant

c denotes mean differences for groups 2 & 3 are significant

On the DAS subscales, the overall multivariate test of significance was also statistically significant ( $p < .025$  [see Table 8]). A compilation of the group means and standard deviations for the DAS scale is included in Table 9. According to the pairwise Bonferroni multiple comparisons, the wives in the severe group reported less dyadic consensus within their marriages than the wives in the moderate group and reported a lower amount of affectional expression than wives in either the moderate or mild groups. On the total DAS score, the wives of the severe head injury patients obtained significantly lower scores than the wives of the moderately injured patients.

-----  
Insert Tables 8 and 9 about here  
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Table 8.

Summary Table for Multivariate Analysis of Variance for DAS  
Subscales

Wilk's Lambda	Degrees of Freedom		F-statistic
.66	21	23	2.25 *

Note. \* denotes  $p < .05$

Table 9.

Group Means and Standard Deviations for DAS Subscales

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
<hr/>			
Dyadic			
Consensus	44.7 (8.7)	49.2 (8.4)	42.8 (9.5) c
Affectional			
Expression	14.2 (3.9)	14.0 (4.4)	9.1 (4.9) b,c
Dyadic			
Satisfaction	31.3 (2.8)	32.1 (5.5)	28.5 (5.3)
Dyadic			
Cohesion	14.1 (2.7)	14.7 (4.7)	12.6 (4.1)
Total DAS			
Score	104.2 (16.3)	110.2 (18.2)	91.9 (18.9) c

Note. a denotes mean differences for groups 1 & 2 are significant

b denotes mean differences for groups 1 & 3 are significant

c denotes mean differences for groups 2 & 3 are significant

As Table 10 indicates, overall significant differences were not found using the PAIR subscales as dependent measures. Table 11 provides a summary of the subscale means and standard deviations for the mild, moderate, and severe groups. Given the nonstatistically significant overall test, multiple comparisons were not employed.

-----  
Insert Tables 10 and 11 about here  
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Table 10

Summary Table for Multivariate Analysis of Variance for PAIR  
Subscales

Wilk's Lambda	Degrees of Freedom			F-statistic
.68	2	4	20	0.81



Table 11

Group Means and Standard Deviations for PAIR Subscales

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Perceived Intimacy			
Emotional	51.4 (15.3)	58.2 (23.4)	42.6 (25.2)
Social	53.0 (10.5)	58.2 (15.8)	53.8 (18.8)
Sexual	64.5 (18.2)	60.3 (17.5)	53.4 (26.7)
Intellectual	42.0 (15.9)	51.6 (21.2)	47.0 (20.7)
Recreational	49.0 ( 8.6)	55.6 (14.6)	50.7 (15.2)
Expected Intimacy			
Emotional	75.9 (15.9)	73.8 (15.2)	73.0 (16.7)
Social	70.9 (14.7)	64.9 (13.1)	67.2 (12.1)
Sexual	76.1 ( 9.5)	67.8 (14.2)	70.5 (20.2)
Intellectual	67.4 (12.4)	62.9 (15.4)	66.8 (14.1)
Recreational	65.7 ( 9.4)	64.4 (10.3)	65.9 (11.9)

As the Health Symptoms/Conditions Inventory yields a single total sum of the number of health symptoms or conditions an individual reports, a oneway analysis of variance was used to determine overall between group differences. This overall test was not significant (see Table 12) and hence, pairwise comparisons were not computed. Table 13 presents the means and standard deviations for the three groups.

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Insert Tables 12 - 13 about here  
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### Predictor Variables

Severity of the Head Injury. Based on the manner in which the head injury patients were categorized as either mild, moderate, or severe, and by definition one would expect there to be significant differences between the groups on their GCS scores. Statistical procedures for assessing differences were therefore not employed. The frequency distribution for the GCS scores is presented in Table 14. As the frequency distribution illustrates, the full range of level of consciousness is represented for the overall GCS scores.

-----  
Insert Table 13 about here  
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Table 12

Summary Table for Multivariate Analysis of Variance for  
Health Symptoms/Conditions Inventory

Source	df	Sums of Squares	Mean Square	F
Between Groups	2	6.6	3.3	0.56
Within Groups	52	309.1	5.9	
Total	54			

Table 13

Group Means and Standard Deviations for Health Conditions/  
Symptoms Inventory

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Total Number			
Conditions	4.6 (3.2)	4.4 (2.8)	3.8 (1.4)

Table 14

Frequency Distribution by Group for Glasgow Coma Scale (GCS)  
Scores

GCS	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
15	4 (40%)	10 (25%)	
14	4 (40%)	5 (20%)	
13	2 (20%)	4 (16%)	
12		1 ( 4%)	
11		1 ( 4%)	
10		1 ( 4%)	
9		3 (12%)	
8			6 (30%)
7			6 (30%)
6			3 (15%)
5			2 (10%)
4			1 ( 5%)
3			2 (10%)

**Physical Restrictions of the Head Injury Patient.** The Garrad and Bennett Activity Schedule yields one score representing an individual's functional independence within his or her environment, hence a oneway analysis of variance was calculated to determine if there were between group differences on this variable. This analysis was significant at the  $p < .01$  level, indicating that at least one of the groups differed significantly from another in terms of their activity score (see Table 15). Using the Tukey Honestly Significant Difference test for post-hoc pairwise comparisons, the severe head injury patients obtained statistically higher scores than both the mild and moderate patients on the Garrad and Bennett Activity Schedule. The group means and standard deviations are displayed in Table 16.

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Insert Tables 15 and 16 about here  
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Table 15

Summary Table for Multivariate Analysis of Variance for Gar-  
rad                      and                      Bennett                      Activity                      Schedule

Source	df	Sums of Squares	Mean Square	F
Between Groups	2	34.6	17.3	6.36 **
Within Groups	52	141.6	2.7	
Total	54			

Note. \*\* denotes  $p < .01$

Table 16

Group Means and Standard Deviations for Garrad and Bennett Activity Schedule Scores

	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Variable			
Garrad & Bennett			
Score	0.10 (0.32)	0.29 (0.84)	1.88 (2.60) b,c

Note. a denotes mean differences for groups 1 & 2 are significant

b denotes mean differences for groups 1 & 3 are significant

c denotes mean differences for groups 2 & 3 are significant



**Time Post-Injury.** The patients who participated in this research ranged from 11 to 93 months post-injury. Thus the sample provided a wide range of years spanning the developmental process of adjustment to head injury with the exception of the more recently injured patients of 0 to 10 months post-accident. Table 17 highlights the group means and standard deviations for months post-injury.

-----  
Insert Table 17 about here  
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Table 17

Group Means and Standard Deviations for the Number of Months Post-Injury

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Months Post Injury	38.2 (20.2)	40.9 (14.8)	51.9 (22.6)

Current Adjustment of the Head Injury Patient. Overall between group differences on the KAS-R were assessed with a oneway multivariate analysis of variance using the KAS-R subscale scores as dependent measures. This test was not statistically significant indicating that the wives in the mild, moderate, and severe groups rated their husbands relatively similarly in terms of their general adjustment (see Table 18). The group means and standard deviations for KAS-R subscales are presented in Table 19. For the purposes of further exploration, univariate  $F$  -tests did indicate a trend ( $p < .10$ ) towards significant differences on four of the KAS-R subscales. These scales were verbal expansiveness, negativism, general psychopathology, and nervousness. Table 20 provides a comparison of the KAS-R subscale scores of the severe group from this study with a sample of closed head injury patients (Klonoff & Costa, 1984), and with normative data on "normals" and psychiatric patients (Hogarty & Katz, 1971). A series of 2-sample  $t$  -tests were conducted to determine whether there were significant differences on the 12 KAS-R subscales between the severe head injury group and Klonoff et al.'s head injury sample, the severe head injury group and the normative data on normals, and the severe head injury group and the normative data on psychiatric patients. The .0005 level of significance was used to maintain a low type I error rate given the large number of  $t$  -tests which were performed.

Based on these analyses, the ratings of the severe head injury group were significantly different from those of a group of normal males. In all cases, the severe head injury sample ratings were in the negative direction as compared to the ratings of the normal sample (i.e. more belligerent, verbally expansive, negative, etc.). When compared with a heterogeneous sample of head injury patients, the severe head injury group's ratings were significantly different on eight of the 12 subscales. The severe head injury group were rated as more verbally expansive, negative, helpless, suspicious, anxious, socially withdrawn and retarded, and nervous, with a higher level of general psychopathology than Klonoff et al.'s (1984) sample. Lastly, when compared with the normative data of a group of psychiatric patients admitted for day hospital treatment, significant differences were found on only four of the 12 subscales. The severe group were rated as more verbally expansive, and less anxious, nervous and hyperactive than the psychiatric patients.

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Insert Tables 18 - 20 about here  
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Table 18

Summary Table for Multivariate Analysis of Variance for  
KAS-R Subscales

Wilk's Lambda	Degrees of Freedom		F-statistic
.60	24 1/2	19 1/2	.98

Table 19

Group Means and Standard Deviations for KAS-R Subscales

Subscale	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Belligerence	5.9 (2.5)	5.1 (1.4)	6.3 (2.3)
Verbal			
Expansiveness	6.7 (2.4)	6.6 (1.9)	8.5 (2.8)*
Negativism	12.6 (3.9)	12.2 (3.7)	15.9 (3.9)*
Helplessness	6.6 (2.5)	5.7 (1.7)	7.1 (2.3)
Suspiciousness	5.5 (1.7)	5.4 (1.5)	6.7 (2.5)
Anxiety	8.4 (3.1)	7.2 (1.7)	8.1 (3.3)
Withdrawal and			
Retardation	11.4 (4.5)	10.8 (3.5)	13.5 (4.2)
General Psycho-			
pathology	41.5 (14.7)	37.4 (9.1)	46.9 (12.7)*
Nervousness	8.5 (3.7)	6.4 (2.1)	8.3 (2.1)*
Confusion	4.0 (1.8)	3.8 (1.4)	4.2 (1.8)
Bizzareness	6.7 (2.2)	5.8 (1.1)	6.4 (2.7)
Hyperactivity	5.6 (2.2)	4.6 (1.5)	5.2 (1.9)

Note.\* denotes trend based on univariate F -tests

Table 20

Comparison of Mean Katz Adjustment Scale - Relatives Form Scores

Subscale	Group			
	Severe (Peters)  (N=20)	Head Injured (Klonoff et al., 1984)  (N=63)	Normals (Hogarty & Katz, 1971)  (N=221)	Psychiatric Patients (Hogarty & Katz, 1971)  (N=133)
Belligerence	6.3 (2.3)	5.9 (2.3)	4.6 (.9)*	5.4 (1.9)*
Verbal				
Expansiveness	8.5 (2.8)	6.9 (2.0)*	5.9 (1.3)*	7.0 (2.5)*
Negativism	15.9 (3.9)	13.9 (3.8)*	11.5 (2.5)*	15.3 (4.5)
Helplessness	7.1 (2.3)	5.2 (1.3)*	4.5 (.8)*	8.4 (2.9)
Suspiciousness	6.7 (2.5)	5.1 (1.5)*	4.3 (.9)*	7.1 (3.1)
Anxiety	8.1 (3.3)	6.7 (1.2)*	6.2 (.6)*	11.1 (4.1)*
Withdrawal and Retardation	13.5 (4.2)	9.4 (3.1)*	8.9 (2.5)*	12.3 (4.1)
General Psycho- pathology	46.9 (12.7)	37.8 (8.3)*	30.7 (4.5)*	46.2 (11.0)
Nervousness	8.3 (2.1)	6.6 (1.7)*	6.1 (1.8)*	11.3 (3.1)*
Confusion	4.2 (1.8)	3.5 (1.0)	3.1 (.4)*	3.7 (1.4)
Bizzareness	6.4 (2.7)	5.5 (1.1)	5.2 (.6)*	7.2 (2.5)
Hyperactivity	5.2 (1.9)	4.8 (1.6)	4.2 (1.2)*	6.8 (2.3)*

Note:

\* indicates significant difference between severe head injury group and comparison group at  $p < .0005$  level.

**Personality of the Spouse.** Significant differences between groups were not found on the EPQ subscales using a oneway multivariate analysis of variance (see Table 21). Table 22 presents the EPQ subscale group means and standard deviations. Three sets of 2-sample  $t$ -tests were also performed to determine whether any of the three severity groups differed significantly from the normative sample (see Table 23). According to this analysis the wives in all three groups obtained significantly higher scores than the normative group on the lying Scale. As well, the mild group scored higher than the normative sample on the three remaining scales of extroversion, psychoticism, and neuroticism.

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Insert Tables 21 - 23 about here  
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Table 21

Summary Table for Multivariate Analysis of Variance for EPO  
Subscale Scores

Wilk's Lambda	Degrees of Freedom		F-statistic
.80	2. 1/2	23 1/2	1.44

Table 22

Group Means and Standard Deviations for EPQ Subscales

Subscale	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Extroversion	21.6 (24.8)	13.5 (3.6)	13.1 (4.4)
Psychoticism	5.4 (8.7)	1.9 (1.7)	1.8 (1.1)
Neuroticism	15.4 (3.4)	12.0 (5.0)	12.4 (4.9)
Lying	18.4 (22.3)	10.6 (3.8)	10.0 (3.1)

Table 23

Comparisons of Mean EPQ Scores with Normative Data


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	Mild	Moderate	Severe	Normative
Subscale	(N=10)	(N=25)	(N=20)	(N=2,565)
<hr/>				
Extroversion	21.6*	13.5	13.1	13.0
Psychoticism	5.4*	1.9	1.8	2.7
Neuroticism	15.4*	12.0	12.4	12.2
Lying	18.4*	10.6*	10.0*	7.9

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Note     \*Indicates significant differences between the normative sample and comparison group at  $p < .005$  level.

**Coping Strategies Employed by the Healthy Spouse.** A one-way multivariate analysis of variance determined that there were significant between group differences on the F-COPES subscales (see Table 24). Bonferroni pairwise multiple comparisons were done to determine where the significant differences were. Based on this technique, wives in the severe group reported that they acquired and sought less spiritual support and less social support than wives in the moderate group. Wives in the mild group reported less mobilization of family resources to cope with stress than wives in the moderate group. Wives in the severe group scored significantly less than wives in the mild or moderate group in terms of their ability to accept problematic issues with minimal reactivity. Overall, the wives in the moderate group reported making more use of the various coping strategies than the wives in either the mild or severe group. Table 25 lists the F-COPES group means and standard deviations.

-----  
Insert Tables 24 and 25 about here  
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Table 24

Summary Table for Multivariate Analysis of Variance for  
F-COPES Subscales

Wilk's Lambda	Degrees of Freedom			F-statistic
.47	2	1 1/2	22 1/2	3.58 ***

Note. \*\*\* denotes  $p < .001$

Table 25

Group Means and Standard Deviations for F-COPES Subscales

Subscale	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
<hr/>			
Acquiring Social			
Support	29.3 (6.9)	31.2 (6.4)	26.0 (5.0) c
Reframing	28.4 (4.1)	30.0 (4.3)	28.5 (3.8)
Seeking Spiritual			
Support	11.0 (4.2)	14.3 (2.4)	10.7 (5.1) c
Mobilizing			
Family	12.1 (3.6)	15.2 (2.4)	13.6 (2.9) a
Passive			
Appraisal	10.6 (1.3)	10.5 (2.2)	7.6 (2.6) b,c
Total F-COPES	87.6 (7.1)	101.1 (14.1)	84.8 (13.0)a,c

Note. a denotes mean differences for groups 1 & 2 are significant

b denotes mean differences for groups 1 & 3 are significant

c denotes mean differences for groups 2 & 3 are significant

**Recent Family Life Change Events.** As Table 26 indicates, a oneway multivariate analysis of variance using the FILE subscale scores as dependent measures was statistically significant. This test was followed up by Bonferroni pairwise multiple comparisons. According to these comparisons, the wives in the mild group reported more changes in the areas of intrafamily strain, finance/business, and illness than wives in the moderate group. They also reported more changes in the area of work/family than wives in either the moderate or severe groups. Overall, the wives in the mild group reported more recent and past total life change events than the wives in the moderate group. See Table 27 for group means and standard deviations for FILE subscales.

-----  
Insert Tables 26 and 27 about here  
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Table 26

Summary Table for Multivariate Analysis of Variance for FILE  
Subscales

Wilk's Lambda	Degrees of Freedom		F-statistic
.45	24	20	1.84 *

Note. \* denotes  $p < .05$



Table 27

Group Means and Standard Deviations for FILE Subscales

Subscale	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Intrafamily			
Strain	5.9 (4.5)	2.8 (3.0)	4.2 (2.3) a
Marital	0.5 (0.9)	0.4 (0.5)	0.6 (0.6)
Pregnancy	0.3 (0.4)	0.1 (0.3)	0.3 (0.5)
Finance /			
Business	3.6 (2.4)	1.3 (1.5)	2.4 (2.1) a
Work/Family	3.6 (1.8)	2.0 (1.8)	2.0 (1.5) a,b
Illness	2.1 (2.5)	0.4 (0.5)	1.1 (1.2) a
Losses	0.5 (0.7)	0.5 (0.6)	0.5 (0.6)
Transitions	0.8 (0.6)	0.3 (0.4)	0.5 (1.1)
Legal	0.0 (0.0)	0.1 (0.2)	0.2 (0.5)
Total Recent			
Changes	15.8 (10.5)	8.0 (5.5)	11.8 (4.8) a
Total Past			
Changes	9.1 (3.8)	4.1 (4.1)	6.6 (2.8) a

Note. a significant mean differences for groups 1 & 2

b significant mean differences for groups 1 & 3

**Financial Strain.** A oneway analysis of variance determined that there were significant between group differences on the degree to which the wives reported experiencing financial strain (see Table 28). Pairwise comparisons were performed using the Tukey Honestly Significant Difference method. According to this technique, the wives in the severe group reported greater financial strain than the wives in the moderate group. See Table 29 for group means and standard deviations.

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Insert Tables 28 and 29 about here  
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Table 28

Summary Table for Multivariate Analysis of Variance for Financial Strain

Source	df	Sums of Squares	Mean Square	F
Between Groups	2	7.5	3.8	3.71 *
Within Groups	52	52.8	1.0	
Total	54			

Note. \* denotes  $p < .05$

Table 29

Group Means and Standard Deviations for Financial Strain

Variable	Group		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Financial Strain	2.89 (0.88)	2.22 (1.19)	3.00 (0.80) c

Note. a denotes means for groups 1 & 2 are significant

b denotes means for groups 1 & 3 are significant

c denotes means for groups 2 & 3 are significant

## Hypothesis 2

According to hypothesis 2, stress related adjustment problems in the spouse will be positively associated with the severity of the head injury, physical restrictions of the head injury patient, time post-injury, psychological adjustment of the head injury patient, level of neuroticism in the spouse, number of recent life change events and financial strain, and negatively associated with coping strategies used by the spouse. In order to test this hypothesis, a series of stepwise multiple regression analyses were conducted on the total sample using the previously mentioned predictors as independent variables, and the statistically significant spousal outcome variables as dependent variables. That is, the dependent variables used in successive regression analyses were the SCL-90-R depression subscale score, and the DAS dyadic consensus, affectional expression and total adjustment score. These measures of spousal psychopathology and marital functioning were all found to have a multiple correlation coefficient significantly greater than zero (see Tables 30 - 33). The raw score regression equations for the four spousal outcome measures are :

$$\begin{aligned} \text{SCL-90-R Depression} &= .34 \text{ KAS-R General Psychopa-} \\ &\text{thology} - .65 \text{ GCS} + 3.75 \end{aligned}$$

DAS Dyadic Consensus =  $-.25 \text{ KAS-R General Psycho-}$   
 $\text{pathology} - 1.48 \text{ Garrad \& Bennett Activity Scale} -$   
 $2.60 \text{ Financial Strain} + 64.8$

DAS Affectional Expression =  $.62 \text{ GCS} - 1.17 \text{ Finan-}$   
 $\text{cial Strain} + 8.3$

DAS Total Score =  $-6.19 \text{ Financial Strain} - .54$   
 $\text{KAS-R General Psychopathology} + 1.57 \text{ GCS} + 123.53$

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 Insert Tables 30 to 33 about here  
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High spousal depression was associated with high psychosocial maladjustment in the head injury patient and a more severe injury based on GCS on admission to hospital. Difficulty in reaching consensus within the couple was related to high psychosocial maladjustment in the patient, increased physical restrictiveness in their day to day functioning and increased financial strain. A low degree of expressed affection within the couple was related to a more severe injury and increased financial strain, and lower overall dyadic adjustment was related to a high degree of financial strain and psychosocial maladjustment or psychopathology in the patient and a more severe injury.

Table 30

Analysis of Variance Summary Table for SCL-90-R Depression  
Subscale Score for Stepwise Regression Analysis

Multiple R .65

R Square .42

Source of Variation	df	Sum of Squares	Mean Square	F
Regression	2	1445.13	722.56	18.46 ***
Residual	50	1957.13	39.14	

Note. \*\*\* denotes  $p < .001$

Table 31

Analysis of Variance Summary Table for DAS Dyadic Consensus  
Subscale Score for Stepwise Regression Analysis

Multiple R .64

R Square .42

Source of Variation	df	Sum of Squares	Mean Square	F
Regression	3	1883.02	627.67	11.63 ***
Residual	49	2644.01	53.96	

Note. \*\*\* denotes  $p < .001$



Table 32

Analysis of Variance Summary Table for DAS Affectional  
Expression Subscale Score for Stepwise Regression Analysis

Multiple R .57

R Square .33

Source of Variation	df	Sum of Squares	Mean Square	F
Regression	2	446.32	223.16	12.17 ***
Residual	50	916.57	18.33	

Note. \*\*\* denotes  $p < .001$

Table 33

Analysis of Variance Summary Table for DAS Total Adjustment  
Score for Stepwise Regression Analysis

Multiple R .67

R Square .47

Source of Variation	df	Sum of Squares	Mean Square	F
Regression	3	9815.31	3271.77	14.59 ***
Residual	49	10985.89	224.20	

Note. \*\*\* denotes  $p < .001$

Open Ended Questions. The open-ended questions for the spouse were reviewed to obtain their opinion on a number of issues related to their husband's head injury. When asked what has been the most difficult experience since the time of the accident, the majority of spouse's responses fell within three broad categories: (1) changes in the patient's personality, (2) concerns about the family's future, and (3) decreased social activity. Personality changes frequently identified as problematic were increased dependency, hot-temperedness, being demanding, and being egocentric. In response to what has been most helpful, the wives overwhelmingly stated that family support had been of greatest value.

In terms of hospital or government services which were used it appeared that the couples made very little use of any services. Some wives stated that they had no knowledge of what services they might be eligible to receive. In the few cases that did report making use of outside services, these included Home Care Services, Handi-Transit, insurance companies, and a psychologist. The advice which a wife would give to another wife going through a similar situation focussed on providing words of encouragement to persist in the situation.

The wives reported dissatisfaction with hospital staff in two areas. They wanted more interaction between the staff and family members particularly to obtain information

regarding the patient's current status and prognosis. They also stated that the staff should be more sympathetic in their contacts with the patient. In the majority of cases, the wife identified herself as having suffered the greatest strain. Parents and children were also reported as experiencing strain due to the situation.

The role which the spouse played in the accident did not appear to be a significant factor as in the largest percentage of cases the spouse was not involved. Lastly, spouses were asked to comment on their experience. Their comments fell into two opposing streams of thought. The bulk of responses expressed thoughts of hopelessness and pessimism regarding the future. These wives commented on the difficulty of the situation and how there appeared to be no end in sight. On the other hand there were a minority of wives who verbalized a positive aspect of the experience. That is, they stated that they were able to find new inner strengths. Based on the qualitative and unstandardized nature of this data, formal statistical analyses were not conducted.

## DISCUSSION

Samples of mild, moderate and severe male head injury patients and their wives were surveyed to answer two research questions: (1) Do the wives of severe head injury patients experience a significantly greater number of stress-related problems than wives of mild or moderately injured patients, and if so, in what areas? and (2) Is there a set of factors which is associated with and can help predict the impact of head injury on the spouse? In answer to the former question, the findings of this present study do indeed lend support to the contention that there is measurable psychological and marital impact on the wives of severe head injury victims. As well, with respect to the latter question, certain variables were found to have greater power in the prediction of stress-related adjustment problems than others.

The SCL-90-R significantly discriminated between wives of severe head injury patients and the wives in the mild or moderate group in their self-report of depressive symptomatology. The wives in the severe group (i.e. patients who were in coma on admission to hospital) endorsed a significantly greater number of symptoms associated with depression than the wives of mild or moderate head injury patients

(i.e. patients with a normal or slightly decreased level of consciousness on admission to hospital). When compared to the female norms, (Derogatis, 1977), the mean depression T score of wives of the severe head injury patients fell within the normal limits for both psychiatric out-patients and inpatients. However, when the mean T-score was compared to that of female non-patients, it fell approximately one and a half standard deviations above the community sample mean. According to the standardized distribution of scores, the mean depression subscale score for wives of severely injured patients was higher than about 93% of the scores obtained by the normative group of non-patients. The mean depression scores for the spouses of the mild and moderately injured patients fell within normal limits. Increased levels of depressive symptomatology in the wives of severe head injury patients is entirely consistent with the results reported by Rosenbaum and Najenson (1976). For the combined sample of wives in the mild, moderate and severe groups, a higher self-report of depressive symptomatology was associated with their higher rating of general psychopathology in their husband and a more severe injury.

It is surprising that all the variables which figured prominently into the regression equation examining the relationship between the set of predictors and depression, were medical/patient related. In light of the research assessing the relationship between personality factors, coping skills,

recent life change events and felt stress, (McCubbin & Patterson, 1983), it is interesting that none of these psychosocial factors played a significant role in predicting level of spousal depression. This finding suggests that despite the use of coping strategies, personality style, and presence or absence of family stressors, the wives of the severe and the relatively recent head injured may be vulnerable to the development of depressed mood or, in its more severe form, a major depressive episode.

In light of the many changes and losses the spouse of the head injury patient must face following the injury, it is not surprising that depression is a common reaction. One such major change is the loss of a marital partner to share the instrumental and emotional demands and joys of maintaining a functional marital and family unit. As well, the adjustment or grieving process may be particularly difficult for the healthy spouse given that the brain injured patient is still alive (Lezak, 1978). Additionally, many spouses might remain in unsatisfying marriages because of the guilt associated with leaving a disabled partner (Lezak, 1978). Such guilt might also compel the healthy spouse to deny his or her own needs while becoming preoccupied with meeting the needs of the patient or other family members. Based on clinical experience, it is not uncommon for the wife to work outside the home, manage all household affairs and care for her spouse and children without any respite care whatsoever.

A depressive reaction is certainly understandable under such circumstances, particularly if the situation persists into the long-term. It is possible that appropriate psychological or medical intervention for all spouses may be critical components of the "couple's" rehabilitation when the head injury is severe and fairly recent in onset.

Significant differences between groups were not observed on the Health Conditions/Symptoms Inventory. Wives in each of the three groups reported experiencing, on average, four health conditions or symptoms. Based on these results then, looking at the personal distress the wives of severe patients report, it appears to be depression-based without significant somatization.

Interpersonally, the results suggest that wives in the severe group experience less satisfaction in various aspects of their marital relationships than the wives in the mild or moderate groups. The wives of severely injured patients reported a greater amount of disagreement and difficulty in reaching joint decisions than the wives in the moderate group. They also reported that there were less overt acts of physical or verbal affection expressed between themselves and their husbands than the wives in the mild or moderate groups. On the total overall dyadic adjustment score, the wives in the severe group obtained significantly lower scores than wives in the moderate group. This finding indicates that in general these wives perceive there to be poor



agreement between themselves and their spouse, little expressed affection between partners, overall marital dissatisfaction and lack of cohesiveness. When compared to normative data for married and divorced couples, the scores for the severe group are most similar to those of the group of couples whose marriages ended in divorce (Spanier, 1976).

For the total sample, a lower degree of consensus or agreement between spouses was related to higher levels of patient psychopathology, more physical limitations in the patient's day to day activities, and a greater degree of perceived financial strain. The ability to reach joint decisions might certainly be adversely affected if one partner evidences high levels of psychopathology and is physically limited in activities essential for independent living. As well, limited financial resources can place restrictions on a couple in terms of the options or choices they have available to them in making certain decisions. It may be more difficult to choose from a limited set of options if none of them are seen as desirable. For instance, a couple may be forced to accept a lower standard of living if the husband does not return to his pre-accident employment. This can lead to a series of difficult decisions the couple must make in terms of changing residences, expenditures on non-necessity items such as entertainment, vacations, non-essential clothing, and so on. Attempting to come to agreement on these unwanted changes could be expected to place a strain on any marriage.

In this study, the degree to which affection was expressed within the marriage was related to the severity of the injury and the degree to which financial strain is experienced. The lower the degree to which affection was openly expressed, the lower the patient's GCS on admission to hospital, and the greater the amount of family financial strain. In some cases, the more severe the injury, the greater the likelihood that the wife views her husband as a "patient". This can serve to create a distance between wife and husband as they take on the roles of "caregiver" and "patient", respectively. Lezak (1986) has also suggested that part of the process of adjustment to living with the characterologically disordered head injury patient is to, in some ways, detach oneself from the patient and reorganize one's life and the rest of the family to rebuild a meaningful and satisfying life. One would expect there to be less expression of affection in couples in which there is a severely injured husband and detachment has occurred. As well, the severely injured patient may be egocentric and lacking in the social awareness to appreciate the benefits of and initiate any expression of affection.

Financial strain seems to impact on expressed affection as well. Anger, resentment, and tension might all be experienced between husband and wife if the husband is no longer perceived as making a major contribution to the couple's financial status. In some cases, the patient may

in fact be draining family finances due to special needs related to the permanent effects of the head injury. For the wives who are experiencing a perceived decline in standard of living, it may be difficult to remain affectionate towards their husbands. For husbands, the downward economic mobility of the family might be associated with a loss of self-esteem, as a man's perception of self is heavily based on his employment status and earning power. Self-esteem difficulties might contribute to marital problems.

Lastly, with respect to overall marital adjustment, maladjustment was related to a high degree of financial strain, the head injury patients' high level of psychopathology, and a more severe injury based on GCS scores on admission to hospital. With the exception of the variable financial strain, the variables which were statistically significant in predicting both spousal depression and marital adjustment were medical/patient related. In many ways this is contrary to suggestions of a multidimensional model of stress in that spousal personality/adaptive variables and family stressors play a relatively minor role in predicting spousal adjustment problems. It may be that the injury related variables as well as financial strain are factors which must be confronted on a daily basis. It is these variables which can impact on day to day necessities such as fundamental physiological and safety needs. Difficulties may also be noted in the couple's ability to reach higher

levels of esteem and fulfillment of potential if their basic needs are not satisfactorily met. These factors are relatively permanent and difficult to change, and may leave spouses overwhelmed and vulnerable to the effects of stress, even if they are personally adaptable and resourceful individuals.

Significant between group differences were not found for PAIR Subscale scores. There were, however, trends suggesting that wives of severe head injury patients perceived less emotional and sexual intimacy within their marriages than wives of mild or moderately injured husbands. Statistical analyses were conducted only on perceived intimacy scores and not on the expected intimacy scores. Given the significant between group differences on the DAS, it is surprising that none were found on the PAIR. While the PAIR can be used as a measure to assess the marital relationship in terms of perceived and expected intimacy, it appears to be more commonly used as a tool to promote discussion in couples therapy and marriage enrichment groups. Intimacy was defined as a feeling of closeness or sharing in five different areas, emotional, social, sexual, intellectual, and recreational. The PAIR attempts to assess the degree to which a partner feels intimate in the various areas, and the degree to which a partner would like to be intimate. Given that this questionnaire has not been as widely used as the DAS, and that it has been designed for use in counselling

with non-clinical populations, it may not be as sensitive to the detection of between group differences as it is to intra-individual differences between perceived and expected intimacy. The alternative explanation, however, may be that for the samples in this study, perceptions of intimacy in marriage were similar for wives of mild, moderate, and severe head injury patients.

Looking now at between-group differences on the predictor variables, by definition, the three groups were different in terms of the severity of the head injury. The total sample of head injury patients was divided into groups based on level of consciousness at the time of hospital admission to insure that a full range of severity levels was represented. For patients in the mild group, their injury was such that their level of consciousness was only briefly if at all compromised, and the long term effects of their injury should be negligible. That is, they were expected to experience little to no residual physical or cognitive impairments, they required at most a brief period of hospitalization, and they were generally able to return to their pre-injury occupation. The mild group could in fact be considered as a control group.

Patients in the severe group experienced a complete loss of consciousness, some for more protracted periods of time, and often required neurosurgical intervention and/or extensive rehabilitation. These patients were generally unable

to return to their pre-injury level of psychosocial functioning due to cognitive and personality changes directly attributable to the injury to their brain. The moderate group experienced some compromise in their level of consciousness although not to the extent as those in the severe group. Residual problems in this group varied from mild to moderate.

On the Garrad and Bennett Activity Schedule, the severe group was more physically limited in activities essential to daily living than patients in the mild or moderate group. Although these differences were statistically significant, they were relatively small in terms of raw scores and do not translate into meaningful "real-life" qualitative changes in ability to function independently. Significant differences were not found between groups for the number of months post-injury. There was tremendous variability of scores on this variable for each of the the three groups.

Significant between group differences were not found on the KAS-R, although there were trends suggesting that the wives of severely injured husbands rated them as more verbally expansive, negative, and nervous, and had a higher degree of general psychopathology than the remaining groups. Based on univariate t-tests, significant differences were, however, found on further comparisons between the KAS-R scores for the severe head injury group and normative data for normal males (N=221) and psychiatric patients, (N=133;

Hogarty & Katz, 1971), and another sample of head injury patients (N=63; Klonoff et al., 1984).

These results suggest that the severe head injury sample experienced considerably more emotional dysfunction than the normative sample of normal males, as well as a group of head injury patients which included all severity levels. Exceptions to this were noted on the belligerence, confusion, bizarreness and hyperactivity subscales, in which the two head injury samples did not differ significantly. The scores of the head injury sample were similar to those of the psychiatric population on most subscales, with the exception of a higher score on verbal expansiveness, and lower scores on anxiety, nervousness and hyperactivity. In general, these results suggest a comparable degree of dysfunction between these two samples.

Although significant differences on the KAS-R subscales were not found between the mild, moderate and severe groups in this present study, in comparison with other samples the severe group did show evidence of psychological dysfunction which closely resembled that of a group of psychiatric patients. The wives in the severe group who did the ratings endorsed many items related to psychological symptomatology suggesting that they did perceive their husbands to be experiencing psychological difficulties. The current results suggest that the extent of head injury is to some degree related to increased ratings of social maladjustment.

This finding is consistent with past research in this area (e.g. Klonoff et.al., 1984). Overall, these findings suggest that the spouse of the severely injured patient must face considerable burden in terms of dealing with a husband who may act inappropriately in social situations. The current results also suggest that these social adjustment problems persist over an eight year period of time and may in fact be permanent. Given that the severely injured patients were rated at approximately the same level of general maladjustment as psychiatric patients, this raises the possibility that spouses may share the social stigma that family members of a psychiatric patient may experience.

Looking now at the wives' EPQ scores, according to the multivariate analysis, there were no between-group differences on any of the four subscales. When compared to normative data, however, the wives in all three groups obtained significantly higher scores on the lying Scale, with the mild group also scoring higher than the normative sample on the remaining three scales - extroversion, psychoticism, and neuroticism. These findings suggest that all the wives may have to some degree responded in a socially desirable manner. Some of the spouses may have had concerns about an evaluative component to this research and would wish to be seen in a positive light. This is also suggestive of the effects of social conditioning on women, in that the traditional female is supposed to be nurturing, understanding and



caring, no matter what. Some of the wives in the sample might wish to appear "in control" possibly even at an unconscious level due to denial of the magnitude of the stressfulness of their environment. At times, this form of denial might even be viewed as adaptive, as a more realistic appraisal of their situation might develop into a more serious psychological reaction. Additionally, the milder the husband's symptoms, the less evidence of stress, and the more likely significant others might expect spouses to cope. Whereas, if the husband is clearly dysfunctional there may be more permission from others to acknowledge difficulties coping. Perhaps there is stress, but the spouses are not acknowledging it, and thus a high L score. As these findings are questionable given high L scores, they should be interpreted with caution.

Significant between-group differences were found on the F-COPES. Overall, the wives in the moderate group reported making more use of various coping strategies than wives in either the mild or severe group. The wives in the moderate group reported acquiring more spiritual and social support than wives in the severe group. They also reported mobilizing more family resources to cope with stress than wives in the mild group, and wives in the mild and moderate group reported a greater ease in accepting problematic issues with minimal reactivity than wives in the severe group. No differences were found in the degree to which wives were able

to use the technique of reframing in dealing with a stressful situation.

The F-COPES was developed on the premise that "families operating with more coping behaviours... will be able to adapt to stressful situations more successfully" (McCubbin, Larsen & Olson, 1985, p. 120). Given this assumption, the wives in the moderate group would appear to be making the best adaptation to their husband's head injury. In the moderate group, the husbands have less residual physical and social problems than the severe group and this suggests that their coping strategies are effective to some degree but that this effectiveness is enhanced by a less severe injury. The mild group appears to be less well adjusted given that like in the severe group, they too employ fewer coping strategies. Given however that their husbands have had relatively minor injuries with little to no quantifiable residual impairments, they may experience less of a need to use coping techniques. Their situation may be such that they do not require as concerted an effort to cope or adapt, as there may be in general, less felt stress. The stress may not be great enough to mobilize coping mechanisms. For the wives in the severe group, what may be occurring is an overload of strain with a consequent breakdown in coping mechanisms.

Percentiles based on raw F-COPES scores are presented in Table 34. Of particular note is that when the total F-COPES

score of wives in the severe group are translated into percentiles based on female normative data, they are placed at the 15th percentile in terms of the number of coping strategies they report using. These are the same wives who endorse many items of depressive symptomatology and marital maladjustment. It may be that the same stresses which result in depression and marital maladjustment can detrimentally affect the wives' ability to cope. In addition, the wife who is depressed will be less able to make effective use of various coping strategies.

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Table 34

F-COPES Subscale Score Percentiles

Subscale	Groups		
	Mild (N=10)	Moderate (N=25)	Severe (N=20)
Acquiring Social Support	58	70	37
Reframing	28	49	28
Seeking Spiritual Support	5	19	5
Mobilizing Family	44	81	57
Passive Appraisal	77	77	46
Total F-COPES	22	69	15

Based on the between group differences on the F-COPES, there may be a curvilinear relationship between the use of coping strategies and intensity of stress. According to the SCL-90-R and DAS findings, the wives in the severe group experience the greatest degree of stress with the mild group experiencing the least. So as the intensity of stress (or severity of the head injury) increases, so does the use of coping strategies, until at some point the intensity of stress reaches a critical level. At this time the use of coping strategies tapers off (an inverted U function). This curvilinear relationship between the use of coping strategies and the severity of the injury or intensity of stress would explain why the moderate group employed the greatest number of coping strategies, with the mild and severe groups using relatively fewer.

Significant differences were also found between groups on the FILE. In general, the wives in the mild group reported more recent (within the past 12 months) and past (within the past 24 months) life changes than those in the moderate group in the areas of intrafamily strain, finance/business, work/family, and illness. The number of changes for the severe group fell between that of the mild and moderate groups. According to McCubbin, Patterson and Wilson (1985), the high score for the mild group implies higher stress resulting from an accumulation of life events. They also report on the proliferation of research that has concluded

that stress arising from a pile-up of life events "plays a role in the etiology of various somatic and psychiatric disorders" (p. 82). Although this supposed "high stress" does not translate into measurable adjustment difficulties for the wives in the mild group, this is perhaps another example of masked distress. That is, the wives in the mild group may be reluctant to admit to experiencing stress due to social pressure, although they have experienced a pile-up of life events and changes. In the regression analysis for the total sample of wives in the mild, moderate and severe groups, neither depression nor marital maladjustment were associated with an increase in family life change events.

The results of this present study also indicated that the wives in the severe group reported experiencing greater financial strain than those in the moderate group. In fact, the spouses in the severe group were the only ones who indicated a decrease in total family income following the accident. For the total sample, in addition to patient/medical factors, increased financial strain was associated with poorer marital adjustment in several areas. This perception of financial difficulties can likely lead to strained relations between marital partners, particularly if, as in the case in the severe head injury group, the husband is unemployed and has not been able to achieve the same level of employment and status as prior to the accident.

A review of the spouses' responses to the open-ended questions indicated that they identified stressors including the personality changes in their husbands, worry over the family's future, and increased social isolation resulting from decreased social activity as a couple. In general they found family support the most helpful aid in going through the experience. Surprisingly, few couples made use of community services following the injury. The main reason for this appeared to be a lack of awareness of what services were available for their use. Spouses might also wish to believe the problems are temporary and so may be hesitant to actively seek out community resources. An increase in the availability and use of such services might serve to ease the strain on the spouse. The typical words of advice they would give to others in a similar situation centered on supportive words of encouragement such as, "stick it out" and "hang in there." It is interesting that their advice focussed on mental endurance, persistence, and self-discipline as opposed to obtaining more outside help. It may be that this attitude of persevering and handling this stressful situation on one's own may contribute to the experience of depression.

The majority of wives were of the opinion that they were lacking in information from physicians and other hospital staff regarding the current medical status of their husband and his prognosis. They suggested increased communication

between the staff and patient's family. They also expressed concerns that the hospital staff were unsympathetic in caring for their husbands. Improved staff-family interactions may help instill more realistic expectations regarding the head injury patient's behavior.

It is clear from the spouse's self-report that they perceive themselves to be under the greatest strain. They also indicated that parents and children were affected, but to a lesser degree. It appears that the wives do have an appreciation of the stressful impact of the injury on their lives and the majority of them view their situation in a pessimistic light. That is, the experience was perceived as a catastrophic tragedy, with no recognition of the fact that perhaps some good might come of the situation. There were however a small number of wives who were able to express some optimism in that through their experience they were able to find new inner strength.

Based on a review of the literature documenting numerous neuropsychological changes which occur as a result of trauma to the brain (Bond, 1984), it is surprising that a greater number of significant between group mean differences were not found on the measures of psychopathology and psychosomatic disorders. A lack of findings in this respect, as well as the wives' self-report, suggests some wives of severe head injury patients do not experience significant, distressing psychological symptomatology. As previously



mentioned, there were some wives who found new inner strength and were able to experience satisfaction in this discovery.

In part, the small number of stress-related adjustment problems which were identified may be a result of the sample used in this present study. The inclusion criteria specifically stated that only those couples in which husband and wife continued to live together after the injury would be considered as participants. In many ways this stipulation narrowed the pool of potential participants considerably, for the head injured husband must have achieved sufficient recovery to return home. Many of the severely head injured require intensive nursing and attendant care preventing them from returning home. As well, given that these couples have remained together as long as eight years following the injury, it might be argued that they had relatively stable and satisfactory marriages prior to the injury. This study did not attempt to look at the many marriages which did end in separation or divorce. In some respects, then, the findings of this present study are skewed to a certain degree and should not be generalized to other head injury groups in different marital circumstances.

While this study has made methodological improvements in the area of the impact of head injury on the spouse, it has its own methodological limitations. These include the lack of control over socially desirable responding, under-repre-

sentation of mild head injury couples, a retrospective and cross-sectional design, restricted inclusion criteria and a reliance on volunteer couples. These factors may in turn have influenced the results in certain ways and will thus limit the generalizability of the findings. Future research in this area would be enhanced with larger sample sizes, a longitudinal design, and the inclusion of female head injury patients and their husbands to make meaningful comparisons between the adjustment of husbands as opposed to wives.

Yet in spite of the many restrictions of this preliminary work, the findings do support the hypothesis that wives are affected by the presence of a head injured husband. In addition, the findings have identified several areas of psychological and marital adjustment that appear to be the most significantly affected. The results of the present study provide justification for future exploration of variables which are associated with and can help predict the degree to which a wife will experience stress-related difficulties. The findings also indicate that continued study of couple dynamics and spousal reactions to head injury is warranted.

How then do these results translate from the academic to the clinical setting? As previously discussed, rehabilitation programs for the brain injured tend to be patient centered with few resources available for the involvement of spouse. It is ironic however that just prior to discharge, and following discharge from hospital, the spouses are given

a tremendous amount of responsibility in the continuation of their partners' "rehabilitation", and provision of their ongoing care. One would expect that if spouses are experiencing depression and decreased marital satisfaction, it would be difficult for them to maximally carry out these duties. What these findings do show is that the severity of the head injury should dictate the automatic assumption of the spouses' need for support. As well, it should not be viewed as a weakness on their part if they are not coping well, for it appears that severity of the injury overrides the other predictive factors assessed in this study. Their reactions can be normalized as part of a necessary grieving process or result of long-term stress.

Brain injury rehabilitation teams need to be more sensitive to the needs of the patients' spouse and should begin to allocate more resources for the involvement of spouses or significant others in rehabilitation programs. Participation in community peer support groups for the wives prior to their husbands hospital discharge might assist in easing the transition from hospital to home. The findings emphasize that the need for spousal intervention exists on a relatively long-term basis and does not end after hospital discharge of the patient.

As Stambrook and Peters (1988) outlined in their paper on neuropsychology and the rehabilitation of severe traumatic brain injury, an integrated approach to the management of

long term recovery from head injury is necessary. In particular it is important to have an approach in which one can work and intervene in the multiple levels of systems that can affect the sequelae from the injury. These levels will be individual, family, treatment team and social/cultural. Specifically, at the family/couple level, resources should be available for the treatment team to perform educating functions, that is, provide the spouse/family with clear, practical information about the patient's mental functions and behavioural/personality disturbances, provide consultation regarding the appropriate way to structure a patient's living environment and daily activities, provide individual and/or couple/family therapy when appropriate, and present information regarding community services/agencies which may be of assistance.

Unfortunately, the majority of families of head injury victims are ill-prepared for this catastrophic event. Significant others are often in dire need of help for themselves or guidance in managing the patient. It is clear that rehabilitation efforts for head injury survivors and their families are greatly needed to deal with the ongoing social and emotional difficulties as required.

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**Appendix A**  
**DEMOGRAPHIC AND MEDICAL DATA**

Name: _____	HSC #: _____
Address: _____	Telephone: _____
Date of Birth: _____	Sex: _____
Marital Status: _____	Date of Injury: _____
Coma Duration: _____	
Glasgow Coma Score on Admission: _____	
Duration of Glasgow Coma Score less than 8: _____	
Length of PTA: _____	
Type of Accident	_____ MVA
	_____ fall
	_____ assault
	_____ car/pedestrian
	_____ other
Level of Head Injury	_____ cerebral
	_____ brainstem
	_____ both
Skull Fracture	_____ no
	_____ left
	_____ right
	_____ bilateral
	_____ basal
If Skull Fracture	_____ anterior
	_____ posterior

	<input type="checkbox"/> both
CT Scan Damage	<input type="checkbox"/> normal scan
	<input type="checkbox"/> left
	<input type="checkbox"/> right
	<input type="checkbox"/> diffuse/bilateral
CT Scan Dilatation	<input type="checkbox"/> yes
	<input type="checkbox"/> no
If Yes	<input type="checkbox"/> mild
	<input type="checkbox"/> moderate
	<input type="checkbox"/> severe
Development of PT Epilepsy	<input type="checkbox"/> yes
	<input type="checkbox"/> no
Development of PT Hallucinations	<input type="checkbox"/> yes
	<input type="checkbox"/> no
Development of PT Delusions	<input type="checkbox"/> yes
	<input type="checkbox"/> no
Systemic/Other Complications	<input type="checkbox"/> yes
	<input type="checkbox"/> no
If Yes	<input type="checkbox"/> infection
	<input type="checkbox"/> other
Other initial Injuries	<input type="checkbox"/> yes
	<input type="checkbox"/> no
If Yes, What	<input type="checkbox"/> cardiovascular
	<input type="checkbox"/> orthopedic
Cranial Nerve Damage	<input type="checkbox"/> yes
	<input type="checkbox"/> no
If Yes, Which	<input type="checkbox"/>

Previous Major Illness \_\_\_\_\_ yes

\_\_\_\_\_ no

If Yes, What

\_\_\_\_\_

EEG

\_\_\_\_\_

Discharge Diagnosis

\_\_\_\_\_

## **Appendix B**

### **LETTER TO POTENTIAL PARTICIPANTS**

The Health Sciences Centre/University of Manitoba are conducting a joint research project on the effects of head injury in terms of the changes and stresses it causes for patients and families. This research involves assessing the effects that these serious injuries have in terms of how they influence and change patients, families, and relationships. Your Health Sciences Centre doctor has given us permission to contact you, and we are doing so in strictest confidence so as we can ask you to participate, if you are willing, in research that looks at the effects of head injury.

For this research that we are asking you to participate in, we will be looking at the stress that you as a patient and your family have experienced. It is our hope that research such as this will lead to better programs to provide optimal care for patients and families as they go through the very stressful time associated with the injury.

If you agree to participate in this research, we will be asking you to complete a number of questionnaires regarding your current experience, sources of stress, changes in the family, and available sources of help and support you were



able to find to help you deal with the injury. As this research will be carried out at the Health Sciences Centre, we will provide cash reimbursement to help cover travelling expenses for you. You are assured that this research and all research materials will be always kept strictly confidential and will not be released under any circumstances. We are not concerned with the answers of any one individual, but with the answers of all people who participate in this research as a group.

If you are willing to assist us with this valuable and needed research, please indicate "yes" on the enclosed letter, as well as times when we can contact you, and return this to us in the self-addressed envelope. If you do not want to participate in this project, answer "no" on the enclosed letter and also return it to us. You are completely free to decline participating in this research without any fear of penalty or without effecting any future medical care. Participation is entirely voluntary, and you are free to withdraw from this study at any time if you do choose, as well as to refuse to answer any of the questions that are posed to you. However, your participation in this research would be greatly appreciated, as it is only through research efforts like this that our knowledge of the effects of serious head injuries can be determined, which is vital if we are to plan the best treatment possible.

Thank you for your cooperation.

## Appendix C

### SUMMARY FOR PARTICIPANTS

Dear Manitoba Head Injury Study Participant :

After 9 months of data collection, we have completed the first phase of our study on the effects of head injury in terms of the changes and stresses it caused for patients and families. The purpose of this letter is to tell you what our reasons were for doing this research, what we found as a result of your participation, what we hope to achieve with this new information, and what lies ahead in our research plan.

Survival from head injury is frequently associated with long lasting thought, personality, and physical problems. Our purpose was to look and see what life was like for people who, thanks to increasing medical knowledge, survive what for some people would be fatal injuries. We were also interested in finding out what it was like for the families of those who suffer from head injury, and specifically in this phase of the study, what the spouses of married male closed head injury patients has to tell us about what challenges and changes occurred after the injury. We were also interested in finding out what positive things happened after the injury, both in the hospital and at home, so that

we could help others who find themselves in similar situations in the future.

We sent out letters requesting participation in the study to nearly 300 married couples in Manitoba. To date, we have interviewed, either in person, over the phone, or by mail, 62 married couples in which the husband suffered a head injury, and nearly 60 other families in which other members of the family had a head injury. As we were interested in what happens to people with a range of seriousness of injury, some of the people we interviewed had survived very serious injuries while others had had less serious injuries.

As you can guess from the large number of questionnaires you filled out, we had a lot of information to look through and analyze. Here is some of the things we found out. We found that head injury was associated with difficulty in returning to a pre-injury level of employment for a large number of people, and this was related to the seriousness of the injury. Spouses reported some marital strain when injuries were more severe. As well, spouses of severely injured husbands were, at times, more sad and distressed than those of less severely injured husbands but this difference lessened as husbands recovered. We found that there were no differences between wives of severely and less severely injured husbands in terms of their health after the injury. Other researchers have found that stress is related to a greater chance of ill health, so this suggests to us that

the wives in this group coped well with their husband's injury. We have written and submitted a number of papers to two major psychological and rehabilitation conferences to be held in the summer of 1988, and will be discussing these important findings with other health care professionals across the country and around the world.

Our goal is to help the health care team to be able to help other people who suffer from head injury more effectively. Through your help, we have identified some important factors that will help us, and other medical professionals across Canada and around the world, identify potential problems and pitfalls that will help us both treat head injured people better, and be able to help people close to a head injured person deal with what is a very stressful and trying time.

We have just moved our research facilities over to the Thorlakson Building at the Health Sciences Center, and have new research space as part of the work being carried out at the Neuropsychology Research Unit, Health Sciences Clinical Research Center. Our next step in our work looking at the head injured, is to interview, much as we have with you, a group of single male head injured persons and to look at what differences exist between married and single head injured persons. We are also interested in looking at the difference in terms of the family when a son versus a husband suffers from a head injury.

We hope that this answers some of your questions concerning the project, and we would like to thank you again for your time and effort in helping us help other people who suffer from head injuries. You can be proud in knowing that your participation will help patients and their families 'coast to coast' who suffer from the effects of head injuries.

## Appendix D

### SCL-90-R

#### INSTRUCTIONS

Below is a list of problems and complaints that people sometimes have. Please read each one carefully. After you have done so, circle the one number that best describes HOW MUCH THAT PROBLEM HAS BOTHERED OR DISTRESSED YOU DURING THE PAST WEEK INCLUDING TODAY - 0 = NOT AT ALL, 1 = A LITTLE BIT, 2 = MODERATELY , 3 = QUITE A BIT, and 4 = EXTREMELY. (Circle only one number for each problem and do not skip any items.)

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. Headaches   | 0 | 1 | 2 | 3 | 4 |
| 2. Nervousness or shakiness inside                         | 0 | 1 | 2 | 3 | 4 |
| 3. Unwanted thoughts, words, or ideas that leave your mind | 0 | 1 | 2 | 3 | 4 |
| 4. Faintness or dizziness                                  | 0 | 1 | 2 | 3 | 4 |
| 5. Loss of sexual interest or pleasure                     | 0 | 1 | 2 | 3 | 4 |
| 6. Feeling critical of others                              | 0 | 1 | 2 | 3 | 4 |
| 7. The idea that someone else can control your thoughts    | 0 | 1 | 2 | 3 | 4 |
| 8. Feeling others are to blame for most of your troubles   | 0 | 1 | 2 | 3 | 4 |
| 9. Trouble remembering things                              | 0 | 1 | 2 | 3 | 4 |

10. Worried about sloppiness or carelessness	0	1	2	3	4
11. Feeling easily annoyed or irritated	0	1	2	3	4
12. Pains in heart or chest	0	1	2	3	4
13. Feeling afraid in open spaces or in the streets	0	1	2	3	4
14. Feeling low in energy or slowed down	0	1	2	3	4
15. Thoughts of ending your life	0	1	2	3	4
16. Hearing voices that other people do not hear	0	1	2	3	4
17. Trembling	0	1	2	3	4
18. Feeling that most people cannot be trusted	0	1	2	3	4
19. Poor appetite	0	1	2	3	4
20. Crying easily	0	1	2	3	4
21. Feeling shy or uneasy with the opposite sex	0	1	2	3	4
22. Feeling of being trapped or caught	0	1	2	3	4
23. Suddenly scared for no reason	0	1	2	3	4
24. Temper outbursts that you could not control	0	1	2	3	4
25. Feeling afraid to go out of your house alone	0	1	2	3	4
26. Blaming yourself for things	0	1	2	3	4
27. Pains in lower back	0	1	2	3	4
28. Feeling blocked in getting things done	0	1	2	3	4
29. Feeling lonely	0	1	2	3	4
30. Feeling blue	0	1	2	3	4
31. Worrying too much about things	0	1	2	3	4
32. Feeling no interest in things	0	1	2	3	4

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 33. Feeling fearful   | 0 | 1 | 2 | 3 | 4 |
| 34. Your feelings being easily hurt   | 0 | 1 | 2 | 3 | 4 |
| 35. Other people being aware of your private thoughts                               | 0 | 1 | 2 | 3 | 4 |
| 36. Feeling others do not understand you or are unsympathetic                       | 0 | 1 | 2 | 3 | 4 |
| 37. Feeling that people are unfriendly or dislike you                               | 0 | 1 | 2 | 3 | 4 |
| 38. Having to do things very slowly to insure correctness                           | 0 | 1 | 2 | 3 | 4 |
| 39. Heart pounding or racing  | 0 | 1 | 2 | 3 | 4 |
| 40. Nausea or upset stomach   | 0 | 1 | 2 | 3 | 4 |
| 41. Feeling inferior to others  | 0 | 1 | 2 | 3 | 4 |
| 42. Soreness of your muscles  | 0 | 1 | 2 | 3 | 4 |
| 43. Feeling that you are watched or talked about by others                          | 0 | 1 | 2 | 3 | 4 |
| 44. Trouble falling asleep  | 0 | 1 | 2 | 3 | 4 |
| 45. Having to check and double-check what you do                                    | 0 | 1 | 2 | 3 | 4 |
| 46. Difficulty making decisions   | 0 | 1 | 2 | 3 | 4 |
| 47. Feeling afraid to travel on buses, subways, or trains                           | 0 | 1 | 2 | 3 | 4 |
| 48. Trouble getting your breath   | 0 | 1 | 2 | 3 | 4 |
| 49. Hot or cold spells  | 0 | 1 | 2 | 3 | 4 |
| 50. Having to avoid certain things, places, or activities because they frighten you | 0 | 1 | 2 | 3 | 4 |



51. Your mind going blank	0	1	2	3	4
52. Numbness or tingling in parts of your body	0	1	2	3	4
53. A lump in your throat	0	1	2	3	4
54. Feeling hopeless about the future	0	1	2	3	4
55. Trouble concentrating	0	1	2	3	4
56. Feeling weak in parts of your body	0	1	2	3	4
57. Feeling tense or keyed up	0	1	2	3	4
58. Heavy feelings in your arms or legs	0	1	2	3	4
59. Thoughts of death or dying	0	1	2	3	4
60. Overeating	0	1	2	3	4
61. Feeling uneasy when people are watching or talking about you	0	1	2	3	4
62. Having thoughts that are not your own	0	1	2	3	4
63. Having urges to beat, injure, or harm someone	0	1	2	3	4
64. Awakening in the early morning	0	1	2	3	4
65. Having to repeat the same actions such as touching, counting, washing	0	1	2	3	4
66. Sleep that is restless or disturbed	0	1	2	3	4
67. Having urges to break or smash things	0	1	2	3	4
68. Having ideas or beliefs that others do not share	0	1	2	3	4
69. Feeling very self-conscious with others	0	1	2	3	4
70. Feeling uneasy in crowds, such as shopping or at a movie	0	1	2	3	4
71. Feeling everything is an effort	0	1	2	3	4

72. Spells of terror or panic	0	1	2	3	4
73. Feeling uncomfortable about eating or drinking in public	0	1	2	3	4
74. Getting into frequent arguments	0	1	2	3	4
75. Feeling nervous when you are left alone	0	1	2	3	4
76. Others not giving you proper credit for your achievements	0	1	2	3	4
77. Feeling lonely even when you are with people	0	1	2	3	4
78. Feeling so restless you couldn't sit still	0	1	2	3	4
79. Feelings of worthlessness	0	1	2	3	4
80. Feeling that familiar things are strange or unreal	0	1	2	3	4
81. Shouting or throwing things	0	1	2	3	4
82. Feeling afraid you will faint in public	0	1	2	3	4
83. Feeling that people will take advantage of you if you let them	0	1	2	3	4
84. Having thoughts about sex that bother you a lot	0	1	2	3	4
85. The idea that you should be punished for your sins	0	1	2	3	4
86. Feeling pushed to get things done	0	1	2	3	4
87. The idea that something serious is wrong with your body	0	1	2	3	4
88. Never feeling close to another person	0	1	2	3	4
89. Feelings of guilt	0	1	2	3	4

90. The idea that something is wrong with your mind

0 1 2 3 4

# Appendix E HEALTH SYMPTOMS/CONDITIONS INVENTORY

## INSTRUCTIONS:

Below you will find a number of symptoms and conditions relating to your health. Please indicate in the appropriate space with a checkmark those symptoms/conditions which you have experienced in the past. Please note any other symptoms/conditions in the space provided which are not listed here.

	Yes (regularly)	Yes (occasionally)	NO
<u>Symptoms</u>			
Headaches	_____	_____	_____
Indigestion	_____	_____	_____
Constipation	_____	_____	_____
Nervous stomach	_____	_____	_____
Stomach aches	_____	_____	_____
Diarrhea	_____	_____	_____
<u>Conditions</u>			
Hypertension	_____	_____	_____
Asthma	_____	_____	_____
Ulcers	_____	_____	_____
Colitis	_____	_____	_____
Weight trouble			

Too heavy	_____	_____	_____
Too thin	_____	_____	_____
Weight fluctuates	_____	_____	_____
<u>Other symptoms/conditions</u>			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

## Appendix F

### DYADIC ADJUSTMENT SCALE

#### INSTRUCTIONS

Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list - 5 = ALWAYS AGREE, 4 = ALMOST ALWAYS AGREE, 3 = OCCASIONALLY DISAGREE, 2 = FREQUENTLY DISAGREE, 1 = ALMOST ALWAYS DISAGREE, and 0 = ALWAYS DISAGREE.

1. Handling family finances	5	4	3	2	1	0
2. Matters of recreation	5	4	3	2	1	0
3. Religious matters	5	4	3	2	1	0
4. Demonstration of affection	5	4	3	2	1	0
5. Friends	5	4	3	2	1	0
6. Sex relations	5	4	3	2	1	0
7. Conventionality (correct or proper behaviour)	5	4	3	2	1	0
8. Philosophy of life	5	4	3	2	1	0
9. Ways of dealing with parents or in-laws	5	4	3	2	1	0
10. Aims, goals and things believed important	5	4	3	2	1	0
11. Amount of time spent together	5	4	3	2	1	0

12. Making major decisions	5	4	3	2	1	0
13. Household tasks	5	4	3	2	1	0
14. Leisure time interests and activities	5	4	3	2	1	0
15. Career decisions	5	4	3	2	1	0

Please circle the appropriate answer -0 = ALL THE TIME, 1 = MOST OF THE TIME, 2 = MORE OFTEN THAN NOT, 3 = OCCASIONALLY, 4 = RARELY, and 5 = NEVER.

16. How often do you discuss or have you considered divorce, separation, or terminating your relationship?

0 1 2 3 4 5

17. How often do you or your mate leave the house after a fight?

0 1 2 3 4 5

18. In general, how often do you think that things between you and your partner are going well?

5 4 3 2 1 0

19. Do you confide in your mate?

5 4 3 2 1 0

20. Do you ever regret that you married? (or lived together)

0 1 2 3 4 5

21. How often do you and your partner quarrel?

0 1 2 3 4 5

22. How often do you and your mate "get on each other's nerves"?

0 1 2 3 4 5

4 = EVERY DAY, 3 = ALMOST EVERY DAY, 2 = OCCASIONALLY, 1 = RARELY, and 0 = NEVER

23. Do you kiss your mate?

4 3 2 1 0

4 = ALL OF THEM, 3 = MOST OF THEM, 2 = SOME OF THEM, 1 = VERY FEW OF THEM, and 0 = NONE OF THEM

24. Do you and your mate engage in outside interests together?

4 3 2 1 0

How often would you say the following events occur between you and your mate?

0 = NEVER, 1 = LESS THAN ONCE A MONTH, 2 = ONCE OR TWICE A MONTH, 3 = ONCE OR TWICE A WEEK, 4 = ONCE A DAY, and 5 = MORE OFTEN

25. Have a stimulating exchange of ideas 0 1 2 3 4 5

26. Laugh together 0 1 2 3 4 5

27. Calmly discuss something 0 1 2 3 4 5

28. Work together on a project 0 1 2 3 4 5

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either item below caused differences of opinions or were problems in your relationship during the past few weeks. (Check yes or no)

29. Being too tired for sex yes \_\_\_\_\_ no \_\_\_\_\_

30. Not showing love yes \_\_\_\_\_ no \_\_\_\_\_



31. The dots on the following line represent different degrees of happiness in your relationship. The middle point "happy" represents the degree of happiness of most relationships. Please circle the number which best describes the degree of happiness, all things considered, of your relationship.

0 = extremely unhappy

1 = fairly unhappy

2 = a little unhappy

3 = happy

4 = very happy

5 = extremely happy

6 = perfect

32. Which of the following statements best describes how you feel about the future of your relationship?

5 = I want desperately for my relationship to succeed, and would go to almost any length to see that it does.

4 = I want very much for my relationship to succeed, and will do all I can to see that it does.

3 = I want very much for my relationship to succeed, and will do my fair share to see that it does.

2 = It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.

1 = It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.

0 = My relationship can never succeed, and there is no  
more than I can do to keep the relationship going.

## Appendix G

### PERSONAL ASSESSMENT IN INTIMACY IN RELATIONSHIPS

#### INSTRUCTIONS:

This Inventory is used to measure different kinds of "intimacy" in your relationship. You are to indicate your response to each statement by using the following five point scale.

0	1	2	3	4
strongly	somewhat	neutral	somewhat	strongly
disagree	disagree		agree	agree

There are two steps to the Inventory. First, you are to respond in the way you feel about the item at present. That is, answer the question as to (a) "HOW IT IS NOW". Secondly, you are to respond to the same question (b) "THE WAY YOU WOULD LIKE IT TO BE", that is, if you could have your relationship be any way that you may want it to be. There are no right or wrong answers.

1. My partner listens to me when I need someone to talk to.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

2. We enjoy spending time with other couples.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

3. I am satisfied with our sex life. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
4. My partner helps me clarify my thoughts. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
5. We enjoy the same recreational activities. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
6. My partner has all of the qualities I've always wanted in a mate. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
7. I can state my feelings without him/her getting defensive. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
8. We usually "keep to ourselves". (a) 0 1 2 3 4  
(b) 0 1 2 3 4
9. I feel our sexual activity is just routine. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
10. When it comes to having a serious discussion, it seems we have little in common. (a) 0 1 2 3 4  
(b) 0 1 2 3 4
11. I share in few of my partner's interests. (a) 0 1 2 3 4  
(b) 0 1 2 3 4

12. There are times when I do not feel a great deal of love and affection for my partner.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

13. I often feel distant from my partner.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

14. We have few friends in common.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

15. I am able to tell my partner when I want sexual intercourse.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

16. I feel "put-down" in a serious conversation with my partner.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

17. We like playing together.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

18. Every new thing I have learned about my partner has pleased me.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

19. My partner can really understand my hurts and joys.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

20. Having time together with friends is an important part of our shared activities.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

21. I "hold back" my sexual interest because my partner makes me feel uncomfortable.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

22. I feel it is useless to discuss some things with my partner.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

23. We enjoy the out-of-doors together.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

24. My partner and I understand each other completely.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

25. I feel neglected at times by my partner.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

26. Many of my partner's closest friends are also my closest friends.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

27. Sexual expression is an essential part of our relationship.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

28. My partner frequently tries to change my ideas.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

29. We seldom find time to do fun things together.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

30. I don't think anyone could possibly be happier than  
my partner and I when we are with one another.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

31. I sometimes feel lonely when we're together.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

32. My partner disapproves of some of my friends.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

33. My partner seems disinterested in sex.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

34. We have an endless number of things to talk about.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

35. I feel we share some of the same interests.

(a) 0 1 2 3 4

(b) 0 1 2 3 4

36. I have some needs that are not being met by my relationship.

(a) 0 1 2 3 4

(b) 0 1 2 3 4



**Appendix H**  
**THE GLASGOW COMA SCALE**

<u>Eye Opening</u>	<u>Score</u>
Spontaneously	4
To verbal command	3
To pain	2
No response	1

<u>Best Motor Response</u>	<u>Score</u>
(To verbal command/painful stimulus)	
Obeys	6
Localizes pain	5
Flexion - withdrawal	4
Flexion - abnormal (decorticate rigidity)	3
Extension (decerebrate rigidity)	2
No response	1

<u>Best Verbal Response</u>	<u>Score</u>
Oriented and converses	5
Disoriented and converses	4
Inappropriate words	3
Incomprehensible sounds	2
No response	1

<u>Total Score</u>	3 - 15
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## Appendix I

### GARRAD AND BENNETT ACTIVITY SCHEDULE

This questionnaire deals with what types of activities a person can or cannot do. Please check the most appropriate answer as it applies to you.

Do you walk outdoors in the street (with crutch or stick if used)?

If "yes": one mile or more \_\_\_\_\_  
1/4 mile \_\_\_\_\_  
100 yards \_\_\_\_\_  
10 yards \_\_\_\_\_

If "no": between rooms \_\_\_\_\_  
within room \_\_\_\_\_  
unable to walk \_\_\_\_\_

and: unaccompanied \_\_\_\_\_  
accompanied \_\_\_\_\_  
accompanied with support \_\_\_\_\_

Do you walk up stairs?  
to first floor or above \_\_\_\_\_  
5-8 steps or stairs \_\_\_\_\_  
2-4 steps or stairs \_\_\_\_\_  
1 step \_\_\_\_\_  
mount stairs not by walking \_\_\_\_\_  
unable to mount stairs \_\_\_\_\_

and: unaccompanied \_\_\_\_\_

accompanied \_\_\_\_\_  
 accompanied with support \_\_\_\_\_  
 no need to mount stairs \_\_\_\_\_

Do you walk down stairs?

from 1 floor to another \_\_\_\_\_  
 5-8 steps or stairs \_\_\_\_\_  
 2-4 steps or stairs \_\_\_\_\_  
 1 step \_\_\_\_\_

down stairs not by walking \_\_\_\_\_  
 unable to descend stairs \_\_\_\_\_

and: unaccompanied \_\_\_\_\_  
 accompanied \_\_\_\_\_  
 accompanied with support \_\_\_\_\_  
 no need to descend stairs \_\_\_\_\_

Do you need help to get into bed? yes \_\_\_\_\_ no \_\_\_\_\_

Do you need help to get out of bed? yes \_\_\_\_\_ no \_\_\_\_\_

Are you bedridden? yes \_\_\_\_\_ no \_\_\_\_\_

Do you need help to sit down in a chair?

yes \_\_\_\_\_ no \_\_\_\_\_

Do you need help to stand up from a chair?

yes \_\_\_\_\_ no \_\_\_\_\_

Do you drive yourself in a car?

normal (unadapted) \_\_\_\_\_  
 adapted \_\_\_\_\_  
 invacar \_\_\_\_\_  
 self-propelled outdoors vehicle \_\_\_\_\_  
 do not drive \_\_\_\_\_

Do you travel by bus or train?

If "yes": whenever necessary \_\_\_\_\_  
only out of rush hour \_\_\_\_\_  
and: unaccompanied \_\_\_\_\_  
accompanied \_\_\_\_\_  
If "no": unable to use bus and train \_\_\_\_\_  
unable to use bus, train, car \_\_\_\_\_  
do not travel by choice \_\_\_\_\_  
use private transport by choice \_\_\_\_\_  
Are you able to feed yourself?  
without any help \_\_\_\_\_  
with assistance \_\_\_\_\_  
not at all, must be fed \_\_\_\_\_  
with specially prepared food \_\_\_\_\_  
or containers \_\_\_\_\_  
Are you able to dress yourself completely?  
without any help \_\_\_\_\_  
with help other than fastenings \_\_\_\_\_  
with help with fastenings \_\_\_\_\_  
do not dress \_\_\_\_\_  
Are you able to undress yourself completely?  
without any help \_\_\_\_\_  
with help other than fastenings \_\_\_\_\_  
with help with fastenings \_\_\_\_\_  
not applicable \_\_\_\_\_  
Are you able to use toilet facilities?  
without any help \_\_\_\_\_  
toilet with help \_\_\_\_\_  
receptacles without assistance \_\_\_\_\_

receptacles with assistance \_\_\_\_\_

Are you able to wash yourself?

without any help \_\_\_\_\_

with help for bodily washing \_\_\_\_\_

with assistance for shaving, \_\_\_\_\_

combing hair, etc. \_\_\_\_\_

not at all \_\_\_\_\_

Do you do your own:

	all	part	none	by preference	unable
shopping	_____	_____	_____	_____	_____
cooking	_____	_____	_____	_____	_____
cleaning	_____	_____	_____	_____	_____
laundry	_____	_____	_____	_____	_____
male with no household duties	_____				

Do you have a paid job at present?

If "yes": full time \_\_\_\_\_

part-time \_\_\_\_\_

and: normal working \_\_\_\_\_

modified working \_\_\_\_\_

sheltered employment \_\_\_\_\_

If "no" and male 65 years, or female 60 years and older:

age retired \_\_\_\_\_

premature retired \_\_\_\_\_

non-employed \_\_\_\_\_

If "no" and male 65 years, or female 59 years and under:

unemployed \_\_\_\_\_

unfit \_\_\_\_\_

non-employed \_\_\_\_\_

## Appendix J

### KAS-R

#### INSTRUCTIONS

Please circle the appropriate answer - 1=ALMOST NEVER,  
2=SOMETIMES, 3=OFTEN, and 4=ALMOST ALWAYS.

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. Has trouble sleeping                                      | 1 | 2 | 3 | 4 |
| 2. Gets very critical, starts to blame himself for things    | 1 | 2 | 3 | 4 |
| 3. Cries easily  | 1 | 2 | 3 | 4 |
| 4. Feels lonely  | 1 | 2 | 3 | 4 |
| 5. Acts as if he has no interest in things                   | 1 | 2 | 3 | 4 |
| 6. Is restless   | 1 | 2 | 3 | 4 |
| 7. Has periods where he can't stop moving or doing something | 1 | 2 | 3 | 4 |
| 8. Just sits   | 1 | 2 | 3 | 4 |
| 9. Acts as if he doesn't have much energy                    | 1 | 2 | 3 | 4 |
| 10. Looks worn out   | 1 | 2 | 3 | 4 |
| 11. Feelings get hurt easily                                 | 1 | 2 | 3 | 4 |
| 12. Feels that people don't care about him                   | 1 | 2 | 3 | 4 |
| 13. Does the same thing over and over again without reason   | 1 | 2 | 3 | 4 |
| 14. Passes out   | 1 | 2 | 3 | 4 |

15. Gets very sad, blue	1	2	3	4
16. Tries too hard	1	2	3	4
17. Needs to do things very slowly to do them right	1	2	3	4
18. Has strange fears	1	2	3	4
19. Afraid something terrible is going to happen	1	2	3	4
20. Gets nervous easily	1	2	3	4
21. Jittery	1	2	3	4
22. Worries or frets	1	2	3	4
23. Gets sudden fright for no reason	1	2	3	4
24. Has bad dreams	1	2	3	4
25. Acts as if he sees people or things that aren't there	1	2	3	4
26. Does strange things without reason	1	2	3	4
27. Attempts suicide	1	2	3	4
28. Gets angry and breaks things	1	2	3	4
29. Talks to himself	1	2	3	4
30. Acts as if he has no control over his emotions	1	2	3	4
31. Laughs or cries at strange times	1	2	3	4
32. Has mood changes without reason	1	2	3	4
33. Has temper tantrums	1	2	3	4
34. Gets very excited for no reason	1	2	3	4
35. Gets very happy for no reason	1	2	3	4
36. Acts as if he doesn't care about other people's feelings	1	2	3	4
37. Thinks only of himself	1	2	3	4

38. Shows his feelings	1	2	3	4
39. Generous	1	2	3	4
40. Thinks people are talking about him	1	2	3	4
41. Complains of headaches, stomach trouble, other physi- cal ailments	1	2	3	4
42. Bossy	1	2	3	4
43. Acts as if he's suspicious of people	1	2	3	4
44. Argues	1	2	3	4
45. Gets into fights with people	1	2	3	4
46. Is cooperative	1	2	3	4
47. Does the opposite of what he is asked	1	2	3	4
48. Stubborn	1	2	3	4
49. Answers when talked to	1	2	3	4
50. Curses at people	1	2	3	4
51. Deliberately upsets routine	1	2	3	4
52. Resentful	1	2	3	4
53. Envious of other people	1	2	3	4
54. Friendly	1	2	3	4
55. Gets annoyed easily	1	2	3	4
56. Critical of other people	1	2	3	4
57. Pleasant	1	2	3	4
58. Gets along well with people	1	2	3	4
59. Lies	1	2	3	4
60. Gets into trouble with the law	1	2	3	4
61. Gets drunk	1	2	3	4
62. Is dependable	1	2	3	4



63. Is responsible	1	2	3	4
64. Argues (talks) back	1	2	3	4
65. Obedient	1	2	3	4
66. Shows good judgment	1	2	3	4
67. Stays away from people	1	2	3	4
68. Takes drugs other than recommended by hospital or clinic	1	2	3	4
69. Shy	1	2	3	4
70. Quiet	1	2	3	4
71. Prefers to be alone	1	2	3	4
72. Needs a lot of attention	1	2	3	4
73. Behavior is childish	1	2	3	4
74. Acts helpless	1	2	3	4
75. Is independent	1	2	3	4
76. Moves about very slowly	1	2	3	4
77. Moves about in a hurried way	1	2	3	4
78. Clumsy; keeps bumping into things or dropping things	1	2	3	4
79. Very quick to react to something you say or do	1	2	3	4
80. Very slow to react	1	2	3	4
81. Gets into peculiar positions	1	2	3	4
82. Makes peculiar movements	1	2	3	4
83. Hands tremble	1	2	3	4
84. Will stay in one position for a long period of time	1	2	3	4
85. Loses track of day, month, or year	1	2	3	4

86. Forgets his address or other places he knows well	1	2	3	4
87. Remembers the names of people he knows well	1	2	3	4
88. Acts as if he doesn't know where he is	1	2	3	4
89. Remembers important things	1	2	3	4
90. Acts as if he's confused about things; in a daze	1	2	3	4
91. Acts as if he can't get certain thoughts out of his mind	1	2	3	4
92. Acts as if he can't concentrate on one thing	1	2	3	4
93. Acts as if he can't make decisions	1	2	3	4
94. Talks without making sense	1	2	3	4
95. Hard to understand his words	1	2	3	4
96. Speaks clearly	1	2	3	4
97. Refuses to speak at all for periods of time	1	2	3	4
98. Speaks so low you cannot hear him	1	2	3	4
99. Speaks very loudly	1	2	3	4
100. Shouts or yells for no reason	1	2	3	4
101. Speaks very fast	1	2	3	4
102. Speaks very slowly	1	2	3	4
103. Acts as if he wants to speak but can't	1	2	3	4
104. Keeps repeating the same idea	1	2	3	4
105. Keeps changing from one subject to another for no reason	1	2	3	4
106. Talks too much	1	2	3	4
107. Says that people are talking about him	1	2	3	4

- |  |   |   |   |   |
|--|---|---|---|---|
| 108. Says that people are trying to make him do or think things he doesn't want to | 1 | 2 | 3 | 4 |
| 109. Talks as if he committed the worst sins                                       | 1 | 2 | 3 | 4 |
| 110. Talks about how angry he is at certain people                                 | 1 | 2 | 3 | 4 |
| 111. Talks about people or things he's very afraid of                              | 1 | 2 | 3 | 4 |
| 112. Threatens to injure certain people  | 1 | 2 | 3 | 4 |
| 113. Threatens to tell people off  | 1 | 2 | 3 | 4 |
| 114. Says he is afraid that he will injure somebody                                | 1 | 2 | 3 | 4 |
| 115. Says he is afraid that he will not be able to control himself                 | 1 | 2 | 3 | 4 |
| 116. Talks about strange things that are going on inside his body                  | 1 | 2 | 3 | 4 |
| 117. Says how bad or useless he is   | 1 | 2 | 3 | 4 |
| 118. Brags about how good he is  | 1 | 2 | 3 | 4 |
| 119. Says the same thing over and over again                                       | 1 | 2 | 3 | 4 |
| 120. Complains about people and things in general                                  | 1 | 2 | 3 | 4 |
| 121. Talks about big plans he has for the future                                   | 1 | 2 | 3 | 4 |
| 122. Says or acts as if people are after him                                       | 1 | 2 | 3 | 4 |
| 123. Says that something terrible is going to happen                               | 1 | 2 | 3 | 4 |
| 124. Believes in strange things  | 1 | 2 | 3 | 4 |
| 125. Talks about suicide   | 1 | 2 | 3 | 4 |
| 126. Talks about strange sexual ideas  | 1 | 2 | 3 | 4 |
| 127. Gives advice without being asked  | 1 | 2 | 3 | 4 |

Please circle the appropriate answer - 1=IS NOT DOING, 2=IS DOING SOME, 3=IS DOING REGULARLY, and 4=DOES NOT APPLY.

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. Helps with household chores                 | 1 | 2 | 3 | 4 |
| 2. Visits his friends                          | 1 | 2 | 3 | 4 |
| 3. Visits his relatives                        | 1 | 2 | 3 | 4 |
| 4. Entertains friends at home                  | 1 | 2 | 3 | 4 |
| 5. Dresses and takes care of himself           | 1 | 2 | 3 | 4 |
| 6. Helps with the family budgeting             | 1 | 2 | 3 | 4 |
| 7. Remembers to do important things on time    | 1 | 2 | 3 | 4 |
| 8. Gets along with family members              | 1 | 2 | 3 | 4 |
| 9. Goes to parties and other social activities | 1 | 2 | 3 | 4 |
| 10. Gets along with neighbors                  | 1 | 2 | 3 | 4 |
| 11. Helps with family shopping                 | 1 | 2 | 3 | 4 |
| 12. Helps in the care and training of children | 1 | 2 | 3 | 4 |
| 13. Goes to church                             | 1 | 2 | 3 | 4 |
| 14. Takes up hobbies                           | 1 | 2 | 3 | 4 |
| 15. Works                                      | 1 | 2 | 3 | 4 |
| 16. Supports the family                        | 1 | 2 | 3 | 4 |

Please circle the appropriate answer - 1=DO NOT EXPECT HIM TO BE DOING, 2=EXPECT HIM TO BE DOING SOME, 3=EXPECT HIM TO BE DOING REGULARLY, and 4=DOES NOT APPLY.

- |                                |   |   |   |   |
|--------------------------------|---|---|---|---|
| 1. Helps with household chores | 1 | 2 | 3 | 4 |
| 2. Visits his friends          | 1 | 2 | 3 | 4 |
| 3. Visits his relatives        | 1 | 2 | 3 | 4 |
| 4. Entertains friends at home  | 1 | 2 | 3 | 4 |

5. Dresses and takes care of himself	1	2	3	4
6. Helps with the family budgeting	1	2	3	4
7. Remembers to do important things on time	1	2	3	4
8. Gets along with family members	1	2	3	4
9. Goes to parties and other social activities	1	2	3	4
10. Gets along with neighbors	1	2	3	4
11. Helps with family shopping	1	2	3	4
12. Helps in the care and training of children	1	2	3	4
13. Goes to church	1	2	3	4
14. Takes up hobbies	1	2	3	4
15. Works	1	2	3	4
16. Supports the family	1	2	3	4

Please circle the appropriate answer - 1=FREQUENTLY,  
2=SOMETIMES, 3=PRACTICALLY NEVER, and 4=DOES NOT APPLY.

1. Work in and around the house	1	2	3	4
2. Work in the garden or yard	1	2	3	4
3. Work on some hobby	1	2	3	4
4. Listen to the radio	1	2	3	4
5. Watch television	1	2	3	4
6. Write letters	1	2	3	4
7. Go to the movies	1	2	3	4
8. Attend lectures, theatre	1	2	3	4
9. Attend club, lodge, other meeting	1	2	3	4
10. Shop	1	2	3	4
11. Take part in community or church work	1	2	3	4

12. Bowl or other sports	1	2	3	4
13. Play cards or other table games	1	2	3	4
14. Take rides	1	2	3	4
15. Visit friends	1	2	3	4
16. Entertain friends	1	2	3	4
17. Sew, crochet or knit	1	2	3	4
18. Read	1	2	3	4
19. Go to the library	1	2	3	4
20. Just sit and think	1	2	3	4
21. Take courses at home	1	2	3	4
22. Go to school	1	2	3	4
23. Other (what?) _____	1	2	3	4

Please circle the appropriate answer - 1=SATISFIED WITH WHAT HE DOES HERE, 2=WOULD LIKE TO SEE HIM DO MORE OF THIS, 3=WOULD LIKE TO SEE HIM DO LESS, and 4=DOES NOT APPLY.

1. Work in and around the house	1	2	3	4
2. Work in the garden or yard	1	2	3	4
3. Work on some hobby	1	2	3	4
4. Listen to the radio	1	2	3	4
5. Watch television	1	2	3	4
6. Write letters	1	2	3	4
7. Go to the movies	1	2	3	4
8. Attend lectures, theatre	1	2	3	4
9. Attend club, lodge, other meetings	1	2	3	4
10. Shop	1	2	3	4

11. Take part in community or church work	1	2	3	4
12. Bowl or other sports	1	2	3	4
13. Play cards or other table games	1	2	3	4
14. Take rides	1	2	3	4
15. Visit friends	1	2	3	4
16. Entertain friends	1	2	3	4
17. Sew, crochet or knit	1	2	3	4
18. Read	1	2	3	4
19. Go to the library	1	2	3	4
20. Just sit and think	1	2	3	4
21. Take courses at home	1	2	3	4
22. Go to school	1	2	3	4
23. Other (what?) _____	1	2	3	4

**Appendix K**  
**EYSENCK PERSONALITY QUESTIONNAIRE**

**INSTRUCTIONS:**

Please answer each question by putting a circle around the "yes" or the "no" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the question. REMEMBER TO ANSWER EACH QUESTION.

- |  |     |    |
|--|-----|----|
| 1. Do you have many different hobbies?   | yes | no |
| 2. Do you stop to think things over before doing anything?                             | yes | no |
| 3. Does your mood often go up and down?  | yes | no |
| 4. Have you ever taken the praise for something you knew someone else had really done? | yes | no |
| 5. Are you a talkative person?   | yes | no |
| 6. Would being in debt worry you?  | yes | no |
| 7. Do you ever feel "just miserable" for no reason?                                    | yes | no |
| 8. Were you ever greedy by helping yourself to more than your share of anything?       | yes | no |
| 9. Do you lock up your house carefully at night?                                       | yes | no |
| 10. Are you rather lively?   | yes | no |



- |   |     |    |
|---|-----|----|
| 11. Would it upset you a lot to see a child or an animal suffer?  | yes | no |
| 12. Do you often worry about things you should not have done or said?   | yes | no |
| 13. If you say you will do something, do you always keep your promise no matter how inconvenient it might be? | yes | no |
| 14. Can you usually let yourself go and enjoy yourself at a lively party?                                     | yes | no |
| 15. Are you an irritable person?  | yes | no |
| 16. Have you ever blamed someone for doing something you knew was really your fault?                          | yes | no |
| 17. Do you enjoy meeting new people?  | yes | no |
| 18. Do you believe insurance schemes are a good idea?   | yes | no |
| 19. Are your feelings easily hurt?  | yes | no |
| 20. Are all your habits good and desirable ones?  | yes | no |
| 21. Do you tend to keep in the background on social occasions?  | yes | no |
| 22. Would you take drugs which may have strange or dangerous effects?   | yes | no |
| 23. Do you often feel "fed-up"?   | yes | no |
| 24. Have you ever taken anything (even a pin or button) that belonged to someone else?                        | yes | no |
| 25. Do you like going out a lot?  | yes | no |
| 26. Do you enjoy hurting people you love?   | yes | no |

- |   |     |    |
|---|-----|----|
| 27. Are you often troubled about feelings of guilt?                           | yes | no |
| 28. Do you sometimes talk about things you know nothing about?                | yes | no |
| 29. Do you prefer reading to meeting people?                                  | yes | no |
| 30. Do you have enemies who want to harm you?                                 | yes | no |
| 31. Would you call yourself a nervous person?                                 | yes | no |
| 32. Do you have many friends?   | yes | no |
| 33. Do you enjoy practical jokes that can sometimes really hurt people?       | yes | no |
| 34. Are you a worrier?  | yes | no |
| 35. As a child did you do as you were told immediately and without grumbling? | yes | no |
| 36. Would you call yourself happy-go-lucky?                                   | yes | no |
| 37. Do good manners and cleanliness matter much to you?                       | yes | no |
| 38. Do you worry about awful things that might happen?                        | yes | no |
| 39. Have you ever broken or lost something belonging to someone else?         | yes | no |
| 40. Do you usually take the initiative in making new friends?                 | yes | no |
| 41. Would you call yourself tense or "highly-strung"?                         | yes | no |
| 42. Are you mostly quiet when you are with other people?                      | yes | no |
| 43. Do you think marriage is old-fashioned and should be done away with?      | yes | no |

- |   |     |    |
|---|-----|----|
| 44. Do you sometimes boast a little?                                    | yes | no |
| 45. Can you easily get some life into a rather dull party?              | yes | no |
| 46. Do people who drive carefully annoy you?                            | yes | no |
| 47. Do you worry about your health?                                     | yes | no |
| 48. Have you ever said anything bad or nasty about anyone?              | yes | no |
| 49. Do you like telling jokes and funny stories to your friends?        | yes | no |
| 50. Do most things taste the same to you?                               | yes | no |
| 51. As a child were you ever cheeky to your parents?                    | yes | no |
| 52. Do you like mixing with people?                                     | yes | no |
| 53. Does it worry you if you know there are mistakes in your work?      | yes | no |
| 54. Do you suffer from sleeplessness?                                   | yes | no |
| 55. Do you always wash before a meal?                                   | yes | no |
| 56. Do you nearly always have a "ready answer" when people talk to you? | yes | no |
| 57. Do you like to arrive at appointments in plenty of time?            | yes | no |
| 58. Have you often felt listless and tired for no reason?               | yes | no |
| 59. Have you ever cheated at a game?                                    | yes | no |
| 60. Do you like doing things in which you have to act quickly?          | yes | no |
| 61. Is (or was) your mother a good woman?                               | yes | no |

- |   |     |    |
|---|-----|----|
| 62. Do you often feel life is very dull?  | yes | no |
| 63. Have you ever taken advantage of someone?   | yes | no |
| 64. Do you often take on more activities than you have<br>time for?                                   | yes | no |
| 65. Are there several people who keep trying to avoid<br>you?   | yes | no |
| 66. Do you worry a lot about your looks?  | yes | no |
| 67. Do you think people spend too much time safeguarding<br>their future with savings and insurances? | yes | no |
| 68. Have you ever wished that you were dead?  | yes | no |
| 69. Would you dodge paying taxes if you were sure you<br>could never be found out?                    | yes | no |
| 70. Can you get a party going?  | yes | no |
| 71. Do you try not to be rude to people?  | yes | no |
| 72. Do you worry too long after an embarrassing experi-<br>ence?                                      | yes | no |
| 73. Have you ever insisted on having your own way?  | yes | no |
| 74. When you catch a train do you often arrive at the<br>last minute?                                 | yes | no |
| 75. Do you suffer from "nerves"?  | yes | no |
| 76. Do your friendships break up easily without it being<br>your fault?                               | yes | no |
| 77. Do you often feel lonely?   | yes | no |
| 78. Do you always practice what you preach?   | yes | no |
| 79. Do you sometimes like teasing animals?  | yes | no |
| 80. Are you easily hurt when people find fault with you<br>or the work you do?                        | yes | no |

81. Have you ever been late for an appointment or work?  
yes no
82. Do you like plenty of bustle and excitement around  
you? yes no
83. Would you like other people to be afraid of you? yes no
84. Are you sometimes bubbling over with energy and some-  
times very sluggish? yes no
85. Do you sometimes put off until tomorrow what you  
ought to do today? yes no
86. Do other people think of you as being very lively?  
yes no
87. Do people tell you a lot of lies? yes no
88. Are you touchy about some things? yes no
89. Are you always willing to admit it when you have made  
a mistake? yes no
90. Would you feel very sorry for an animal caught in a  
trap? yes no

## Appendix L

### F-COPES

#### DIRECTIONS

Decide how well each statement describes your attitudes and behavior in response to problems or difficulties. If the statement describes your response very well, then circle the number 5 indicating that you STRONGLY AGREE; if the statement does not describe your response at all, then circle the number 1 indicating that you STRONGLY DISAGREE; if the statement describes your response to some degree, then select a number 2 (MODERATELY DISAGREE), 3 (NEITHER AGREE NOR DISAGREE) or 4 (MODERATELY AGREE) to indicate how much you agree or disagree with the statement about your response.

WHEN WE FACE PROBLEMS OR DIFFICULTIES IN OUR FAMILY, WE RESPOND BY:

1. Sharing our difficulties with relatives 1 2 3 4 5
2. Seeking encouragement and support from friends  
1 2 3 4 5
3. Knowing we have the power to solve major problems  
1 2 3 4 5
4. Seeking information and advice from persons in other families who have faced the same or similar problems  
1 2 3 4 5

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 5. Seeking advice from relatives (grandparents, etc.)   | 1 | 2 | 3 | 4 | 5 |
| 6. Seeking assistance from community agencies and programs designed to help families in our situation | 1 | 2 | 3 | 4 | 5 |
| 7. Knowing that we have the strength within our own family to solve our problems                      | 1 | 2 | 3 | 4 | 5 |
| 8. Receiving gifts and favors from neighbors (e.g. food, taking in mail, etc.)                        | 1 | 2 | 3 | 4 | 5 |
| 9. Seeking information and advice from the family doctor  | 1 | 2 | 3 | 4 | 5 |
| 10. Asking neighbors for favors and assistance  | 1 | 2 | 3 | 4 | 5 |
| 11. Facing the problems "head-on" and trying to get solution right away                               | 1 | 2 | 3 | 4 | 5 |
| 12. Watching television   | 1 | 2 | 3 | 4 | 5 |
| 13. Showing that we are strong  | 1 | 2 | 3 | 4 | 5 |
| 14. Attending church services   | 1 | 2 | 3 | 4 | 5 |
| 15. Accepting stressful events as a fact of life  | 1 | 2 | 3 | 4 | 5 |
| 16. Sharing concerns with close friends   | 1 | 2 | 3 | 4 | 5 |
| 17. Knowing luck plays a big part in how well we are able to solve family problems                    | 1 | 2 | 3 | 4 | 5 |
| 18. Exercising with friends to stay fit and reduce tension  | 1 | 2 | 3 | 4 | 5 |
| 19. Accepting that difficulties occur unexpectedly  | 1 | 2 | 3 | 4 | 5 |

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 20. Doing things with relatives (get-togethers, dinners, etc.)                                  | 1 | 2 | 3 | 4 | 5 |
| 21. Seeking professional counseling and help for family difficulties                            | 1 | 2 | 3 | 4 | 5 |
| 22. Believing we can handle our own problems  | 1 | 2 | 3 | 4 | 5 |
| 23. Participating in church activities  | 1 | 2 | 3 | 4 | 5 |
| 24. Defining the family problem in a more positive way so that we do not become too discouraged | 1 | 2 | 3 | 4 | 5 |
| 25. Asking relatives how they feel about problems we face                                       | 1 | 2 | 3 | 4 | 5 |
| 26. Feeling that no matter what we do to prepare, we will have difficulty handling problems     | 1 | 2 | 3 | 4 | 5 |
| 27. Seeking advice from a minister  | 1 | 2 | 3 | 4 | 5 |



## **Appendix M**

### **FAMILY INVENTORY OF LIFE EVENTS AND CHANGES**

#### **PURPOSE**

Over their life cycle, all families experience many changes as a result of normal growth and development of members and due to external circumstances. The following list of family life changes can happen in a family at any time. Because family members are connected to each other in some way, a life change for any one member affects all the other persons in the family to some degree.

#### **DIRECTIONS**

"DID THE CHANGE HAPPEN IN YOUR FAMILY?" Please read each family life change and decide whether it happened to any member of your family (i.e. persons you are living with and to whom you have a long term commitment) - including you. First, decide if it happened any time during the last 12 months and check "yes" or "no". Second, for some family changes decide if it happened any time before the last 12 months and check "yes" or "no". It is okay to check "yes" twice if it happened both times - before last year and during the past year.

	During last		Before last	
	12 months		12 months	
1. Increase of husband/father's time away from family	yes	no	yes	no
2. Increase of wife/mother's time away from family	yes	no	yes	no
3. A member appears to have emotional problems	yes	no	yes	no
4. A member appears to depend on alcohol or drugs	yes	no	yes	no
5. Increase in conflict between husband and wife	yes	no		
6. Increase in arguments between parent(s) and child(ren)	yes	no		
7. Increase in conflict among children in the family	yes	no		
8. Increased difficulty in managing teenage child(ren)	yes	no		
9. Increased difficulty in managing school age child(ren) 6 - 12 yrs	yes	no		
10. Increased difficulty in managing preschool age child(ren) 2 1/2 - 6 yrs	yes	no		
11. Increased difficulty in managing toddler(s) 1 - 2 1/2 yrs	yes	no		
12. Increased difficulty in managing infant(s) 0 - 2 yr	yes	no		



- |  |     |    |     |    |
|--|-----|----|-----|----|
| 27. Went on welfare  | yes | no | yes | no |
| 28. Change in conditions (economic, political, weather)<br>which hurts the family business                     | yes | no | yes | no |
| 29. Change in Agriculture Market, Stock Market, or Land<br>Values which hurts family investments and or income | yes | no | yes | no |
| 30. A member started a new business  | yes | no | yes | no |
| 31. Purchased or built a home  | yes | no | yes | no |
| 32. A member purchased a car or other major item   | yes | no |     |    |
| 33. Increasing financial debts due to over use of credit<br>cards  | yes | no |     |    |
| 34. Increased strain on family "money" for medical/dental<br>expenses  | yes | no |     |    |
| 35. Increased strain on family "money" for food, cloth-<br>ing, energy, home care                              | yes | no |     |    |
| 36. Increased strain on family "money" for child(ren)'s<br>education   | yes | no |     |    |
| 37. Delay in receiving child support or alimony payments   | yes | no |     |    |
| 38. A member changed to a new job/career   | yes | no | yes | no |
| 39. A member lost or quit a job  | yes | no | yes | no |
| 40. A member retired from work   | yes | no | yes | no |
| 41. A member started or returned to work   | yes | no | yes | no |

42. A member stopped working for extended period  
yes no
43. Decrease in satisfaction with job/career  
yes no
44. A member had increased difficulty with people at work  
yes no
45. A member was promoted at work or given more responsibilities  
yes no
46. Family moved to a new home/apartment  
yes  
no
47. An adolescent member changed to a new school  
yes no
48. Parent/spouse became seriously ill or injured  
yes no yes no
49. Child became seriously ill or injured  
yes no yes no
50. Close relative or friend of the family became seriously ill  
yes no yes no
51. A member became physically disabled or chronically ill  
yes no yes no
52. Increased difficulty in managing a chronically ill or disabled member  
yes no yes no
53. Member or close relative was committed to an institution or nursing home  
yes no yes no
54. Increased responsibility to provide direct care or financial help to husband's and/or wife's parent(s)  
yes no



70. A member ran away from home            yes      no            yes      no
71. A member dropped out of school or was suspended from  
school    yes      no

## **Appendix N**

### **OPEN ENDED QUESTIONS**

1. What has been the most difficult for you since the time of the accident?
2. What has been the most helpful?
3. What kind(s) of hospital or other government services have you used if any?
4. What would you tell a friend who was now going through the same experience as you did?
5. Any suggestions you would make to the hospital staff in dealing with the family of a head injury patient?
6. Who has had to suffer the greatest strain in your family?
7. What was your role in the accident?
8. Any comments about your experience?