

Cognitive Moderators In Multidimensional Recovery From
Traumatic Brain Injury:
A Prospective Examination

by
W. Allan D. Moore

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

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Acknowledgements

Looking back on the past nine years of university study, the lessons learned, the people I've met and had the chance to work with, and how these experiences have changed me, a line from one of my favorite movies seems to sum up things quite well. The line goes in part 'I received more than I gave'. Working both here in Winnipeg and in Seattle on internship with people who have experienced serious illnesses and accidents, the most incredible and universal aspect of my contact has been the courage of the vast majority of these people have shown me in their efforts to adapt to what are massive changes to their lives. In many ways, this demonstration of the power of life and the strength of the human spirit has been a gift from those clients I do not know that I can repay. The content of this dissertation comes from these unsung persons and their families who struggle with the ongoing changes that their illness or injury represents. It is my hope that in some small way the findings in this study reveal part of the lessons these people have for all of us, and to them, I offer my thanks.

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Abstract

Using a multivariate, longitudinal design, the current study investigated the potential moderating role of cognitive beliefs in the adjustment to traumatic brain injury (TBI) in a sample of 61 patients 1 to 2 years post-TBI. Based on a literature review examining the moderating effect of cognitive beliefs in adjustment to chronic illness, a conceptual model is presented; it views locus of control (LOC), attributional style, and automatic thoughts (AT) as related and overlapping constructs impacting both on adjustment and selection of coping strategies. Results confirmed three of five hypotheses and provided marginal support for the remaining two. Confirmed hypothesized results consisted of: 1) External LOC and negative AT at time one associated with high levels of overall coping and emotion-focused coping specifically at time two, 2) negative AT and high external LOC at time one associated with poorer outcome at time two, and 3) high overall and emotion-focused coping at time one associated with poorer outcome at time two. No consistent relationships were found to support a hypothesized interaction effect of time post-injury and TBI severity on cognitive moderator or outcome variables. Finally, a LISREL path analysis designed to investigate and refine the conceptual model resulted in a somewhat more specific model, consistent with the

original hypothesized model, but did not meet established goodness-of-fit criteria. In sum, results largely confirmed the structural hypotheses in the model but were less successful in predicting developmental/recovery mediated processes or the model as a whole. Limitations, implications, and directions for future research are discussed.

Cognitive Moderators In Multidimensional Recovery From
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This project represents the second step in a research programme to investigate the potential influence of cognitive moderators on psychosocial outcome following traumatic brain injury (TBI), and to explore their potential use in interventions for this population. The first step involved a retrospective examination of 62 male patients with TBI's coping behaviors, attributional styles and locus of control beliefs (Moore, 1989). This work represented an attempt to integrate current theory in the area of cognitive mediation of stressful events and coping, and the growing literature of data on the challenges confronted by the survivors of life-threatening illness. Specifically, the goals of this first step were to investigate the relationship between attributional style, feelings of control, and the coping behaviors used by patients with TBI and to determine the relationship between these cognitive factors, initial injury severity and long-term psychosocial outcome. Although cognitive beliefs were not related to injury severity, significant relationships were found between concomitant measures of quality of life and cognitive beliefs. Despite

these promising results, limitations involving both the single assessment of outcome and cognitive beliefs, as well as the stage in the recovery process subjects were currently involved in placed significant limitations on the generalizability of results. The present step in the research process involves a more rigorous examination of the relationship between cognitive beliefs and outcome following TBI. The main goal is to determine, using a prospective design, the relationship between locus of control, coping behavior, and cognitive style measures and outcome of a group of consecutively identified patients with TBI one to two years post-injury. The third step in the research programme involves the future evaluation of cognitive-based intervention methods following TBI.

As part of a comprehensive review of the relevant literature, three research topics will be reviewed: a) an examination of the extant literature on TBI: its epidemiology, pathophysiology, multidimensional sequelae, and current rehabilitation intervention strategies, b) the theoretical models involving cognitive moderators on illness, specifically focusing on models involving control beliefs and coping behaviors, and c) the literature empirically testing the adequacy of these models in illness situations. Finally, these lines of research will be summarized and

combined to form the central theme investigated in the current study: That the uncontrollable, permanent, and negative cognitive, behavioral, emotional and interpersonal sequelae of TBI may influence cognitive beliefs and coping styles in patients with TBI in a manner that compromise their ability to deal optimally with the changes that TBI represents. Three hypotheses are tested: 1) Patterns of cognitive distortion measured at Time 1 are hypothesized to be associated with patterns of suboptimal coping at Time 2, 2) patterns of cognitive distortion and suboptimal coping measured at Time 1 are hypothesized to be associated with poorer outcome at Time 2, and, 3) among severely injured patients with TBI, cognitive distortion will increase with time post-injury. Should these time-based results occur, strong evidence (although not causal, but the closest possible in a clinical study) will be presented to justify an intervention study in this population at a post-acute stage in the recovery process.

TRAUMATIC BRAIN INJURY

Epidemiology of TBI

Traumatic brain injury (TBI) involves various processes, the common outcome creating damage to the brain through forces such as blunt impact, pressure, shearing, and direct focal damage by missiles (Silver, Yudofsky, & Hales, 1987). Cerebral trauma can be divided into two main categories; open head injuries, involving penetration of the skull, and closed head injuries, in which the brain is damaged although the skull remains intact. The most common cause of open head injuries are gunshot wounds, and these are relatively infrequent in peacetime (Cooper, 1987). Far more common are closed TBI's following automobile accidents, falls, assaults, or sports accidents. In fact, cerebral trauma is the most common cause of damage to the brain among persons under 40 (Kolb & Whishaw, 1985). Silver, Yudofsky, and Hales (1987) cite statistics indicating that 70 percent of all automobile-related deaths occur due to head trauma. In the United States, approximately 500,000 persons yearly sustain head trauma serious enough to be admitted to hospital; of these 30 to 50 percent involve moderate to

fatal TBI, and 5 to 10 percent of the survivors may experience neurological sequelae (Miller, 1986; Silver, Yudofsky, & Hales, 1987). Placing the epidemiology of TBI into perspective in the United States, the incidence of brain trauma has been estimated to exceed the incidence of schizophrenia by one and one-half times (Silver, Yudofsky, & Hales, 1987). In Manitoba, 2.2 of every 1000 residents sustain TBI per year (Parkinson, Stephenson, & Phillips, 1985). Economically, the impact of TBI is also significant. Estimates of the cost of TBI annually in the United States in the early 1980's range from 4 to 15 billion dollars annually (Miller, 1986; Silver, Yudofsky, & Hales, 1987).

A substantial difficulty in determining accurate epidemiological data for TBI is that a large number of TBI's go unreported (Miller, 1986). In general however, TBI occurs most often among young, single males (between ages 15-24), usually from low socioeconomic strata, who have a history of "risk-taking" and illicit activities, with a second, smaller peak among the elderly (Bond, 1986, Miller, 1986). Consumption of alcohol and/or other psychoactive substances is frequently associated with TBI (Bond, 1986; Gill, Stambrook, Moore & Peters, 1989; Hawryluk, Gill, Stambrook, Moore, & Peters, 1989; Sparadeo &

Gill, 1989). A frequently neglected element of the epidemiology of TBI involves the far-ranging effects of TBI on the family system and social network of the patient (Peters, 1989; Peters, Stambrook, & Moore, 1989; Moore, Stambrook, Peters, & Lubusko, 1991).

Pathophysiology of TBI

In this section, discussion of pathophysiology will be limited to non-penetrating TBI. Non-penetrating TBI is associated with damage to the brain from two main processes, primary and secondary injuries (Brooks, 1984). Primary injury in TBI involves blunt trauma and rotational forces that occur at the moment of trauma. Secondary injuries arise following the injury, and include damage to the brain due to raised intracranial pressure, hypoxia, neural damage due to blood-neuron contact, and effects of other organ system damage. While primary injury is caused directly through the mechanism of the accident and is beyond the control of the treatment team, limiting the extent of secondary damage forms the basis on which neurosurgical treatment following TBI is administered.

Blunt trauma of the brain occurs when the cerebrospinal fluid cushioning system is overwhelmed by extreme acceleration/deceleration forces causing the brain to contact the inner surface of the skull and

tentorial plates (supportive bony structures inside the skull), causing bruising and swelling of the brain immediately at the site of impact and, possibly, the opposite pole of the brain. In addition, hemorrhages following blunt trauma can contribute to raised intracranial pressure. Damage of this type includes the so-called "contre-coup" injury in which the brain contacts the frontal and occipital surfaces of the skull. As the brain "floats" within the skull cavity on a cushion of cerebrospinal fluid, in a contre-coup injury the brain, after contacting a surface of the skull, may "rebound" within the skull and sustain damage to its opposite pole.

Despite the fact that blunt trauma forces were emphasized early in the 1970's as the primary cause of damage to the brain following TBI, their contribution to the after-effects of TBI may have been overemphasized (Miller, 1986). Early in the 1980's, research began emphasizing rotational and linear acceleration/deceleration forces occurring diffusely throughout the brain as the primary determinant of damage to the brain in TBI (Miller, 1986). Again, these forces overwhelm the cushioning cerebrospinal fluid system causing shearing of axons and blood vessels diffusely throughout the brain.

Secondary damage involved in TBI includes the aftereffects of raised intracranial pressure. These forces occur following swelling of the brain (edema) or as a result of bleeding inside the brain (hematomas). The raised pressure inside the brain compresses the brain tissue and blood supply. These effects can lead to herniation of brain tissue through foramina in the skull and tentorial plates, as well as cutting off blood supply causing infarctions (cell death) of brain tissue. In addition, hypoxia (decreased oxygen supply) due to decreased blood supply (because of blood loss in other organ systems, decreased respiratory rate from brain stem injury, or metabolic disturbances) can lead to infarctions. Finally, physical contact of blood with neurons leads to neuron cell damage due to changed extracellular fluid content, as well as breach of the blood-brain barrier.

Early management of TBI involves decreasing the effects of raised intracranial pressure by administration of corticosteroids and invasive procedures to relieve intracranial pressure. A variety of early markers of injury severity, including the Glasgow Coma Scale (GCS; Teasdale & Jennett, 1974), a behavioral measure, computed tomography (CT) and magnetic resonance imaging (MRI) scanning devices (Levin, Handel, Goldman, Eisenberg, & Guitano, 1985;

Teasdale, Cardoso, Galbraith, & Teasdale, 1984; Toutant et al, 1984), and blood chemistry markers (Kassum, Thomas, & Wong, 1984; Stambrook, Moore, Kowalchuk, Peters, Kassum, McClarty, & Hawryluk, 1990) are used to predict outcome (at times, long-term) and can be used in future resource allocation. Often, TBI occurs in concert with damage to other organ systems (Miller, 1986) which can further complicate both initial status and ultimate recovery (Moore, Stambrook, Peters, Cardoso, & Kassum, 1990)

Sequelae of Traumatic Brain Injury

Once the TBI patient recovers to the extent that he or she is out of mortal danger, one of the most often asked questions involves whether the patient will be the same and will recover fully. Unfortunately, especially among persons sustaining severe TBI, patients generally sustain what may be permanent changes in cognitive, behavioral, emotional and interpersonal domains. In mild TBI, changes are generally much less specific, serious, and resolve more quickly after injury. Complaints following mild TBI usually involve deficits in attention and memory, although there is a growing literature indicating the substantial nature of deficits that can occur even in mild TBI (Levin, Eisenberg, & Benton, 1989). These

deficits include reduced information processing capacity (Gronwall, 1989), slowed execution time in selective attention tasks (Gentilini, Nichelli, & Schoenhuber, 1989), and various somatic and psychosocial complaints (Dikman, Temkin, & Armsden, 1989; Dikmen, McLean, & Temkin, 1986; Rutherford, 1989). In general however, more severe initial TBI is usually associated with a less optimal neuropsychological outcome while the effects of multiple trauma (i.e., in a motor vehicle accident) appear to impact most on functional outcome (Dacey et al., 1991). Let us review the literature examining each of these aspects of outcome separately.

Cognitive Effects of Closed Head Injury

Attention and Alertness. The most common cognitive difficulty experienced by patients with TBI, involves problems with attention and alertness, manifested behaviorally by slowed thinking and reaction. Commonly, frontal lobe damage is associated with impaired attention and concentration. Stuss, Mateer, and Sohlberg (1994) propose a model of frontal lobe functioning outlining two main tasks carried out by the frontal lobes: 1) executive control (directing and adjusting automatic sensory-perceptual processes) and 2) self-reflectiveness (self-awareness), both of

which are attention and concentration producing. Testing of persons recovering from TBI using instruments such as the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1980) usually reveal deficits on nonverbal (Performance) subscales, especially on timed tests (Brooks, 1984; Lezak, 1983). Van Zomeren, Brouwer, and Deelman (1984), in a review of experimental investigations of TBI attention problems, report that patients may process distracting stimuli more slowly than normals, and that this is partially accounted for by a seemingly slower overall information processing speed. Levin (1989), in a review of the cognitive deficits involved following mild and moderate TBI, notes that slowed cognitive processing is a common feature following less severe TBI as well, but that recovery occurs within 4 to 6 weeks.

Assessment of attention and concentration skills in a Lurian framework emphasises the importance of these skills as precursors to recovery in other areas of cognitive functioning (Luria, 1973). The Lurian model outlines three functional units in the brain, connected to each other in a sequential and dependent manner. Luria describes these units as responsible for 1) regulating tone (attention) or waking, 2) obtaining, processing, and storing information, and 3)

programming, regulating, and verifying mental activity. As these units are connected in a hierarchical sequence, deficits in attention/consciousness, or in sensory/perceptual processing, lead to deficits in higher level thought processes in the higher functional units (i.e., abstract thought). Because of the dependence of higher level thought processes on more basic attention and concentration skills, deficits in these skill areas are often the first to appear and the first to show improvement following damage to the brain. Neuropsychological assessment following the Lurian model attempts to assess the intactness of each functional unit by examining the unique functions of each functional unit through a hypothesis testing approach. Gouvier, Webster and Blanton (1986) note that this approach is similar to tracing a fault in an engine, involving sequentially testing lower level potential problems before testing higher level, more complex malfunctions (i.e., ensure there is gas in the tank before testing the carburetor).

Memory. Among cognitive problems that arise following TBI, memory impairment is the most frequently reported deficit (Levin, 1989; 1990). Memory impairment following TBI involves both an acute condition following trauma (post-traumatic amnesia [PTA]), and what can be a chronic impairment in memory after consciousness is restored.

Post-traumatic amnesia (PTA; time between injury and regaining continuous day-to-day memory or orientation) commonly occurs following TBI and has been used as a predictor of later outcome. Most studies show a relationship between longer length of PTA (and other indicies of impaired consciousness [Dikmen, Temkin, McLean, Wyler, & Machamer, 1987]) and worse cognitive outcome, especially during the first 2 years post-injury (Brooks, 1976; Brooks, Aughton, Bond, Jones, & Rivzi, 1980; Dikmen, McLean, Temkin, & Wyler, 1986; Mandelberg, 1976). Length of PTA is also a predictor of quality of life outcome (Brooks, 1984; Bond, 1986).

Brooks (1984), in a review of the literature regarding memory deficits following TBI, reports that patients with TBI have widespread memory problems when compared to normal controls. One of the most robust findings in this area is that patients with TBI seem to have difficulty learning and then recalling information after an intervening period of time. Brooks reviews several studies which suggest that some patients with TBI may also have impaired long-term or retrograde memory, while retaining short-term, immediate memory skills (i.e., Digit Span). Memory deficits also appear to be the most recognizable and identified source of change after TBI as reported by relatives (Brooks,

1984), and appear to increase with more severe TBI (Dikmen et al., 1987).

Intellectual Functioning. Bond (1986) notes that the majority of research investigating cognitive recovery following TBI demonstrates a negatively accelerating recovery curve with the greatest amount of recovery occurring within the first 6 months to year following the injury. Recovery after this period is slow and limited (see also Dikmen, Machamer, Temkin & McLean, 1990). The reader should be aware, however, that these findings are based on group data and that in the individual case, this clinical rule does not always hold. Intelligence as measured by the WAIS-R generally returns to near premorbid levels following TBI (Bond, 1986), although subscales such as Digit Symbol appear to remain sensitive to brain damage, even following re-testing over a year post-injury (Moore, Stambrook, Hawryluk, Peters, Gill, & Hymans, 1990). Responses to intellectual assessment tasks reflect concrete, stimulus-bound problem-solving styles. For example on tasks in the Wechsler intelligence scales, responses to items requiring generation of similarities between two words (such as peas and beans) tend to focus on superficial specific similarities (i.e., both are green) rather than overarching abstract verbal concepts (i.e., both are vegetables). Mandelberg and Brooks

(1975) followed 40 severe patients with TBI and control subjects over a three year period with serial testing using the WAIS. They found that although there were significant impairments in the TBI group on both Verbal and Performance scales early in recovery, differences between TBI and control groups disappeared by the three year follow-up. Verbal functions recovered very quickly (within 5 months), while Performance and Full-Scale Intelligence Quotients remained significantly lower until the 3 year follow-up. However, it should be noted that omnibus measures of intellectual functioning such as the WAIS are not comprehensive measures of cognitive functioning and may not reveal subtle deficits present following TBI (Miller, 1986).

Dikman, McLean, Temkin, & Wyler (1986) report neuropsychological (Halstead-Reitan Neuropsychological Test Battery) test data obtained from a consecutive heterogeneous sample of 102 adult patients with TBI one month post-injury. They found that compared to assessments on family member controls, TBI patients scored more poorly on all measures given. Fifty percent of the patients with TBI performed at a level poorer than the 25th percentile of control subjects on most measures. Severity of deficits revealed by neuropsychological testing was significantly related to the severity of the initial injury. Follow-up on 31

severe and moderate patients with TBI from the above sample are reported in Dikmen, Machamer, Temkin, and McLean (1990). Fastest recovery of neuropsychological functions were noted over the first year post-injury, but significant impairments were noted even at two years post-injury.

Behavioral Effects of Closed Head Injury

Description of Behavioral/Personality Deficits

Miller (1986) reports that personality and behavioral changes are often cited by family and hospital staff as the primary obstacle to reintegration back into society and resumption of normal life after TBI. DSM-III-R (American Psychiatric Association, 1987) includes head trauma as an etiologic factor in 'Organic Personality Syndrome'. This syndrome is marked by: a) affective instability, b) recurrent outbursts of aggression or rage which are not justified, c) markedly impaired social judgement, d) marked apathy and indifference and e) suspiciousness or paranoid ideation. Bond (1984) notes that premorbid factors such as personality, personal and family resources, the nature and extent of damage to the brain, social factors such as interpersonal relations and social resources, and the presence or absence of compensation all contribute to the psychiatric

consequences of TBI. Levin and Grossman (1978) point out that altered neurotransmitter metabolism, neuroendocrine disturbance, reduced cerebral blood supply, and disruption of brainstem functioning, specifically the mesencephalic reticular formation have also been implicated as biological causes of behavioral disturbance following TBI.

The most common early behavioral syndrome following TBI, post-traumatic agitation, is associated with post-traumatic amnesia and is characterized by marked confusion and impaired attention and memory and restlessness (Bond, 1984). In later recovery, following discharge from hospital, Lezak (1978) notes five potential changes that may occur in the TBI patient's personality and behavior. They are: (a) impaired capacity for social perceptiveness (e.g., lack of empathy, self-criticism), (b) impaired capacity for control and self-regulation, (c) stimulus-bound behavior (e.g., loss of ability to initiate and plan activities), (d) emotional changes (e.g., silliness, irritability, lability, apathy, changes to sexual drives), and (e) inability to learn from social experience.

As well, the so called 'frontal syndromes', marked by dishinibition, aggression, cognitive disability, and loss of insight is a frequently reported aftereffect of

TBI. These syndromes fall on a continuum of severity and complexity from apathy/inertia to mania/disinhibition. Bond (1984, p.168) cites a case in which a 24 year old married woman laughed uncontrollably for several minutes at frequent intervals and performed inappropriate behaviors. To the extent that this patient had insight into her behaviors, she attempted, with little success, to control them. In addition, Bond notes that this patient developed a series of ritualistic behaviors, which Bond suggests may be an attempt on the patient's part to gain a sense of control over her daily activities. As well, Bond notes that the patient's self-control was at its best when her parents were around, and at its worst when the parents were away. This suggests that external factors played a role in self-control.

Silver, Yudofsky, and Hayes (1987) note that aggressive behavior is a common, and usually temporary after-effect of CNS trauma. DSM-III-R recognizes that organic causes can lead to explosive outbursts of aggression, and lists this condition under Organic Mental Disorders using the label Organic Personality Disorder, Explosive Type (American Psychiatric Association, 1987). The actual incidence of this diagnosis, however, is rare. Silver, Yudofsky, and

Hayes (1987) go on to suggest diagnostic criteria for a separate diagnostic category which they call Organic Aggressive Syndrome. They note that the current diagnostic system highlights personality changes that may not be present in the aggressive patient following central nervous system trauma.

Wood (1984) notes that as well as inappropriate behaviors of an aggressive and/or sexual nature, patients with TBI may perform attention-seeking behaviors that may be of a destructive and/or bizzare nature (i.e., self-destructive acts). In addition, severe TBI patients may have very low drive and motivation, characterized by a lack of hedonic responses (earning rewards).

Empirical Research

Levin and Grossman (1978) examined 50 hospitalized patients with TBI using the Brief Psychiatric Rating Scale to identify areas of behavioral deficit and their relationship with severity of TBI. The indices of the rating scale most differentiated by TBI severity included emotional withdrawal (lack of spontaneous interaction, isolation), conceptual disorganization (disconnected thought processes), motor retardation (slowed movements and speech), unusual thought content, blunted affect, excitement (agitation, increased

reactivity), and disorientation. McKinlay, Brooks, Bond, Martinage and Marshall (1981) interviewed relatives of patients with TBI and asked them to list the troublesome behaviors emitted by their head injured relatives. Among the most frequently reported behaviors were slowness, tiredness, irritability, poor memory, impatience, tension and anxiety, bad temper, personality change, depressed mood, and headaches (reported by above 50% of the sample one year post-injury). Similar results are reported by Stambrook, Moore, and Peters (1989) who interviewed 43 wives of male patients with TBI an average of 6 years post-injury. They found that spouses of patients with severe TBI rated their husbands as functioning at a significantly more impaired level on a broad range of social behavior indicies compared to community sample normative data. In addition, patients recovering from severe TBI were rated as more impaired compared to normative data derived from relatives of psychiatric patients on scales measuring belligerance, verbal expansiveness, negativism, withdrawal and retardation, confusion, and behaviors indicative of generally socially inappropriate behavior.

Emotional Effects of TBIDescription of Deficits

Bond (1984) notes that about the time that post-traumatic amnesia ends, TBI patients may pass through a period of time marked by hypomania or 'organic excitement'. Patients may also begin exhibiting paranoid delusional behaviors, and Bond notes that these syndromes are most common in patients with left hemisphere damage. Schizophreniform psychoses are found to occur in patients with TBI in higher rates than the normal population. Bond suggests that premorbid personality and social supports may be the most important factors in the development of schizophreniform syndromes. Silver, Yudofsky, and Hales (1987) note that psychoses may develop in as many as 5 percent of patients with TBI, and are often associated with post-traumatic seizure disorders. As well, between 1 and 15 percent of patients with schizophrenia have a history of TBI (Silver, Yudofsky, & Hales, 1987). Bond (1984) as well as Butler and Satz (1988) note that feelings of depression are common after TBI, usually occurring between 3-6 months post injury, and are frequently transient. Depressed affect is almost always related to growing awareness of physical, mental and social consequences of the TBI (Bond, 1984). However, no epidemiological data

currently exists documenting the actual rate of depression among patients with TBI (although this is being studied in the larger population from which this study draws a subsample). Silver, Yodosfsky, and Hales (1987) report that TBI often worsens premorbid affective disorders, while major depression and mania, classified in DSM-III-R as Organic Affective Syndromes, can develop following TBI. Anxiety is less common among patients who sustain severe TBI, but is a common aftereffect of mild injury, and may contribute to a delay in returning to work (Bond, 1984).

O'Hara (1988) has organized symptom clusters of emotional difficulties arising following TBI. She identifies the following clusters. The first, depression, is characterized by feelings of confusion and loss while the patient sorts out what is happening and attempts to resolve the lost past self. The second cluster involves anger and blame. Often patients may act aggressively, often without provocation in interactions with the treatment team, family, or helping professionals. The third cluster is labelled as denial and defensiveness. patients with TBI may adopt a style in which deficits are minimized, occasionally to the point where treatment is refused. The fourth cluster, somatization, is common among persons who have a premorbid history of difficulty

dealing with emotional loss or change. TBI represents a trigger for development of somatization symptoms. Regression and dependency form a cluster characterized by a profound feeling of lack of control, indecision, and self-doubt. Occasionally, these beliefs can be reinforced by family members. Finally, psychotic disintegration is a cluster, although rare, that can lead to "escalating depression, paranoia, and suspiciousness" (p. 29).

In his review, Miller (1986) notes that there is evidence that emotional disturbance following head injury may follow a three stage process. Stage one is characterized by recovery of consciousness, and involves dealing with disorientation, disinhibited affect (agitation and aggression), and rarely, psychotic-like symptoms (hallucinations and delusions). Stage two consists of adjusting to the changes that TBI brings and involves introversion, egocentricity, memory and judgement deficits as well as feelings of anxiety. Stage one and stage two symptoms are often related to severity of injury. Stage three involves relatively permanent personality changes, which can involve flattened affect, anhedonia, and errors in judgement.

Empirical Evidence

Fordyce, Roueche, and Prigatano (1983) examined 52 cases of TBI in which patients completed an MMPI profile either within six months of injury or greater than six months post-injury. MMPI profiles from patients in the latter group were reflective of greater emotional distress, specifically having higher F, Depression, Psychopathic Deviate, Psychasthenia, Schizophrenia, and Social Introversion scale scores. The authors suggest that the increase in emotional distress later in recovery may be due to "enhanced awareness of residual deficits and problems in social adjustment which are not obvious to the patient during the acute period following trauma" (p. 623).

Stambrook, Peters, Moore, and Hawryluk (1988), in a study investigating quality of life outcome one to seven years post-TBI, document that patients recovering from severe TBI report feeling more depressed, hostile, and confused than moderately injured patients with TBI. In addition, Stambrook, Moore, Peters, Zubek, MacBeath, and Friesen (1991) report evidence that the "fallout" from head injury is unique among patients who have experienced neurological trauma. Severely head injured patients were found to have greater psychosocial problems compared to survivors of spinal-cord injuries, while spinal-cord injured patients experienced greater

physical difficulties. Paniak, Shore, Rourke, Finlayson, and Moustacalis (1992) report similar patterns between TBI and spinal-cord injured samples in long-term vocational functioning.

Several studies examining the family's perception of emotional changes in head injured relatives also provide evidence for emotional changes that occur after TBI (Peters, Stambrook, & Moore, 1988; Peters, Stambrook, Moore, & Esses, 1990; Lezak, 1978). Bond (1986) notes that relatives consistently report that patients display emotional changes including poor temper control, irritability, loss of control over mood and inappropriate social behavior such as excessive talking and childishness. Relatives of TBI patients also often report personality changes that remain many years following the accident.

Interpersonal Effects of TBI

The sequelae of TBI also impact upon the relatives of the TBI patient. In several contemporary studies, research has examined this neglected area and have found evidence that the long-term stressors that are part of living with a head injured person have clear effects on the marital relationship and psychological status of relatives.

Stambrook, Moore, and Peters (1990) compared relatives' ratings of patient's social behavior and activity to norms compiled on normal and psychiatric groups. They found that relatives rated patients with moderate TBI as less socially adapted than relatives ratings of normals but more socially adapted than relatives ratings of psychiatric patients. Persons recovering from severe TBI were rated equal to, or more socially impaired than psychiatric patients. The implication of this finding is that family members of patients with TBI may share the social stigma that family members of a psychiatric patient may experience. Peters, Stambrook, Moore, and Esses (1990) found that in a group of married male patients with TBI, affectional expression and dyadic adjustment, as perceived by the wives of the head injured patients, was lower when injuries were more severe. Peters, Stambrook, and Moore (1988) report that wives of husbands who were severely injured had higher levels of depression than wives of less severely injured husbands. The degree of depression was found to be related to increased levels of general psychopathology displayed by their husbands. Moore, Stambrook and Peters (1992) used the family life cycle model to guide selection of potential moderating factors in multiple regression analyses using quality of life measures as dependent measures. They found that TBI that occurs

near the family life cycle task of raising young children may represent an especially difficult challenge since the TBI patient may involve an extra caregiving burden and the loss of a caregiving parent in the family system.

Lezak (1978) notes that caretakers of CHI patients typically feel trapped, isolated, abandoned by family and friends; may have unrealistic expectations for the patient's recovery; and may be abused by the head injured patient. Personality changes also provide significant stressors for caretakers. The implication of these findings is that the support system on which the TBI patient must depend is comprised of a very small number of people, very close to the head injured person, who are under a great deal of stress and having to deal with both the head injured persons' and their own problems.

Perhaps as a result of these stresses that compromise the quality of communication between the TBI family member and caregiving family member, or because of role conflicts, interaction patterns characterized by "double bind communication" are common. Krefting (1990), in a small sample study of long-term patients with TBI and their families describes double-bind communication patterns between TBI members and family, treatment team, and other helping professionals. She points out that especially in the early stages of

recovery, patients with TBI may be cognitively unable to perceive both sides of double-bind messages - an outcome that may lead to feelings of low personal control and helplessness.

Rehabilitation Interventions Following TBI

Stambrook, Peters, and Moore (1989) traced the course of the TBI patient through the health care system, focusing specifically on the role of the neuropsychologist/rehabilitation psychologist as a member of a multidisciplinary team. They described the multiple influences on recovery, from the patient level to the larger social/cultural network, and noted three main temporal crises confronting the TBI patient: the initial injury, discharge from inpatient care, and discharge from outpatient care. At each stage in the recovery process, the role of the treatment team change. As the patient moves towards discharge, and his/her physical status improves, the relative role of the neuropsychologist becomes larger. It is at these stages of recovery that the patient faces greater awareness of the deficits following TBI, and is at risk for developing cognitive belief systems that may limit the extent to which he/she can utilize strengths and coping strategies to compensate for these deficits (Moore, 1989). However, these aspects of the recovery

process have seldom been addressed by the rehabilitation literature.

Psychological, neuropsychological and rehabilitation retraining efforts following TBI are primarily focused on three main goals: 1) using behavioral strategies to train compensatory behaviors, 2) psychometrically guided retraining to teach skills needed to improve test performance, and 3) physically guided efforts which focus on retraining components of complex behaviors (Stambrook, Peters, & Moore, 1989). Gouvier, Webster, and Blanton (1986) note that cognitive retraining efforts must be guided by assessment which seeks to identify the functional unit in a specific behavior that requires remediation. For the most part, these strategies are focused on retraining in the areas of attention and vigilance (Niemann, Ruff, & Baser, 1990), memory, language deficits, perceptual and judgement deficits and activities of daily living (Gouvier, Webster, & Blanton, 1986). Other targets for intervention include: difficulties in planning and decision making (Cicerone & Wood, 1987) and increasing compliance and decreasing aggression (Tate, 1987). Wilson (1987), in her book Rehabilitation of Memory outlines a programme for assessing and retraining memory skills using visual imagery, fading, cues (letter-sequencing, mnemonics),

rhymes, and the PQRS method (preview, question, read, state, test), relying heavily on behavioral principles. Sohlberg and Mateer (1989) outline a "process-specific" approach, involving six principles: 1) theroretically defined cognitive process areas, 2) repetition of therapy tasks, 3) hierarchical organization of goals and objectives, 4) data-based treatment, 5) utilization of generalization probes to determine treatment success, and 6) highest level success measures are improvements in vocational and independent living outcomes (p. 22). They go on to review rehabilitation methods in orientation, attention/concentration, memory, visual processing, language impairments, executive functions, reasoning, and problem-solving. Despite the potential inherent in these programs, scientific evaluation of their efficacy is hampered because of a wide variety of methodological difficulties (Benedict, 1989).

Cognitive retraining efforts are typically reserved for the more severely injured TBI patient who sustain overwhelming physical and cognitive deficits following injury. Surprisingly, there is little mention in the literature involving intervention with a larger group of patients with TBI who recover sufficiently to be discharged from formal rehabilitation programs but continue to experience what

can be profound difficulties long after injury. Wilson (1987) reviews two studies involving rehabilitation of memory functions in mild TBI patients (pp. 184-188, 199-205). These studies show that for persons recovering from mild TBI, PQRSST study techniques, mental images and provided images are helpful memory aids. Sohlberg and Mateer (1989) point out that for this large population, "Perhaps the most important components of a minor brain injury treatment program are psychologic support and counseling" (p. 387). Forrest (1987) provides suggestions in working with patients with TBI early in the recovery process. Intervention strategies involve acknowledging and working through feelings of anger, depression and anxiety, providing structure, establishing contingencies and providing reinforcement for adaptive behavior, and reframing deficits as difficulties to be overcome. Butler and Satz (1988) note that for the TBI patient, issues concerning grieving a loss of self (particularly in vocational areas) are paramount. However, although several review and clinical practice articles exist in the literature providing conceptual models and suggestions for the practitioner involved in psychotherapeutic work with a person recovering from TBI (Butler & Satz, 1988; Cicerone, 1989; Long & Haban, 1986; Miller, 1991; Prigatano, 1991), no literature exists as to the efficacy of psychotherapeutic

intervention in this population, and there is little mention of the usefulness of individual psychotherapy for the TBI patient outside the rehabilitation setting.

Summary

Traumatic brain injury is a neurological condition involving what can be long-term and pervasive deficits in a wide range of psychosocial domains. Previously, most intervention programs have generally focused on treatment of persons sustaining severe TBI, specifically in retraining programs designed to maximize vocational prospects (Gouvier, Webster, & Blanton, 1987). Unfortunately, for a larger portion of patients with TBI who do not meet criteria for inclusion in formal rehabilitation programs, they must deal alone with many negative and permanent life changes brought about by TBI.

The central hypothesis of this research project is that persons recovering from TBI are at risk to develop self-limiting cognitive belief systems in efforts to account for the cognitive, behavioral, emotional, and interpersonal changes involved in TBI. Further, such belief systems are characterized by external locus of control, a helpless/hopeless cognitive style, and poor choice of coping strategies. The self-fulfilling nature of these belief systems may in turn lead to

poorer quality of life outcomes, reinforcing the belief systems, and creating a negative cycle. Moore (1989) suggests three possible contributors to self-limiting belief systems: a) a lack of insight or understanding of the cause of inappropriate, self-defeating behaviors and/or emotions, b) difficulties in controlling aspects of his day-to-day life, and c) low insight into inappropriate behavior leading to negative consequences. The common theme in these three explanations is that the "patient may not have the cognitive abilities, either in terms of self-awareness, self-control, or the ability to determine antecedents of consequences in his or her world to allow the individual to act upon the environment" (Moore, 1989, pp. 17-18). This theme is echoed more generally by Bulman and Wortman (1977) who suggest that for people who must cope with permanent, unavoidable life changes, "the ability to perceive an orderly relationship between one's behaviors and one's outcomes is important for effective coping" (p. 362).

Early evidence (Moore, 1989) suggests that this hypothesized model may be fruitful, and may lead to a new aspect of rehabilitation intervention using empirically based strategies designed to break negative cycles of cognition and affect. We turn next to examine the theoretical models and empirical evidence

(including early work on TBI) on cognitive beliefs and their moderating effects in chronic illness.

COGNITIVE MODERATORS IN CHRONIC ILLNESS

Introduction

In this section, we will examine a conceptual model guiding the present study, review the theoretical concepts involved in the model, and look at the extant literature empirically testing the theoretical concepts in a variety of chronic illnesses.

In this study, the following conceptual model guides the research process (see Figure 1). The TBI patient experiences noncontingent or suboptimal outcomes in cognitive, behavioral, emotional, and interpersonal domains. These outcomes are relatively permanent changes in the patients' life situation, and over time lead to changes in cognitive beliefs. In the present model, three nested cognitive-belief theoretical concepts are presented: 1) the locus of control construct, 2) attributional style (the learned helplessness concept), and 3) primary and secondary assumptions involved in the cognitive theory of depression (expressed behaviorally as automatic thoughts). These concepts are nested (i.e., locus of control as part of attributional style, attributional

style as part of primary and secondary assumptions) as these concepts overlap and all contribute to lowered self-esteem and self-efficacy. In other words, generalized expectancies of external locus of control, stable and global attributional style for negative outcomes, and automatic thoughts subsequent to inaccurate primary and secondary assumptions arising from pervasive noncontingent and suboptimal outcomes in many aspects of the TBI patient's life lead to general beliefs of helplessness and low expectations for personal success when operating on the environment. As a result of these beliefs as well as ongoing 'failure' experiences, the TBI patient experiences a negative emotional state, which feeds back to the cognitive beliefs, and a negative motivational state, both of which may lead to poor selection of coping strategies. Low motivation and suboptimal selection of coping strategies may lead to increased noncontingent and suboptimal outcomes, strengthening the negative cycle.

Insert Figure 1 about here

TRAUMATIC BRAIN INJURY

Multidimensional Sequelae of Traumatic Brain Injury

BEHAVIORAL

COGNITIVE

EMOTIONAL

INTERPERSONAL

NON-CONTINGENT / SUBOPTIMAL OUTCOMES

COGNITIVE BELIEF STRUCTURE

LOCUS OF CONTROL

ATTRIBUTIONAL
STYLE

PRIMARY AND
SECONDARY
ASSUMPTIONS

External
LOC

Internal / Stable
Global

Automatic
Thoughts

LOW PERSONAL CONTROL OF ENVIRONMENTAL CONTINGENCIES

NEGATIVE EMOTIONAL
STATE

NEGATIVE BEHAVIORAL
MOTIVATION

PALLIATIVE
EMOTION
FOCUSED

SELECTION OF COPING STRATEGIES

In this model, psychotherapeutic interventions designed to "break" the negative cycle can be seen, in part, to serve much the same function as medical efforts to prevent secondary damage to the brain from increased intracranial pressure. Psychotherapy will be unable to remediate the substantive physical trauma and the resulting noncontingent and suboptimal outcomes arising from such damage, but will be able to target the perceptions and explanations of these outcomes and reduce added negative outcomes that may arise because of the additive effects of a negative belief system and negative outcomes. In the following section, we will explore in more detail the theoretical concepts involved in this model. We shall review the locus of control, attributional style, cognitive theory of depression, and coping constructs in the following sections, followed by a review of empirical research examining the moderating effect of cognitive beliefs in chronic illness.

Locus of Control

Simply put, the locus of control (LOC) construct consists of the generalized expectancies of internal (within the person) or external (outside the person) forces responsible for reinforcement. Although the initial intent of the LOC concept was to provide a

convenient abstraction to describe an individual's causal beliefs, and was not a unidimensional, stable personality construct, many researchers have misapplied the LOC concept as a "trait" that applies to many domains (Lefcourt, 1981). Possibly the use of Rotter's Internal-External Scale (Rotter, 1966) in the literature is the most salient example of misapplication of the LOC construct.

Historically, development of scales measuring LOC beliefs began with the early work of Phares (1955) and James (1957). These scales were developed to determine whether people had stable attitudes regarding the causes of outcome and if these attitudes influenced behavior. Lefcourt (1981) points out that the Rotter Internal-External Scale (Rotter, 1966), that has since become an extremely widely used scale in the literature, was initially planned as a multidimensional scale but because of a failure in factor analyses to validate the constructed scales, the instrument was modified to its present 23-item single factor form. This single factor scale may have contributed to the misapplication of the LOC construct as a unidimensional trait. More recently, multidimensional and area-specific scales have been developed and validated (i.e., Levenson, 1974; Wallston, Wallston, & DeVellis, 1978). These scales will be examined in more detail in a later section.

Attributional Style and Learned Helplessness

Based on animal work in the early 1970's, the learned helplessness construct includes a model of depression derived from observations that uncontrollable outcomes or response-independent outcomes lead to motivational deficits, disruption of learning, and emotional disturbance (Seligman, 1975). Following the initial experiments with animals (see Seligman, 1975 for a review), the triadic design was used to investigate the effects of learned helplessness in human subjects (Hiroto, 1974).

The triadic design consists of three groups of subjects. Two groups were given pretreatment protocols consisting of identical exposures to loud noxious noise. Subjects in the first group were able to terminate the noise by pressing a button, while subjects in the second group were unable to act on the environment to control noise exposure. A third control group received no pre-exposure. In a test phase, subjects in the second group who were previously unable to control noise exposure failed to acquire an escape response to terminate loud noise, while subjects in the first and third groups learned the new escape response. Essentially, human subjects in the second group behaved much like the animal subjects in earlier experiments - they sat passively and tolerated the noxious stimulus.

Followup experiments using instruction manipulations to suggest control (skill) or the absence of control (chance) in the test phase, as well as using personality inventories to assess LOC beliefs, resulted in findings suggesting that in addition to exposure to noncontingent outcomes, chance instructions and an external LOC also contributed to behaving in a helpless manner. Further experiments (Hiroto & Seligman, 1975; Miller & Seligman, 1975) found that exposure to uncontrollable events impairs new learning and produces a cognitive set where responses are independent of outcomes (an external LOC). Seligman (1975) noted that subjects exposed to uncontrollable events showed six outcomes that parallel behavior commonly seen in depression. These include: a) lowered initiation of voluntary responses, b) negative cognitive set, c) helplessness and depression persisting after multiple experiences, d) lowered aggression, e) loss of appetite, and f) physiological changes (i.e., norepinephrine depletion, cholinergic overactivity).

The observation that motivational, cognitive and emotional deficits occur following noncontingent outcomes, formed the first form of the learned helplessness model. Subsequently, due to further research investigating the validity of the model in human depression, the model was modified to emphasise

cognitive aspects. Specifically, attributions or internal explanations persons make for events form the central concepts in learned helplessness theory (Abramson, Seligman, & Teasdale, 1978). Attributions include responses to three main questions a person asks him or herself (or dimensions a person evaluates) when appraising a stressor. The first, the stable/unstable dimension, involves how long the stressor will last. The second, the global/specific dimension, involves how pervasive and general the stressors effects will be on the person's functioning. The last, the internal/external dimension, involves determining the source of the stressor. Further modifications (Alloy, Abramson, Metalsky, & Hartlage, 1988; Abramson, Metalsky, & Alloy, 1989) have produced the hopelessness theory of depression. This most recent formulation views learned helplessness as a co-factor that, along with stressful life events, synergistically produces depression. An attributional style consisting of stable, global and internal explanations for bad events contributes to, but is not necessary or sufficient for, the development of depression. As such, it is a risk factor and is correlated with depression.

Beck's Cognitive Distortion Model

Beck's model views the etiology of depression as arising from faulty schemas (templates or organized explanatory systems used to speed perception and organize experience) of reality leading to "depressogenic" assumptions and thinking (Hammen, 1985). Prominent in this model is the concept of the cognitive triad of negative thinking in which a person views the self, his or her situation, and the future in pessimistic terms. Errors in thinking such as magnification and minimization support the negative beliefs that the person holds (Nietzel & Bernstein, 1987) by focusing on the negative and pessimistic aspects of reality. A similar emphasis on illogical and inaccurate thinking is present in Beck's model of anxiety (Beck & Emory, 1985). In this model, anxiety results when a person perceives a situation as one in which he is vulnerable - that he is powerless and in danger. Anxiety becomes a clinical difficulty when dysfunctional cognitive processes such as selective abstraction and catastrophizing occur, leading to thoughts of self-doubt. As in the model of depression, Beck's models focus on the negative spiral of inaccurate ways of thinking and perceiving the world - how a person, once he or she learns to think about reality in a negative manner, may develop a habit of

thinking in a constrained and negative manner, never sampling alternative positive thoughts, behaviors, and perceptions.

In Beck's model, there are three levels of cognitions that lead to negative (depressed or anxious) affect. The deepest level of schemas are called primary assumptions. These schemas are similar to Guidano and Liotti's (1983) metaphysical hard core, which consists of rigid, dogmatic structures of self-knowledge that serve to organize thinking about the self. These primary assumptions are broad beliefs that apply over several domains. The middle level of cognitions are called secondary assumptions. These consist of themes and beliefs that are more situation specific. In Guidano and Liotti's model, this level of cognitions include representational models of the self, including cognitions about personal identity such as self-identity and self-esteem. This level of cognition is more easily changed compared to the primary assumption level, but primary assumptions guide the content of secondary assumptions. In turn, secondary assumptions lead to the most easily accessed and third level of cognitions in Beck's model - called automatic thoughts. When these thoughts follow from negative self-schemas, the automatic thoughts can consist of cognitive errors which can lead to negative affect.

In our conceptual model, attributional style can be viewed as a primary assumption - a means of organizing and accounting for why events occur in the person's life - this helps to explain the nested construction of the model. In another way, because primary assumptions are rarely tested and tend to be resistant to change, they represent "habits" of thinking that are only slowly modified, and once present, can lead to pervasive changes in the way an individual perceives his or her environment.

Coping

Folkman and Lazarus (1984) define coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). They go on to point out that this definition uses: 1) a process rather than trait oriented approach to coping, 2) limits coping to behaviors and thoughts that require effort, 3) avoids confounding coping with outcome by defining coping independent of results of coping, and 4) avoids linking coping with mastery. Folkman and Lazarus' model will be reviewed by examining the stages and functions of coping, and by considering how determination of coping effectiveness should take place.

Stages in the Coping Process

Folkman and Lazarus outline three stages in the coping process. Anticipation is the time period during which the stressful event has not occurred, but the individual cognitively appraises the imminence of the stressor and likely outcomes. This process of cognitive appraisal is a central concept in the coping model, and is divided into two tasks. The first, primary appraisal, involves examining the existing harm or loss, future threat, and degree of challenge involved in the stressor. The second task, secondary appraisal, involves evaluation of coping resources and options (Taylor, 1986). The time period involving exposure to the stressor is called the impact period, Folkman and Lazarus (1984) suggest that most psychological energy is involved in dealing with the stressor during this stage, and that a primary task for the individual is dealing with unanticipated differences in the stressor or situation, requiring the individual to reappraise the significance of the stressor. The long-term implications of the stressor, both in terms of the personal changes involved, and the future ability of the person to deal with similar situations in the future are assessed in the postimpact period.

The Functions of Coping

Folkman and Lazarus (1984) go on to outline the functions of coping by dividing coping into two main forms: Emotion-focused and problem-focused coping. Emotion-focused coping "involves efforts to regulate the emotional consequences of the stressful event" (Taylor, 1986, p. 202), mostly through defensive, intrapsychic efforts. Examples of these coping efforts include: reappraisal, involving reframing the event in a more positive and less negative light, and avoidance or denial of a stressor. In some situations, individuals may increase their level of emotional discomfort to "psych themselves up" for a stressor (i.e., an exam). Problem-focused coping efforts involve "attempts to do something about the stressful conditions that are harming, threatening, or challenging an individual (Taylor, 1986. p.202). These strategies usually take the form of externally directed efforts to change the environment (and reduce the stressor), but can also be inner directed (usually involving skill development). Problem-focused and emotion-focused coping strategies are often combined and used together. At times, this can be beneficial (i.e., both reframing a stressor as less threatening, and engaging in self-improvement to deal with the stressor more adequately), but can also be self-

defeating [i.e., gathering increasing amounts of information on an illness, while continuing to re-evaluate the impact of the stressor] (Folkman & Lazarus, 1984).

Evaluating the Effectiveness of Coping

Both Folkman and Lazarus (1984) and Taylor (1986) point out that evaluating the effectiveness of coping is not a simple matter. There are several criteria (physiological, return to pre-stress activity, psychological distress) to evaluate the efficacy of coping efforts (Taylor, 1986). Folkman and Lazarus (1984) suggest that effective coping entails dealing successfully with both emotional distress and the source of the problem, but go on to point out that many stressors may not be amenable to successful adaptation on both dimensions.

Clinical Usefulness of Cognitive Concepts

In the review above, we have examined the theoretical constructs involved in the present study. As the purpose of the study is ultimately linked to intervention, evaluation of both the clinical utility and empirical validity of the constructs are necessary.

The greatest clinical utility in the present model is the potential rapid identification of self-limiting overgeneralized negative belief systems using multidimensional, domain specific self-report questionnaires. Once identified, the clinician will also have the ability to assess the pervasiveness of the belief systems in order to prioritize interventions efficiently. Finally, assessment of self-statements and automatic thoughts will give the clinician important information to begin working on the metaphysical hard-core beliefs causing non-adaptive thought behaviors.

The Interaction of Cognitive Deficits and Cognitive Beliefs

Another important consideration that must be made when evaluating the clinical utility of these measures is the potential causal factor of organic cognitive changes on cognitive moderators. We have reviewed above how the problem-solving style of the TBI patient tends to be concrete (p. 19). Such "black and white" thinking is often a hallmark of persons with cognitive distortions. If organic damage is indeed responsible for cognitive belief changes, we must carefully consider how effective interventions of this type may prove to be, particularly when such intellectual changes can be long-lasting and perhaps permanent.

However, evidence does exist suggesting that organic factors may be less involved in belief system change compared to environmental forces. Moore, Stambrook, and Wilson (1992) compared LOC beliefs of mild, moderate and severe TBI patients. If organic factors proved to influence the belief systems of patients with TBI, one would expect differences between the groups. Comparisons between severity groups revealed no differences between groups. Perhaps then, all severities of patients with TBI deny (or fail to appreciate) the impact of the trauma in a similar fashion independent of injury severity. Differences on LOC measures between patients with TBI and normative data might then be expected. Comparisons of this kind also revealed no differences between the TBI groups and normative data. However, further analyses revealed significant relationships between LOC beliefs and outcome measures. Cognitive beliefs may be shaped by factors independent of injury severity, and yet remain associated with outcome.

Despite these preliminary data analyses, we can still assume that psychotherapy with patients with TBI, especially focusing on modifying belief systems will be difficult because of intellectual changes brought on by the brain injury. The burgeoning area of cognitive rehabilitation points to the huge potential benefits

associated with remediating cognitive deficits, and the concentrated creative efforts of many professionals to overcome the obstacles involved in these pursuits. The difficulties inherent in this approach should not dissuade us from evaluating its potential utility in this population, particularly as the techniques for its use are already available.

In the next section, we will review the empirical evidence suggesting that these theoretical concepts have validity as moderating factors in the adjustment to chronic illness.

Cognitive Moderators in Chronic Illness: Empirical Evidence

Chronic Pain

Crisson and Keefe (1988) investigated the effects of LOC beliefs as moderators of outcome among 62 consecutive chronic pain patients. Using the Multidimensional Health Locus of Control Scale (MHLC; Wallston, Wallston, & DeVellis, 1978), Crisson and Keefe found that Chance LOC was significantly correlated with use of three pain coping strategies; helplessness (catastrophizing, decreasing activity, reports of low ability to control pain), diverting attention, and praying/hoping. In addition, Chance LOC beliefs were associated with increased self-reports of

psychological distress as measured by the Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1983): Specifically, obsessive-compulsive, depressed and anxious affect. In a follow-up study, Keefe, Crisson, Urban, and Williams (1990) investigated the moderating effects of coping behavior on psychosocial outcome on these same patients. Results determined that use of helplessness pain coping behaviors was related to increased SCL-90-R global psychosocial distress and depression as measured by the Beck Depression Inventory (BDI; Beck, 1972). Use of diverting attention and praying/hoping strategies were associated with higher levels of reported pain. Keefe et al (1990) conclude that content of coping that maximizes control and minimizes negative self-statements may be more important in promoting high quality of life than quantity of coping.

Post-Traumatic Stress Disorder

Solomon, Mikulincer, and Benbenishty' (1989) followed-up a random sample of 104 Israeli soldiers diagnosed as suffering Post-Traumatic Stress Disorder (PTSD) to determine the relative contribution of battle intensity, LOC beliefs and coping behavior on outcome one year post-PTSD diagnosis. Subjects holding internal LOC beliefs were found to use greater amounts

of problem-focused coping strategies (behaviors designed to modify the environment to decrease the cause of stress), while external LOC subjects used emotion-focused strategies (palliative, inner-focused behaviors designed to deal with negative emotions). Results suggested that when battle intensity was low, the role of LOC as a moderating factor increased, with higher internal LOC beliefs related to better outcome. Alternatively, when battle intensity was high, the role of LOC did not contribute to prediction of outcome. This finding was interpreted to indicate that: 1) High battle intensity is characterized by low ambiguity of the cause of stress, limiting the causal search and role of LOC beliefs as moderators or, alternatively, 2) in high battle intensity, high stress overwhelms even those subjects holding internal LOC beliefs, who utilized more functional coping strategies. Although the causal sequence could not be determined in this study, the authors concluded by noting that control beliefs "are associated with the appraisal of battle as threatening, the arousal of negative emotions, the selection of coping strategies and the severity of post-traumatic stress disorder" (p. 142).

Rheumatoid Arthritis

Nicassion, Wallston, Callahan, Herbert, and Pincus (1985) investigated how helplessness and LOC were associated with quality of life among 219 rheumatoid arthritis patients. Self-report questionnaire data measuring helplessness were correlated with low internal MHLC measured LOC, low self-esteem, depressed and anxious affect, and increased reports of difficulties in carrying out activities of daily living. Keefe et al (1987) investigated the moderating effect of coping behaviors among 87 osteoarthritic patients' self-reports of pain and physical limitations. Patients who utilized coping strategies reflective of control over pain and limiting catastrophizing thoughts reported significantly less functional impairment, and were able to accomplish physical tasks (walking/transferring) in less time as compared to subjects who reported low control of pain and tended to catastrophize. These findings were present even after demographic and medical status variables were controlled for.

Affleck, Tennen, Pfeiffer, and Fifield (1987) investigated whether patient's degree of control over treatment was related to improved adjustment among 92 chronic arthritis patients. Results demonstrated that patients who reported greater personal control over treatment and daily symptoms experienced less

psychosocial distress and more positive adjustment. In addition, results indicated that beliefs that health care providers were in greater control of daily symptoms (much the same as a Powerful Others LOC in the MHLC) were associated with greater affective distress. Finally, among those patients who experienced severe symptoms and held high self-control beliefs, psychological adjustment was poor.

In a study comparing the relative strength of physical and psychological variables in predicting pain behavior, Anderson et al (1988) examined the relationship of self reports of depression, anxiety and helplessness to observations of physical status and discomfort in 64 patients with rheumatoid arthritis. Although reports of depression and helplessness were positively correlated with reports of pain behavior (in a regression analysis), none of the psychological predictors accounted for additional variance when demographic and physical variables were entered first. The authors suggest that physical pain and limitations may be more related to pain behaviors than psychological variables.

End-Stage Renal Disease

Devins, Binik, Hollomby, Barre, and Guttman (1981) investigated the moderating effect perceptions of LOC have on symptoms of depression and helplessness in a sample of 70 hemodialysis patients. External LOC beliefs in non-illness dimensions of life were significantly correlated with increased depression and helplessness in this sample, while findings indicated that reports of low control over dialysis were not related to reports of depression and helplessness. In a follow up study, Devins et al (1986) tested the hypothesis that defensive denial serves as a defense against depression in end-stage renal disease. Using a card-sort method, 70 patients rated dimensions of day-to-day life in terms of their intrusiveness, control and similarity. Factor analyzed card-sort data demonstrated a clear distinction between illness-related and non-illness-related aspects of everyday life. However, no evidence emerged supporting the hypothesis that illness-related aspects of life are denied. The authors suggest that perhaps "defensive denial" is actually high levels of positive adjustment.

Hardiker, Pedley, Littlewood, and Olley (1986), using open-ended interview techniques, examined how coping strategies are related to illness roles among 20 randomly selected chronic renal failure disease patients treated by home dialysis. Older patients

tended to adopt coping styles where they gave up previous lifestyles and were resigned to their illness. Younger patients tended to react to their illness with anger and resentment. Morris and Jones (1989) compared adjustment between 69 dialysis and 69 kidney transplant patients. Transplant patients were better adjusted and had LOC scores reflecting internal LOC beliefs. Less well adjusted were patients undergoing continuous ambulatory peritoneal dialysis and hemodialysis in a hospital. Patients in these groups also reported significantly more external LOC beliefs. Patients undergoing home dialysis were not significantly different from transplant patients. As a group however, transplant patients were significantly better adjusted compared to dialysis patients.

Liver Disease

Farid, Johnson, Lucas and Williams (1988) compared 73 patients with non-alcohol related liver disease and 57 patients with alcohol liver disease LOC beliefs. While both groups of patients were equally aware of the seriousness of their illnesses, and rated the severity of their illnesses close to physicians ratings, alcohol related liver disease patients reported higher internal LOC beliefs. The authors interpreted these results as prognostically positive, reflecting awareness of

etiology, insight into seriousness of their illness, and implicating the importance of education in treatment interventions.

Thoracic Surgery Patients

DuCette and Keane (1984) used open-ended interview techniques to assess the attributions of 90 thoracic surgery patients concerning the cause of their illness. Results indicated that patients who attributed the cause of their illness to heredity experienced the best outcomes. Patients who attributed illness to bad habits or who reported no attributions experienced significantly worse medical outcomes based on medical chart reviews. The authors suggest that in the latter two groups, feelings of personal control over the illness were either lacking (no attribution) or were combined with feelings of self-blame (bad habit attribution).

Cancer

Taylor, Lichtman, and Wood (1984) interviewed 78 breast cancer patients to examine the moderating effects that illness attributions have on adjustment to cancer. Results from open-ended interviews indicated that beliefs in one's own present control or health care professionals' control over cancer were

independently associated with improved adjustment. In addition, cognitive and behavioral attempts to gain control (i.e, thinking and behaving in positive ways) were also associated with improved adjustment. Ten Kroode, Oosterwijk, & Steverink (1989) also used open-ended interviews to investigate whether conflicts between medically based diagnoses and patient illness explanations contributed to outcome in 33 cancer and 14 myocardial infarction patients. Findings indicated that a majority (23 of 31) cancer patients had both a medical and idiosyncratic attribution, while 11 of 12 myocardial infarction patients had a medically based attribution alone. The cancer patients also reported greater levels of ambivalence and conflict with medical personnel. Watson, Greer, Pruyn, and Van Den Borne (1990) administered a 22-item LOC scale specifically designed for cancer patients to 68 cancer patients. Internal LOC was related to interview data reflective of a "fighting spirit" and was more common among patients in remission or early stages of cancer and religious control beliefs were more common among elderly cancer patients. Despite these patterns, LOC beliefs were not found to be related to psychological adjustment.

Dunkel-Schetter, Feinstein, Taylor, & Falke (1992) adapted the Ways of Coping questionnaire to investigate

the coping patterns of 603 cancer patients. Factor analysis of the WOC items revealed five subscales: Seeking/Using Social Support, Cognitive Escape-Avoidance, Distancing, Focusing on the Positive, and Behavioral Escape-Avoidance. Distancing was the most common coping strategy, although many utilized a "flexible" coping style characterized by multiple coping strategy use. Distancing and the two escape-avoidance coping strategies were found to be most associated with subjective ratings of stress (on a four-point likert scale). No other analyses were conducted examining the relationship between coping and outcome.

Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, and Cruzen (1993) examined the association between perceived control and outcome in a sample of 71 cancer patients. Using their own nine-item locus of control scale, the authors found significant associations between control beliefs (particularly a sense of mastery rather than an ability to evade stressors) and less maladjustment, financial strain, physical dysfunction, and marital dissatisfaction. Control beliefs were also shown to be associated with irrational beliefs. Perfectionistic and catastrophizing beliefs (terms associated with rational emotive therapy) were associated with lower control scores.

Tinnitus

Kirsch, Blanchard, and Parnes (1989) investigated the relationship between coping and adjustment among 77 patients experiencing tinnitus (ringing in the ears) for at least 6 months. Using a single item scale of coping consisting of a rating between 0 to 100 of how well the patient was able to "keep the tinnitus from interfering with concentration and daily activities, and being able to keep the tinnitus from bothering them" (p. 212), patients responding with ratings above 60 reported significantly less depression, anxiety, psychosomatic symptoms as well as less loudness and annoyance of tinnitus.

Bulimia

Goebel, Spalthoff, Schulze, and Florn (1989) compared 44 women with bulimia and 38 matched controls on measures of depression, attributional style, and dysfunctional attitudes. Results indicated that patients with bulimia endorsed significantly more dysfunctional attitudes, held less positive attributional style for bad events (largely due to internal and global beliefs) and were more depressed compared to controls. However, only self reports of depression entered as a significant predictor of severity of bulimia.

Psychiatric Disorders

Among the earliest studies conducted to determine the effects of cognitive beliefs in the adjustment to illness is Soskis and Bowers' (1969) study investigating the relationship of attitudes concerning psychiatric illness and post-hospitalization adjustment among 32 schizophrenic patients 3 to 7 years post-discharge. Results demonstrated a relationship between a positive, integrative attitude towards the illness and feelings of personal control over the resolution of daily problems with positive outcomes. Patients experiencing less positive outcomes tended to report blaming themselves for their illnesses, rather than external factors; tended to rely heavily on internal insight into meeting daily problems; and tended to have few paranoid diagnoses.

McGlashan, Levy, and Carpenter (1975) furthered this line of research, suggesting that positive integration and a style of coping called "sealing over" formed two ways of cognitively dealing with the reality of mental illness. They define integration as the "melting of the illness into a continuous set of life values" (p. 1269), and sealing over as "denial of the psychotic experience itself (the patient either repressing the psychotic experience or regarding it as irrelevant to his life)" (p. 1269). The authors went

on to compare 33 patients with schizophrenia using these coping styles in their recovery. Using interview data and patient record data, patients were separated into "integrator" and "sealing over" groups. Integrators tended to view the psychosis as having a greater impact on their lives; accepted responsibility for their psychosis; attached meaning to the psychotic event(s); viewed their experience ambivalently, including both positive and negative aspects; used the personal information obtained during psychotic experiences; had a strong desire to understand their psychotic experiences; and relinquished the "omnipotent" components of their psychotic experiences and viewed them as unreal. Although the authors did not make comparisons between the groups on their adjustment, they did suggest that the integrating style is optimal.

McGlashan and Carpenter (1981) also followed up on the earlier work of Soskis and Bowers (1969) in order to replicate these earlier findings using a shorter follow-up period and different treatment interventions. Subjects consisted of 30 schizophrenic patients followed up one year post-discharge. Their results partially replicated the earlier work but indicated that the absence of negative attitudes towards illness was more prognostically favorable than holding positive

attitudes, since extremely 'positive' attitudes were found to be associated with negative outcomes.

Wise and Rosenthal (1988) followed 88 consecutively admitted patients with a range of psychiatric diagnoses, to determine the relationship between affective status, illness behavior, LOC and severity of illness. Results indicated that higher external LOC was associated with greater hypochondriacal symptomatology, disease conviction, affective inhibition and affective disturbance. Evidence was also found suggesting that illness beliefs are determined by cognitive style rather than the severity of the illness.

Warner, Taylor, Powers, and Hyman (1989) studied the reports of 42 randomly selected psychotic patients from a community mental health centre to determine the effects of accepting mental illness labels and LOC on adjustment. Among patients who rejected the illness label, self-reports reflected higher self-esteem and lower external LOC beliefs. Internal LOC was also related to better overall functioning.

Spinal Cord Injury

Rosenbaum and Raz (1977) compared 16 brain damaged patients and 10 spinal cord injured patients with locomotor disabilities with a control group of 44 non-

locomotor disabled rehabilitation patients on measures of denial, locus of control and depression. Findings indicated that brain damaged subjects reported significantly more denial than the spinal cord injured patients. Denial was negatively correlated with external LOC, although there were no differences between the three groups on the measure of LOC.

Shadish, Hickman, and Arrick (1981) examined the relationship between LOC and time since injury in depression in 136 male veteran spinal cord injured patients. Results indicated that external LOC and a more recent injury were the best predictors of distress. Frank, Umlauf, Wonderlich, Askanaski, Buckelew, and Elliott (1987) used cluster analytic techniques based on responses from the Ways of Coping Questionnaire and the MHLC to investigate the relationship of coping and LOC beliefs with outcome following spinal cord injury. Using responses from 53 subjects, two clusters were identified. High levels of psychological distress and depression were associated with a cluster characterized by external LOC and high levels of overall coping.

Nielson and MacDonald (1988) examined the relationship between self-blame and psychosocial adjustment following spinal cord injury in a group of 58 patients. "Self-blamers" were found to be more

sensitive and emotional, saw life as more negatively stable, and were in more emotional distress than "non-self-blamers". Frank and Elliott (1989) examined LOC beliefs in a group of 53 spinal cord injured rehabilitation patients. Subjects were divided into three groups based on their highest MHLC score. Subjects scoring highest in Chance LOC beliefs were significantly more depressed compared to patients with Internal and Powerful Others LOC beliefs.

Traumatic Brain Injury

Moore, Stambrook, and Peters (1989) examined the moderating effect of coping behaviors in multidimensional outcome among a sample of 69 male mild, moderate and severe closed head injury patients. On the basis of cluster analytic techniques, three groups were formed based on responses from the Ways of Coping-Revised Questionnaire (Folkman, Lazarus, & Dunkel-Schetter, 1986). The most well adjusted groups on validation measures consisted of a patient cluster using low overall coping behaviors, and a patient cluster using reappraisal coping strategies compared to a patient cluster using high levels of a wide variety of coping strategies.

Moore (1989) examined LOC beliefs, attributional style and coping behaviors in a sample of 62 male

closed head injured patients to determine the moderating effect of severity of injury, cognitive beliefs and coping on long-term adjustment following TBI. Although severity of injury was significantly related to long-term outcome (i.e, more severe TBI related to poorer outcome), severity of injury was unrelated to cognitive beliefs. However, indiscriminant use of coping behaviors, external LOC beliefs and negative attributional style for bad events were associated with poorer quality of life status.

Lubusko, Moore, Stambrook, Gill, Blumenschein, and Peters (1990) examined the relationship between LOC beliefs and helplessness in a group of 19 severely head-injured male patients, and their relationship to vocational outcome. Patients who failed to return to their premorbid level of employment reported significantly lower MHLC internal LOC, higher Revised Internal-External Scale (Levenson, 1974) Powerful Others LOC, and higher hopelessness scores on the Beck Hopelessness Scale (Beck, 1967).

Moore, Stambrook, and Wilson (1991) used multiple regression techniques to determine the relative strength of LOC measures as predictors of outcome compared to a commonly used predictor of outcome, the Glasgow Coma Scale in a sample of 53 patients with TBI. Results indicate that in this long-term follow-up, LOC

beliefs accounted for significantly more variance compared to Glasgow Coma scale scores obtained on admission when predicting psychosocial outcome.

Moore and Stambrook (1992), replicated the earlier reviewed study by Frank et al (1987) examining coping and LOC beliefs in a sample of 53 patients with TBI. Results revealed a two cluster solution with a patient cluster characterized by higher use of positive reappraisal and self-controlling coping strategies and low external LOC beliefs associated with lower mood disturbance and physical difficulties, and a trend to be less depressed.

Studies With Mixed Diagnoses

Finlayson and Rourke (1978) compared scores on the Nowicki-Strickland LOC scale between 21 hemiplegic, 12 medical control and 12 normal control subjects. They found that the hemiplegic subjects reported significantly higher external LOC beliefs compared to control subjects. LOC scores were also found to demonstrate a trend of association with physiotherapists ratings of motivation.

Viney and Westbrook (1982) studied coping strategies used in a group of 89 chronically ill adults with a wide range of diagnoses (circulatory, metabolic,

respiratory, genito-urinary, nerous system, digestive, musculo-skeletal, trauma-related disorders) and related them to demographic variables and outcome. They found that "action" or "problem oriented coping" were more commonly selected by male patients and patients with relatively higher amounts of education and occupational status. These patients were better adjusted according to staff ratings. Subjects with lower education and occupational status tended to utilize fatalism (passive acceptance of circumstances) as a coping strategy. Women tended to use escape coping strategies (tension reduction, distraction). Lowery and Jacobsen (1984) investigated the prevalence of causal search (attributions for illness) in a group of 296 arthritic, diabetic and hypertensive patients. Using open-ended interview data, the authors concluded that a large number of patients who perceived their illness outcomes as a failure were unable to give attributions for their illness. They suggest that among these patients, rejecting a causal search may represent denial as an alternative means of finding control. Lowery, Jacobsen, and McCauley (1987) followed up this research by examining the relationship between causal search and adjustment in a group of 379 hypertensive, diabetic and arthritic patients. Again, using open-ended interview data, they found that 28% of their sample were unable to report illness attributions, and that these patients

were significantly less anxious and tended to be less depressed compared to patients who reported illness attributions.

Felton, Revenson, and Hinrichsen (1984) examined differences among 170 hypertensive, diabetic, cancer and arthritis patients on LOC and coping responses and their relationship with adjustment. They found that hypertensive and diabetic patients had the highest internal LOC beliefs or control over their illnesses as measured by a short form of the MHLC. Coping strategies were also significantly different among diagnosis groups. Arthritic patients utilized significantly more wish-fulfilling, emotional expression, and cognitive restructuring coping strategies compared to other diagnostic groups. Only cognitive restructuring was associated with positive adjustment. The authors concluded that the extent to which illness effects daily functioning and illness related problems influences cognitive and coping responses.

In a follow-up study, Felton and Revenson (1987) examined the effects of age on coping strategies in a sample of 151 chronically ill adults suffering from hypertension, diabetes, arthritis, or leukemia. Results suggest that older patients use different coping strategies than middle aged patients. Older

patients used less information seeking (interpreted as occurring because chronic illness is "justified" because of age, therefore evoked less strong emotional reaction) as well as less emotional expression and self-blame. The authors also suggest that among older patients in their sample, a cohort effect may have been at work - older patients may have been socialized to utilize social support coping strategies more than information seeking strategies compared to middle aged patients.

Fiefel, Strack, and Nagy (1987) examined the relationship between three types of coping (confrontation, avoidance, and acceptance-resignation) in a group of 223 male patients with life-threatening illness (cancer, myocardial infarction) and chronic illness (arthritis, orthopedic disability, and skin disease). Results showed that use of acceptance-resignation coping strategies was significantly correlated with negative self-perception, and negative expectations about recovery and the future. Using physicians' ratings as a measure of outcome, minimal use of avoidance and acceptance-resignation coping strategies were associated with better adjustment among myocardial infarction patients. Among the chronically ill patients without life-threatening illness, there was a trend suggesting that acceptance-resignation

coping strategies were associated with better adjustment.

Longitudinal Studies

Longitudinal studies investigating the moderating effects of cognitive variables have to this point in the literature used healthy subjects. We will briefly review three of these studies. Seeman and Seeman (1983) followed a group of 1210 randomly sampled adults over a one year period. They found that internal LOC beliefs were significantly related to engaging in preventative health behaviors. However, engaging in some health behaviors, such as breast self-examinations, was not predicted by LOC beliefs. The authors suggest that for these "high-risk" health behaviors, LOC is overridden as a moderating factor by fear. External LOC beliefs were found to be present among those subjects experiencing frequent and chronic illnesses. Peterson, Seligman, and Valliant (1988) used archival data gathered from 99 healthy Harvard graduates at age 25. They used the attributional style concept to rate responses to open-ended questions concerning negative events given 44 years ago, while subjects were attending college, thereby obtaining attributional styles used at age 25. Using this data, the authors examined the relationship between

attributional style at age 25 and present-day health status. Results indicated that those subjects who rated bad events as occurring because of stable, global and internal causes were the least healthy on follow-up. This relationship followed an inverted-U shaped function, with the highest relationship between attributional style and health occurring 20 years after attribution measurement.

Lau, Bernard, and Hartman (1989) investigated how illness attributions effected health LOC beliefs in a 17 month prospective study in a group of 1,628 undergraduates. Initial measurement of illness attributions compared to follow-up LOC measures suggested that attributions of high personal controllability and personal ability to recover from illness were related to increased LOC beliefs of self-control and decreased chance health LOC beliefs on follow-up. Changes were tracked over three measurement periods and LOC beliefs were found to change slowly and gradually, a finding interpreted to suggest that illness attributional style is a stable personality trait. This conclusion has been supported by others (e.g., Burns & Seligman, 1989).

Summary

Summary of Findings

The majority of studies reviewed above suggest that for most chronic illness states, high internal LOC or low external LOC, the absence of a global, stable and internal attributional style, and absence of dysfunctional attitudes are associated with better adjustment and quality of life status. In addition, several patterns of coping are associated with improved outcome: 1) use of problem-solving coping strategies, 2) use of selected palliative strategies designed to positively reappraise life changes brought about by chronic illness, and 3) low overall use of assessed coping strategies (in a sense, doing something by not reacting, perhaps mediating secondary control brought about by minimizing the impact of illness). Poor outcomes are associated with external LOC beliefs, internal LOC beliefs in the face of severe deficits brought on by illness state, reports of helplessness, self-blame, attributing negative outcomes to global, stable, and negative causes, and holding dysfunctional attitudes. Coping styles associated with poor outcome include: 1) high (indiscriminant) use of coping strategies and 2) high reliance on palliative coping strategies. Evidence is also present suggesting that cognitive beliefs and coping styles are sensitive to

the effects of severity of stressor, age of the patient, and type of illness state.

Methodological Critique

Despite the fact that the studies reviewed above are fairly consistent in their findings across a number of illness states, methodological considerations limit the extent to which we can be confident of these findings. Perhaps most importantly, none of these studies utilizes clinical designs that allow the researcher to make valid inferences concerning cause-effect relationships (i.e., by examining relations between variables over time). Let us examine the most serious flaws in this body of research.

Design. Perhaps the most critical flaw in the design of the large majority of studies reviewed above is the almost exclusive use of cross-sectional, single-measurement, retrospective designs. Practically, these studies are the easiest to implement, especially when studying clinical populations, and can provide important information, especially to initially evaluate the prospects for performing more costly and difficult longitudinal designs. The most serious limitation in these designs is that the only conclusions that can be drawn from studies of this type, regardless of the precision and accuracy with which they are executed,

are at the time of the assessment. This design does not allow the researcher to determine whether the variables of interest are related over time to the dependent measure of outcome. Only prospective, multiple-measurement studies can allow us to respond to whether these variables are related over time.

Data. A second flaw in a large number of studies reviewed above is the use of open-ended interview data collection methodology. Although open-ended interviewing allows for significantly more idiographic data collection, it also involves the limitation of coding data into useful categories which are often specific to the patient sample and do not allow for replication across studies (Turnquist, Harvey, & Anderson, 1988). In addition, the data obtained from open-ended interviews is often only useable in non-parametric, less powerful, statistical analyses and frequently precludes multivariate analysis.

Sampling inadequacies are another common flaw in the above reviewed studies. Often, samples are not random or consecutive, adding the possibility of sampling bias as a potential intervening variable. Samples are often inadequately described. This is a critical element in clinical research, since results are often partially or completely specific to a particular sample (especially when the sample is not

random or consecutive). If the idiosyncratic factors involved in a sample are not revealed, important information is lost to the researcher and inaccurate conclusions may be drawn.

Instruments. In the studies reviewed above, few standardized and psychometrically sound instruments are used across studies. Let us examine this problem using the example of LOC measures. The most popular LOC scale, Rotter's I-E Scale, is still frequently used in contemporary research. Unfortunately, it consists of a single unidimensional scale, and has been superseded by multidimensional, situation-specific, and more psychometrically sound instruments. Despite these advances, contemporary research continues to use the I-E Scale. An even greater difficulty arises when scales are constructed by amalgamating various scales in the literature and administered to a sample without evaluating the psychometric properties of the new scale. The use of out-moded and amalgamated unstandardized and unevaluated scales creates difficulty in interpretation of results by reducing the precision of data and adding psychometrically based error.

Statistical Techniques. We have alluded to difficulties in this area in the previous sections. Essentially as a result of limitations of design and

data, correlational and comparative analyses are the highest level of statistical analysis that can be performed. Unfortunately, these statistical analyses do not allow researchers to respond to the core question in clinical designs; to explore the causal sequence involved in moderators of illness. Use of multiple assessment designs would allow the use of path analysis and causal modelling statistical techniques.

In summary, a number of theoretical models hypothesizing a moderating effect that cognitive beliefs have in the adjustment to chronic illness have been examined, including the current model focusing on TBI. A number of studies have been reviewed, which on the whole, support the theoretical constructs. However, these studies are limited. Design, data, and statistical analysis flaws limit studies to within assessment session correlations between measures of cognitive beliefs and outcomes. The next step in the research process is to utilize prospective, multiple-assessment designs with standardized, psychometrically validated instruments suitable for multiple administration, allowing for time-sequenced, multivariate statistical analysis. In the next section, we will briefly review clinical research design literature and will examine the available instruments measuring cognitive beliefs.

RESEARCH DESIGN ISSUES

Watson and Kendall (1983) in a review of methodological issues in the literature on coping with chronic disease, make four main suggestions that bear equally on the present investigation: "(a) coping is a multifaceted concept that cannot be fully assessed by a single measure, but requires several diverse assessment measures; (b) the dependent variables included in a study should be carefully selected and should be of demonstrable reliability and validity; (c) correlational and multivariate analyses are necessary to explicate the relationships among the variables; and (d) long-term longitudinal designs provide the clearest view of the process of psychological adaptation to chronic disease" (pp. 39-40). In this section, we will explore three main issues involved in the proposed research: Selection of the design, data collection techniques, and selection of instruments for cognitive beliefs.

Design

Watson and Kendall (1983) make a distinction between the two types of studies commonly performed in this area: (a) coping studies - studies that seek to investigate how the illness impacts on the individual and determining the moderating effects of psychological variables on outcome, and (b) outcome studies that determine the effectiveness of interventions on outcomes. This present stage of the research program uses a "coping study" viewpoint. Watson and Kendall go on to discuss several important issues involved in the design of coping studies. These include: sampling, control groups, and longitudinal designs.

Sampling

An important point made by Watson and Kendall (1983) is that each sample drawn from a clinical population often has aspects that make it a unique sample and not part of a large heterogeneous population. As such, it is critical that the sample selected be carefully described. Watson and Kendall point out that the treatment site from which subjects are recruited often represents a source of sample bias. For example, teaching hospitals often treat more complex disorders or more severely affected individuals than non-teaching hospitals. Important sampling

considerations involve recruiting site selection criteria and diagnostic error. In the current design, these two factors will be addressed by sampling in a consecutive fashion from TBI patients seen at two teaching hospitals and by limiting inclusion criteria to include head injured patients using well-established criteria to categorize TBI severity.

Control Groups

In the literature, several types of control groups have been used to compare groups of chronically ill patients with either healthy controls (scale norms, patients' relatives), a general patient sample (normative data), or other groups of chronically ill patients with different diagnoses (Watson & Kendall, 1983). As Watson and Kendall point out, use of any of the above control groups produces substantially different results. They conclude that comparisons to normals, in some cases, represent the poorest choice for control groups. Unfortunately, Watson and Kendall do not provide specific guidelines for selection of control groups. However, control groups using a different diagnosis control sample may be the most critical in designs using a single-assessment design. In a longitudinal design, previous assessment results can serve as controls.

Longitudinal Designs

Watson and Kendall (1983) point out that the major difficulty involved in single-assessment designs involves the fact that "it is impossible to separate out premorbid personality differences from psychological changes resulting from the chronic physical problem" (p. 52). An alternative to longitudinal designs involves the use of cross-sectional single-assessment designs. However, this involves the assumption that the process of living with a chronic illness is universal - an assumption that is tenuous, and ignores cohort effects and other temporal confounding variables. The main advantage of the use of longitudinal designs is that they permit time-sequence analyses, although they cannot be used to establish cause-effect relationships since in clinical studies, not all extraneous variables can be controlled.

Use of Self-Report Instruments versus Interviews

Watson and Kendall (1983) point out that a major difficulty with subjective measures such as interview data, projective measures, and rating scales involves the susceptibility of these measures to biasing effects. They suggest that interviews must be administered by a blind technician to be considered

valid. The majority of interview data consists of single item questions that evoke open-ended responses from the subject. This data must then be coded into meaningful constructs (introducing error) and subsequently factor analyzed to approach the psychometric reliability and validity of well-constructed instruments. However, the interview technique does allow an in-depth idiographic assessment of the individual subject.

In studies using a longitudinal design, a second important consideration beyond those of simple efficiency and accuracy support the use of self-report instruments. Because the design involves multiple assessments, it is crucial that the data gathering technique used has a high level of test-retest reliability to minimize extraneous error due to assessment technique. The reliability of interviews would need to be evaluated separately. Finally, as part of a larger research project, looking forward to an intervention project, evaluation of self-report instruments to assess and track progress is an important consideration. In intervention, use of self-report measures can increase "treatment utility" (Hayes, Nelson, & Jarrett, 1986; i.e., rapidly identifying intervention points, tracking progress), saving considerable therapist time without sacrificing assessment validity.

SELECTION OF SELF-REPORT INSTRUMENTS

Overview

In the recent literature, a large number of questionnaires tapping cognitive beliefs have become available to researchers and clinicians alike. These instruments measure diverse elements of cognitive beliefs; such as attributional styles, locus of control beliefs, self-statements, automatic thoughts, irrational beliefs and coping styles. Several of these instruments have been developed from theories postulating cognitive-behavioral elements in psychopathology. However, for the clinician operating from a more traditional frame of reference, such instruments may serve important diagnostic, evaluative and research purposes. In this section, we will examine the historical precedents involving the use of self-report questionnaires in both traditional and behavioral assessment, examine how these cognitive measures can be used in a behavioral framework, and examine practical issues such as selecting instruments and using self-report questionnaires to accomplish the three stated purposes of behavior assessment: "(1) to select target behaviors, (2) to devise an intervention

program, and (3) to evaluate treatment outcome" (Hayes, Nelson, & Jarrett, 1986, p. 464). Finally, we will examine some future directions involving the use of self-report questionnaires in behavior assessment.

The History of Self-Report Questionnaires Traditional Assessment

Although the self-report has been used as a measure of psychological functioning for the past century, when introspection was used by Titchener and James (Bellack & Hersen, 1977), formal self-report questionnaires were first used during the latter stages of World War I to screen recruits for potential psychopathology (Anastasi, 1988). While current self-report methodologies can involve divergent methods of obtaining information from a subject (i.e., projective and interview techniques), the questionnaire has found its most sustained and successful place in the assessment of personality and psychopathology. An excellent example of an instrument which serves both these functions is the Minnesota Multiphasic Personality Inventory-Second Edition (MMPI-2). Between the 1930's and 1960's, trait theorists used the self-report questionnaire to assess what they viewed as "fixed, unchanging, underlying causal entities" (Anastasi, 1988, p. 555) of personality. Bellack and

Hersen (1977) point out that this approach to testing was based on the assumption that the subject would provide accurate and undistorted information about him/herself, following from the influence of the humanistic-phenomenological tradition. As such, this approach to assessment focuses nearly exclusively on the subjective reports of the client. However, few contemporary psychologists subscribe to this "extreme" view of personality traits, and most psychologists view personality constructs as much more situationally specific (Anastasi, 1988). Beginning in the late 1960's and early 1970's, psychologists subscribing to social learning and social cognitive theories began changing the content and construction of self-report questionnaires, producing instruments which were much more constrained in focus, assessing specific behaviors of interest in particular situations (Anastasi, 1988).

Behavioral Assessment

Despite the reliance on self-report questionnaires as an important source of information in traditional assessment, behavioral assessment has viewed the self-report questionnaire with some measure of skepticism. Historically, this began with Watson's rejection of introspection as an inexact and quick means of gathering psychological data (Bellack & Hersen, 1977). Let us

examine the main criticisms of self-report questionnaires from the point of view of behavioral assessment (this discussion follows from Barrett, Johnson & Pennypacker, 1986; Bellack & Hersen, 1977; and Parks & Hollon, 1988). First, the responses generated from questionnaires are subjective, and therefore of decreased validity. They point to the fact that there is often low external or criterion validity of the instrument to behavior, and often measures on other instruments correlate more highly with scores than do behaviors they are meant to assess (Campbell & Fiske, 1959; Frish & Higgins, 1986). Second, responses on questionnaires are vulnerable to situational variables and response biases such as social desirability and demand characteristics (Parks & Hollon, 1988), as well as malingering (simulating a deficit) and dissimulation (concealment through deception; Anastasi, 1988). Third, questionnaires often measure "hypothetical" mental processes. Following the Watsonian tradition, self-report measures are inaccurate and undesirable means of gathering assessment data. Fourth, questionnaires are not typically designed to be sensitive to change because of the importance of reliability (i.e., test-retest) in classical testing theory. This lessens their utility in repeated assessment. Fifth, questionnaires are not designed to produce or suggest interventions, or to

determine appropriate evaluation processes. Sixth, questionnaires are unable to identify connections between antecedents, consequences, and behavior. Finally, questionnaires are typically unable to identify or measure behavior change arising from behavioral interventions.

Despite these criticisms, contemporary behavior assessment is seeing a return to the use of self-report questionnaires. Three factors have contributed to this return. The first is that questionnaires are an efficient means of gathering assessment information, and therefore increase treatment utility (Hayes, Nelson & Jarrett, 1986). Second, behavior assessment has recognized the usefulness, in certain situations, of standardized instruments. Hawkins (1986) lists four valid functions for normative instruments in behavior analysis: 1) identification of potential clients, 2) identifying behaviors functional in task performance, 3) identification of criterion levels of performance, and 4) using normative behavior as a criterion to determine the social acceptance of behaviors. The third and most important factor is that contemporary measures are increasingly less subjective in their focus on cognitions, motoric responses and physiological activity (Bellack & Hersen, 1977).

Contemporary psychology's general acceptance and adoption of social learning and cognitive principles, reflected in current test-construction methodologies, have made it possible for many self-report questionnaires to be used in behavioral assessment. As we shall see, however, data from these instruments serve different purposes and are applied and evaluated in different ways in behavioral and traditional assessment. For example, Hawkins (1986) suggests that standardized tests and assessment methods such as self-report questionnaires are most useful when defining and quantifying the problem area and less useful when designing or tracking the efficacy of behavioral interventions. In summary, self-report measures are an accepted, valid, and clinically useful means of gathering data. Before turning to these applied issues, a brief review of the common ground between these assessment orientations is in order. First, let us examine the theoretical underpinnings of cognitive-behavioral therapy, followed by the theories involved in questionnaire construction.

Assessment of Cognitions in Cognitive-Behavioral Therapy

Nietzel and Bernstein (1987) define cognitive-behavioral therapy as "a treatment approach that attempts to modify maladaptive behavior by influencing a client's cognitions (beliefs, schemas, self-statements, and problem-solving strategies)" (p. 283). What then are cognitions? Beidel and Turner (1986) state that "the more traditional behavioral view has classified cognitive activities such as perception and ideation as private, behavioral events. In addition, rather than being phenomena which function outside the laws of learning, cognition, when viewed as simply another behavior, is subject to the same laws of acquisition as other behaviors" (p. 179).

If we view cognitions as a class of behavior (although it can only be observed by one person), an important bridge can be made between the more traditional, mentalistic views and the behavioral views of personality and psychopathology. If we view cognitions as behavior, private thoughts can be assessed and treated using both traditional and behavioral techniques. In many descriptions of cognitive-behavioral therapy, behavioral assessment techniques are frequently used. For example, DeRubis and Beck (1988) advocate the use of daily self-

monitoring of dysfunctional thoughts and events. Persons (1989), in discussing cognitive assessment in cognitive therapy, uses several behavioral assessment techniques such as observation, use of ratings by relatives and other mental health professionals, and self-rating questionnaires. Prominent in her discussion is the importance of using assessment as a baseline upon which to evaluate treatment in an ongoing fashion. Such an emphasis on continuous assessment is echoed in Beck and Emory's (1985) discussion involving treatment of anxiety disorders.

Construction and Selection of Self-Report Questionnaires

To this point, we have briefly reviewed how self-report questionnaires have been viewed by traditional and behavioral assessment and are accepted currently by both perspectives. Before turning our attention to examining how self-report questionnaires tapping cognitive beliefs can be used in cognitive-behavioral assessment, it is first important to examine how self-report questionnaires are constructed and selected. Kline (1986) suggests that there are 5 integral characteristics of good psychological tests: scale properties, reliability, validity, discriminatory power and standardization.

The criteria involved in good test construction are also the criteria used by an assessor when selecting measures for assessment. The scale should be of at least an interval scale; should have a test-retest reliability of at least 0.7 with a test-retest interval below six months; should have adequate content consistency (split-half reliability), response consistency and homogeneous items (Kuder-Richardson and coefficient alpha); have high scorer reliability; have high face, concurrent, predictive, and construct validity; demonstrate discriminative power through an adequate distribution of scores; and has been standardized accurately and appropriately (Anastasi, 1988; Kline, 1986) Unfortunately, the relevant information summarized above as necessary for good test construction and evaluation is often not included in journal article descriptions of instruments.

In behavioral assessment, construct validity and test-retest reliability should form important parts of the decision process because of the relatively greater emphasis on idiographic assessment and repeated assessments in this method of assessment. Although psychometric considerations form an important part of instrument selection, practical matters such as ease of scoring and interpretation also need to be considered. Examination of the items in the instrument to ensure

that they reflect the behaviors of interest is as important as statistical item analysis of responses to individual questions. Pattern analysis of sets of responses is another important way of interpreting self-report questionnaire data. Equally important is consideration of the subject-instrument fit. The age, socio-economic, educational, medical, cognitive, and psychological status of the subject must be taken into consideration when using self-report instruments. If the above considerations are not evaluated, the advantages in treatment utility of self-report questionnaires will be lost when inaccurate or incomplete data are obtained, or subjects experience frustration or reactivity when being assessed.

Criteria for Cognitive Belief Instrument Selection in the Present Study

Based on the review above, the first task in selection of instruments was to survey all possible instruments for suitability in this study. Appendix A contains synopses of psychometric data provided for 28 cognitive belief instruments. Based on psychometric data, instruments were eliminated if either their internal consistency (based primarily on coefficient alpha as split half reliabilities were rarely reported) or test-retest reliability were, in general, below .70. In addition, single factor scales were discarded,

unless scale composition tapped a specific area of interest (i.e., a specific type of automatic thought) as opposed to a general area of interest (i.e., a global LOC scale). In appendices B to CC, the actual instruments evaluated are reproduced. Here, instruments were discarded if the scale construction was inappropriate for the TBI population. For example, Moore (1989) used the Attributional Style Questionnaire to evaluate attributional style in the first stage of the research program. Responses from the subjects reflected a generally poor understanding of the goals of the instrument, and ratings tended to be placed on the endpoints of the scales. As a result, instruments like the ASQ may require a level of abstraction inappropriate for persons recovering from severe TBI to complete. As well, the items themselves were examined for potentially reactive item content. Scales such as the Rational Behavior Inventory were subsequently eliminated. Scales that overlapped were also eliminated.

In sum, the following criteria were used in selection of self-report instruments from the 28 scales identified:

- internal consistency greater than .70
- multiple factor scales preferred (greater specificity) unless single factor scales tapped a specific area of interest

- scale construction/complexity appropriate for TBI population
- items contained no reactive item content

The following scales were selected:

Cognitive Bias Instruments

- 1) Automatic Thoughts Questionnaire-Positive
- 2) Automatic Thoughts Questionnaire-Negative

Attributional Style

- 3) Causal Dimension Scale

Locus of Control

- 4) Multidimensional Locus of Control Scale

Coping

- 5) Coping In Stressful Situations
- 6) Ways of Coping Questionnaire-Revised

Criteria for Quality of Life Outcome Instrument
Selection in the Present Study

Selection of these scales was strongly influenced by the past literature. As a large data and literature base currently exists measuring the outcome of persons recovering from TBI with the Sickness Impact Profile (Bergner, Bobbitt, & Pollard, 1976), Profile of Mood States (McNair, Lorr, and Droppleman, 1971), and the Center For Epidemiological Studies Depression Scale (Radloff, 1977) both from our own laboratory as well as others, these measures assist us in making cross-study comparisons. Most importantly, all three quality of

life measures meet the selection criteria outlined above for the cognitive moderator instruments. The consistent use of well-designed and valid instruments in a programme of research is a powerful means of understanding developmental processes involved in clinical outcome, and illustrates the utility of self-report measures in clinical research.

OVERALL SUMMARY AND STATEMENT OF PROBLEM

The current study uses a multivariate, longitudinal design to investigate the potential moderating role of cognitive beliefs in the adjustment to TBI in a sample of persons recovering from TBI within the first 15 months post-injury. Studying these processes at this time period in the overall recovery process serves two main purposes: 1) It extends our understanding of the applicability of these constructs into the post-acute phase of recovery. Past retrospective cross-sectional TBI samples have examined these processes an average of 5-6 years post-injury. The current study extends this research into a new time frame. 2) Theoretically, this time period would be the most optimal for clinical intervention and prevention of the development of negative self-limiting belief systems. Examination of the "normal" developmental processes is a logical first step prior to implementation of an intervention study within the larger research programme. As well, by examining processes after six months post-injury, when the largest cognitive recovery takes place, the confounding effects of temporary cognitive deficits will be minimized, while achieving the goal of examining recovery processes at this phase of overall recovery.

In conclusion, based on a literature review examining the moderating effect of cognitive beliefs in adjustment to chronic illness, a conceptual model viewing locus of control, attributional style, and cognitive distortion as related and overlapping constructs impacting both on adjustment and selection of coping strategies has been outlined. The adequacy of this model in understanding the role of cognitive beliefs in adjustment to TBI will be examined in this study.

HYPOTHESES

Based on the literature review, and in particular on results from the first step in this research plan, the following hypotheses are advanced:

Hypothesis 1

Relationship of Cognitive Beliefs at Time 1 and Coping at Time 2

External LOC, internal, global, and stable attributional style, and high levels of cognitive distortion at Time 1 (6-9 months post-injury) are hypothesized to be related to selection of high levels of overall coping and high levels of emotion-focused coping strategies in particular at Time 2 (12-15 months post-injury).

Hypothesis 2

Relationship of Cognitive Beliefs at Time 1 and Outcome at Time 2

External LOC, internal, global, and stable attributional style, and high levels of cognitive distortion at Time 1 are hypothesized to be related to

poorer emotional, physical and psychosocial self-reports of adjustment at Time 2.

Hypothesis 3

Relationship of Coping at Time 1 and Outcome at Time 2

High overall coping and use of emotion-focused coping strategies at Time 1 are hypothesized to be related to poorer emotional, physical and psychosocial self-reports of adjustment at Time 2.

Hypothesis 4

Interaction of Time and Severity on Cognitive Beliefs and Outcome

An interaction effect is hypothesized to occur on both dependent measures of cognitive beliefs and outcome as a function of the independent measures of time post-injury and severity of injury. More specifically, measures of outcome are expected to improve with increasing time post-TBI for mild and moderate patients with TBI, while measures of outcome are expected to remain stable or decline for persons recovering from severe TBI. Cognitive beliefs are expected to be characterized by increased external LOC, greater internal, global and stable attributional style and greater cognitive distortion for subjects recovering

from severe TBI, while the opposite pattern is hypothesized for mild and moderate patients with TBI.

Hypothesis 5

Evaluation of Conceptual Model

Using LISREL path analysis, relationships between cognitive moderators and coping measured at Time 1 and outcome, measured at Time 2 outlined in the conceptual model in Figure 1 are hypothesized to be confirmed.

METHOD

Subjects

Subjects consisted of 61 patients with TBI identified from admissions to the province's two neurosurgical centres (Health Sciences Centre and St. Boniface General Hospital) from April 1991 to July 1992 as part of a larger research study funded in part by the Health Sciences Centre Research Foundation and the National Health Development and Research Program. All patients receiving diagnoses of TBI (i.e., all severities) were identified prospectively through emergency admissions at these hospitals as part of a larger concurrent study examining prospective quality of life and alcohol related issues (Stambrook, Gill, Hill, & Barnes, 1989). Submissions to obtain ethical approval from the Department of Psychology and the Health Sciences/Faculty of Medicine review boards were approved, given that we only approach those subjects who had not refused participation in the larger concurrent alcohol/quality of life study. In addition to this restriction, subjects needed to meet the following two TBI severity criteria to be eligible for the present study: 1) at least 6 months post-injury (to

control for effects of cognitive recovery) and 2) sustaining at least a mild TBI based on Glasgow Coma Scale (GCS) scores obtained within six hours of injury, computed tomography (CT) results, and presence/absence of surgical intervention.

The GCS is a standardized measure of depth of unconsciousness consisting of ratings on a twelve point scale measuring extent of eye opening, verbal responsiveness, and motor response. The GCS is presented in its entirety in Appendix DD. A score of 15 indicates full consciousness, while a score of 3 indicates deep coma. GCS scores are regularly obtained while the patients are in hospital by medical staff and are recorded on medical records.

Four hundred and sixty-five subjects met the above criteria for inclusion and recruitment letters were sent to these subjects. Two hundred and eighty-four subjects were contacted, and it was found that five of these subjects had died in the six to nine month interval between their injury and our contact. Of the remaining 279 subjects, 214 indicated their willingness to have questionnaires sent to them by mail or by telephone contact (76.7%). Of these 214, four moved and nine became ill during the initial Time 1 three month data collection window and were lost to follow up. Ninety of the remaining 201 subjects sent 6-9 month

post-injury questionnaires returned them to us, yielding a 44.8% compliance rate. Of these ninety subjects, a further nine moved and two became ill over the subsequent six month inter-assessment interval. Of the remaining 79 subjects, 61 completed the Time 2 12-15 month-post questionnaire, a 77.2% compliance rate. For the entire two-assessment protocol, 61 out of 190 eligible subjects (all subjects who were contacted, did not move or become ill over the study period) completed the questionnaires, a 32.1% compliance rate. Figure M1 contains a flow chart of the participation of the subjects along with a breakdown of reasons for refusal or non-participation.

Insert Figure M1 about here

465 Subjects in Series

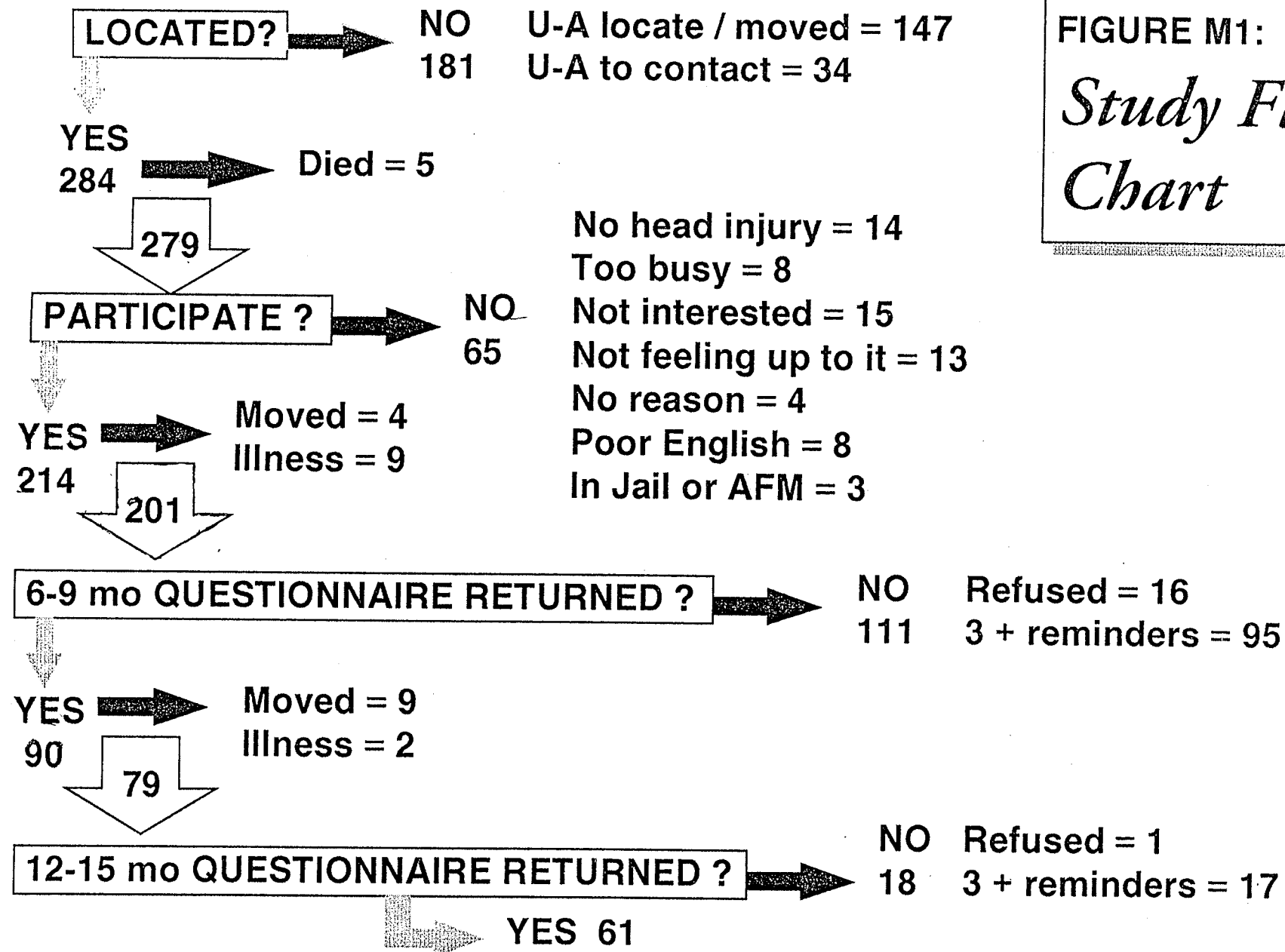


FIGURE M1:

Study Flow Chart

Medical chart review and demographic questionnaires formed part of the research design to assist in describing and identifying the subsequent sample. Table R1 contains obtained demographic information on the sample, including marital status, years of education, employment, and income of the sample. The sample was composed of 36 male and 25 female subjects, with average age at injury of 38.82 (SD = 16.41). The modal subject in the study was married (both prior to and following the injury), had 11-12 years of education and was employed full-time prior to the injury. On follow-up, the modal patient was either unemployed or employed full-time. The modal subject had a family income of approximately \$20-25,000 both prior to and following injury. Blishen (1967) occupational codes were used to quantify occupation (job type). This scale has a range from 75 (chemists, physicians) to 25 (trappers and hunters). The index was modified to include homemakers (20), retirees (15), unemployed (10) and students (5). The average Blishen score prior to injury was 32.78, and was 25.97 following injury. Family income was measured on an 11 point scale with each point representing \$5,000 of yearly income. Average family income was 5.30 prior to and 5.84 following injury.

Table R2 contains medical and trauma-related information on the sample. TBI's were categorized as mild when GCS on admission was greater than 12, the patient experienced loss of consciousness of at least 5 minutes duration, CT scans were normal, and no neurosurgical intervention was required. TBI's were classified as moderate when the patient presented either with GCS score equal or between 9 and 12, or GCS greater than 12 with positive CT findings or neurosurgical intervention. Severe TBI consisted of patients presenting with GCS equal to 8 or less, regardless of CT results or neurosurgery. This method of grouping patients is widely used in the literature (Levin, Hugh, Goethe, Sisson, Overall, Rhoades, Eisenberg, Kalinsky, and Garry, 1987).

The sample differs from the epidemiological norm in that there are more females and that younger patients appear to be under-represented. Forty-one subjects sustained mild TBI, 11 moderate TBI, and 9 severe TBI. The sample severity distribution approximates the typical distribution of severity. The mean length of coma for the entire sample was 0.42 days (SD = 2.00; range 0.01 - 14 days), while mean length of post-traumatic amnesia was 2.37 days (SD = 8.42; range = 0.01 - 50 days). As a whole, the sample spent an average of 14.48 days in hospital (SD = 37.70; range

1 - 198 days). Medical data on the sample is presented in Table R2 while graphs for age at injury, coma length, post-traumatic amnesia length, GCS score on admission, hospital stay, and accident type for the sample is presented in Figures R1 to R6 respectively.

Insert Tables R1 and R2 About Here

Insert Figures R1 to R6 About Here

Table R1

Sample Demographic Information

Variable	N	Mean	S.D.
Years of Education			
Prior to Injury	59	12.63	3.38
Following Injury	59	12.70	3.43
Blishen Occupational Score			
Prior to Injury	59	32.78	17.10
Following Injury	59	25.97	18.34
Family Income *			
Prior to Injury	50	5.30	3.29
Following Injury	51	5.84	3.41

Variable	Prior To Injury	Following Injury
Marital Status		
Married	26	25
Common-Law	7	4
Single	19	18
Divorced	2	4
Widowed	4	5
Missing	3	5
Employment Status		
Full-Time	33	21
Part-Time	9	6
Unemployed	7	21
Retired	7	7
Student	3	3
Missing	2	3

Note. * Measured on 11-point Likert scale (see text).

Table R2

Sample Medical Data

Variable	N	Percent of Sample
<hr/>		
Accident Type		
Motor Vehicle Accident	23	37.7
Fall	17	27.9
Assault	12	19.7
Car/Pedestrian	4	6.6
Snowmobile	1	1.6
Airplane Crash	1	1.6
Hit By Falling Object	2	3.3
Thrown From Horse	1	1.6
Skull Fracture		
No	49	80.3
Yes	12	19.7
CT Scan Results		
Not Done	37	60.7
Normal	8	13.1
Abnormal	16	26.2
Cerebral Hemorrhage		
Not Present	46	75.4
Present	15	24.6
Complications During Hospitalization		
Yes	9	14.8
No	52	85.2
Other Injuries At Time of Admission		
Lacerations	19	31.1
Orthopedic	8	13.1
Major Organ System	2	3.3
Multiple Trauma	3	4.9
No	29	47.5
History of Previous Illness		
Yes	15	24.6
No	46	75.4

Figure R1:
Age At Injury Distribution: Full Sample

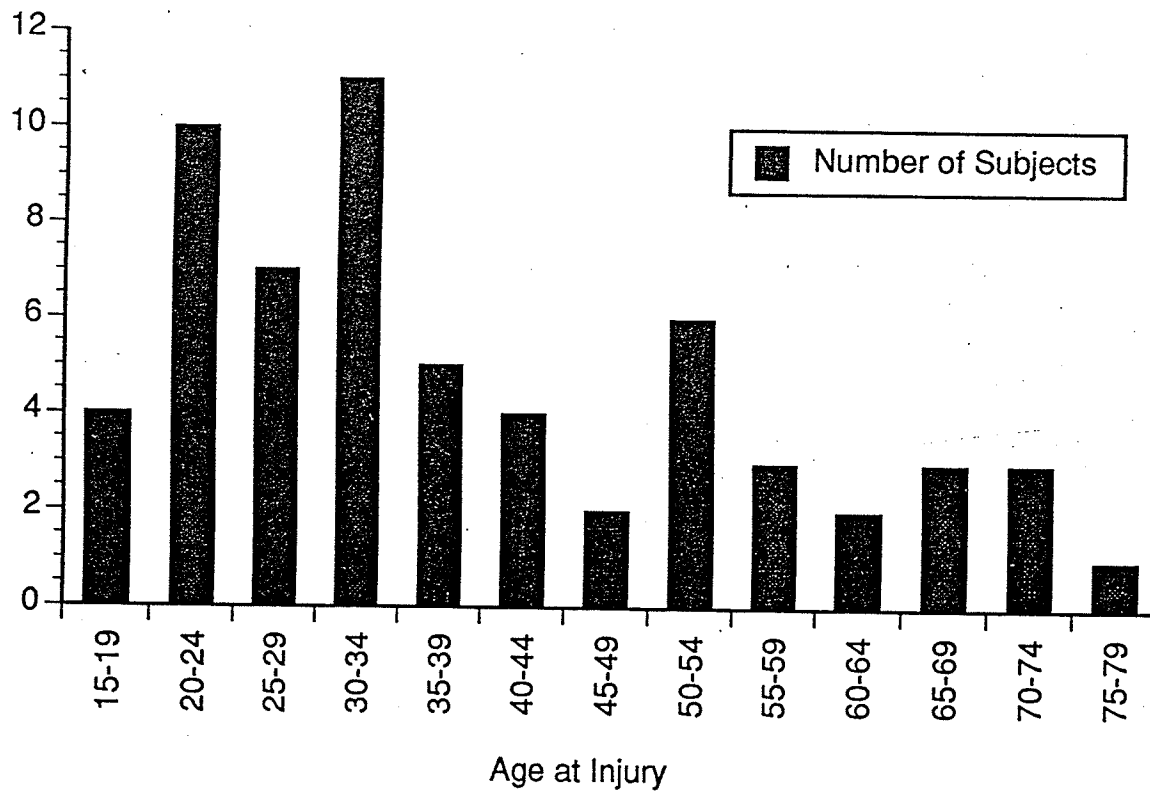


Figure R2:
Coma Length Distribution: Full Sample

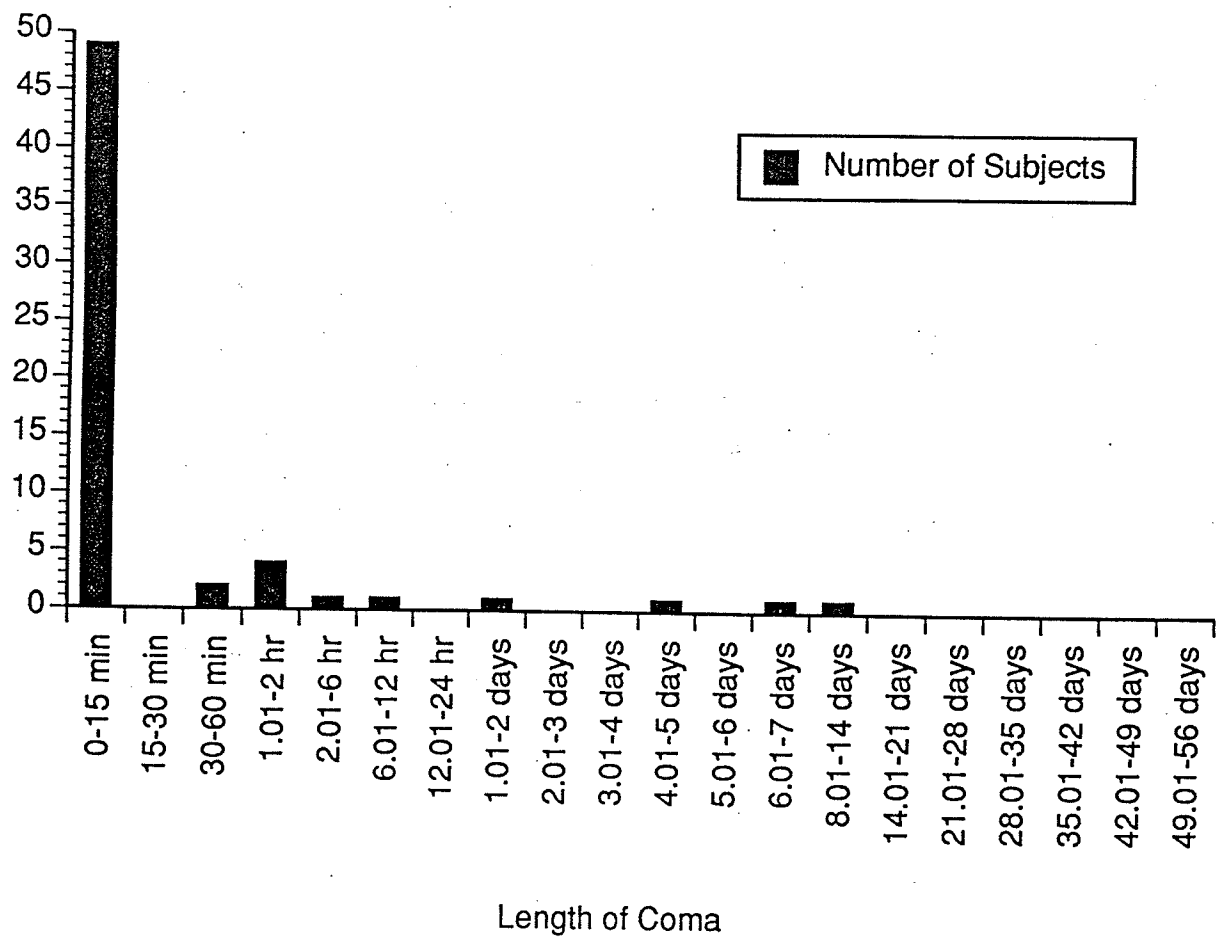


Figure R3:
Post-Traumatic Amnesia Distribution: Full Sample

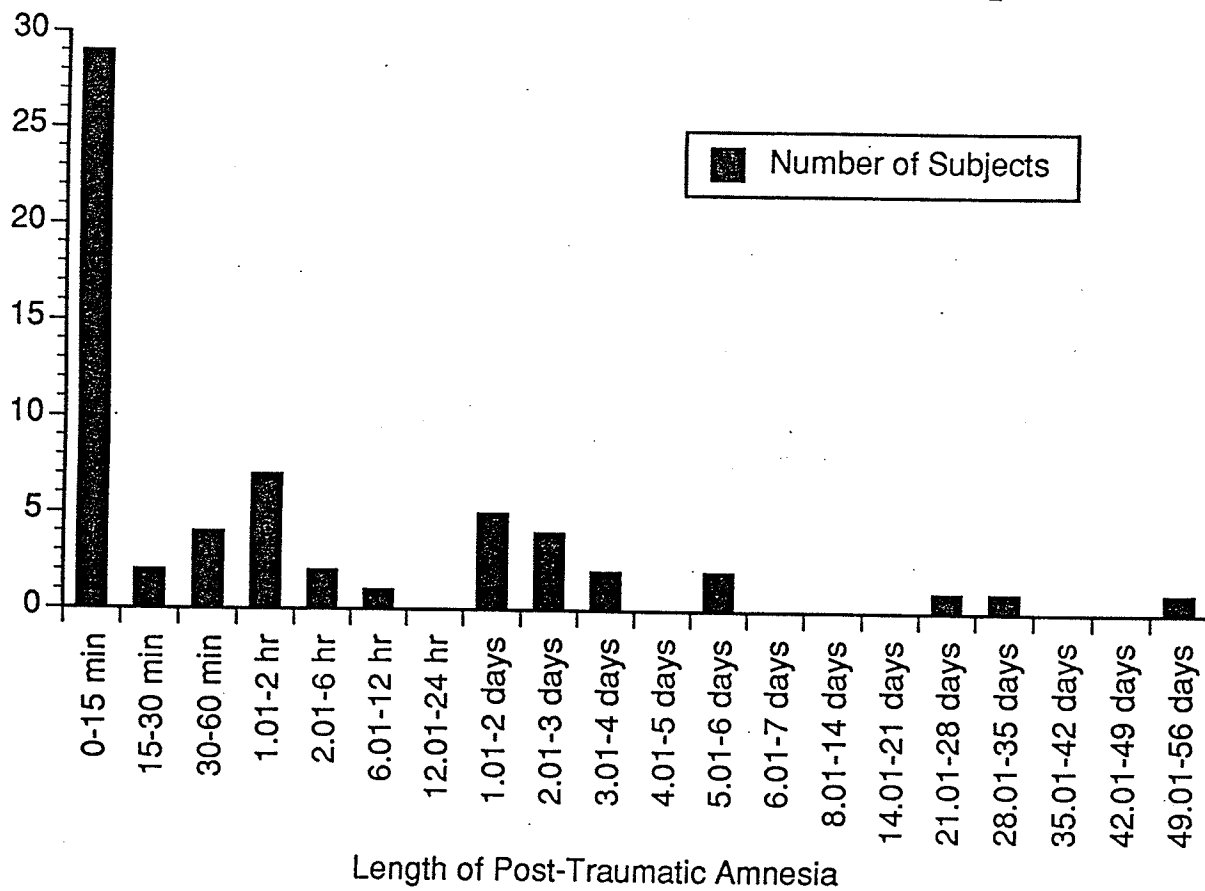


Figure R4:
Glasgow Coma Scale Distribution: Full Sample

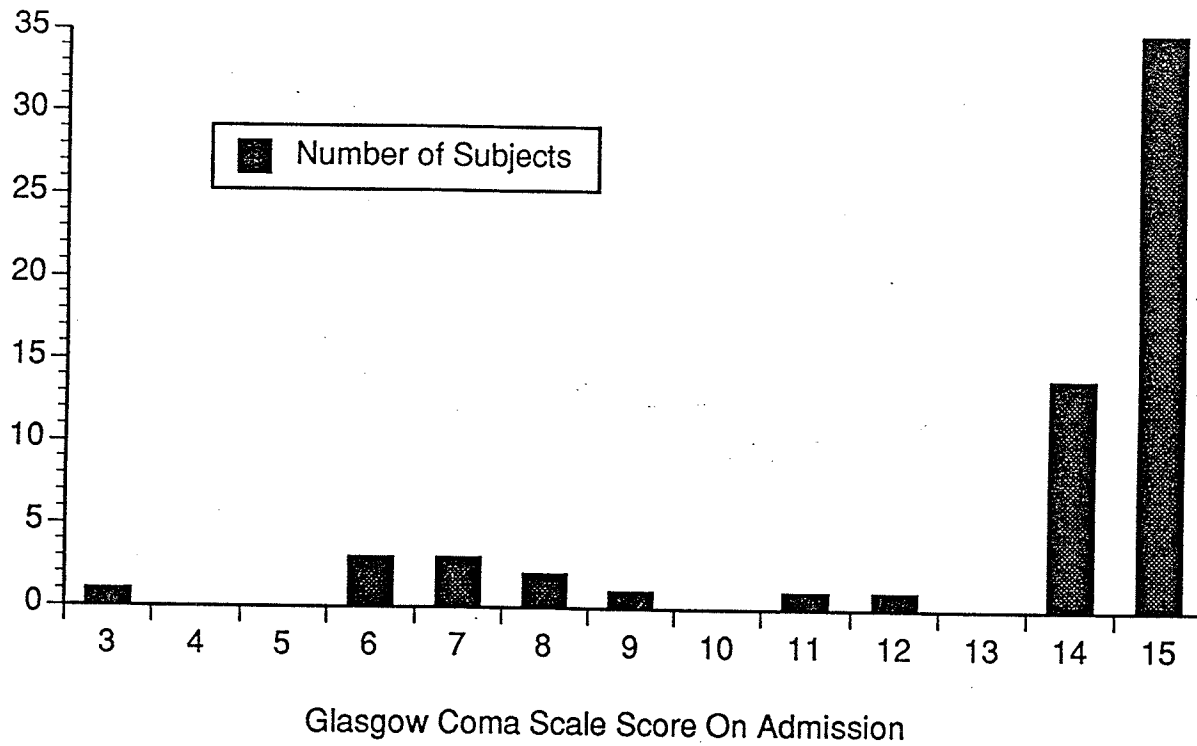


Figure R5:
Hospital Stay Distribution: Full Sample

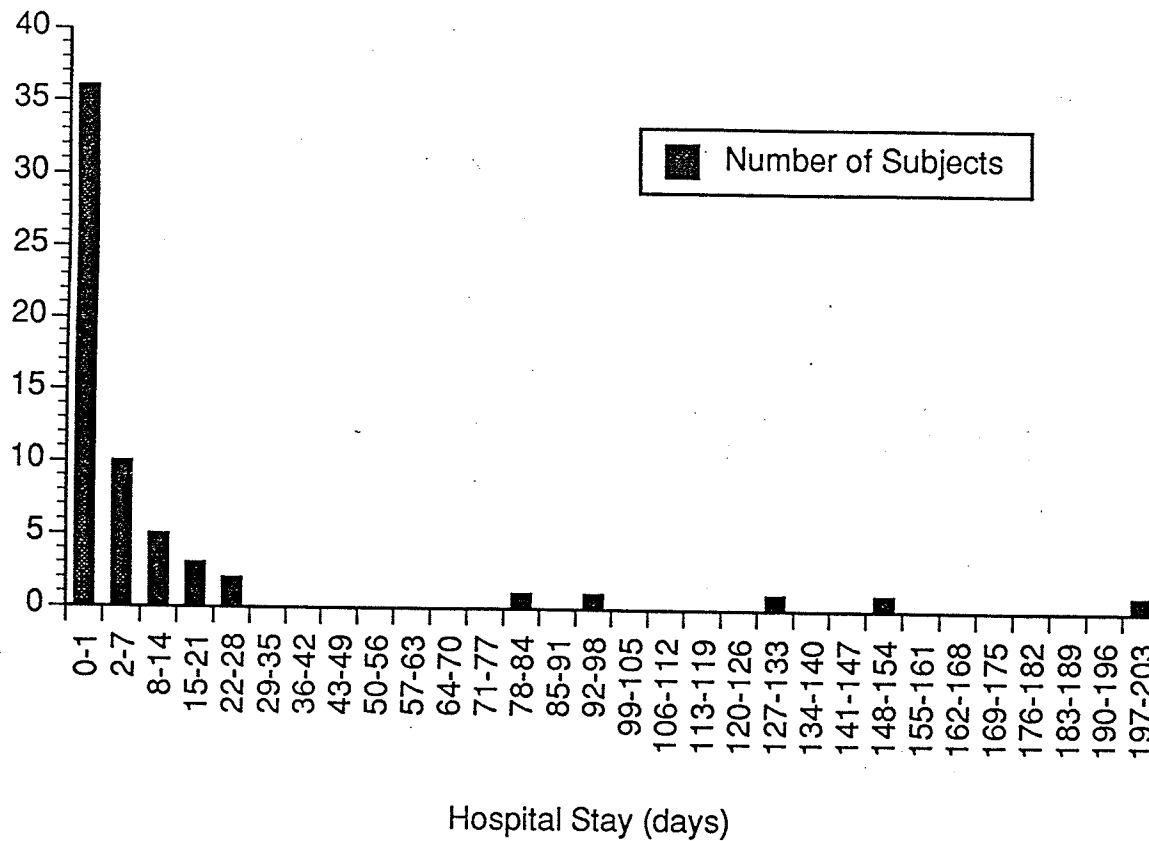
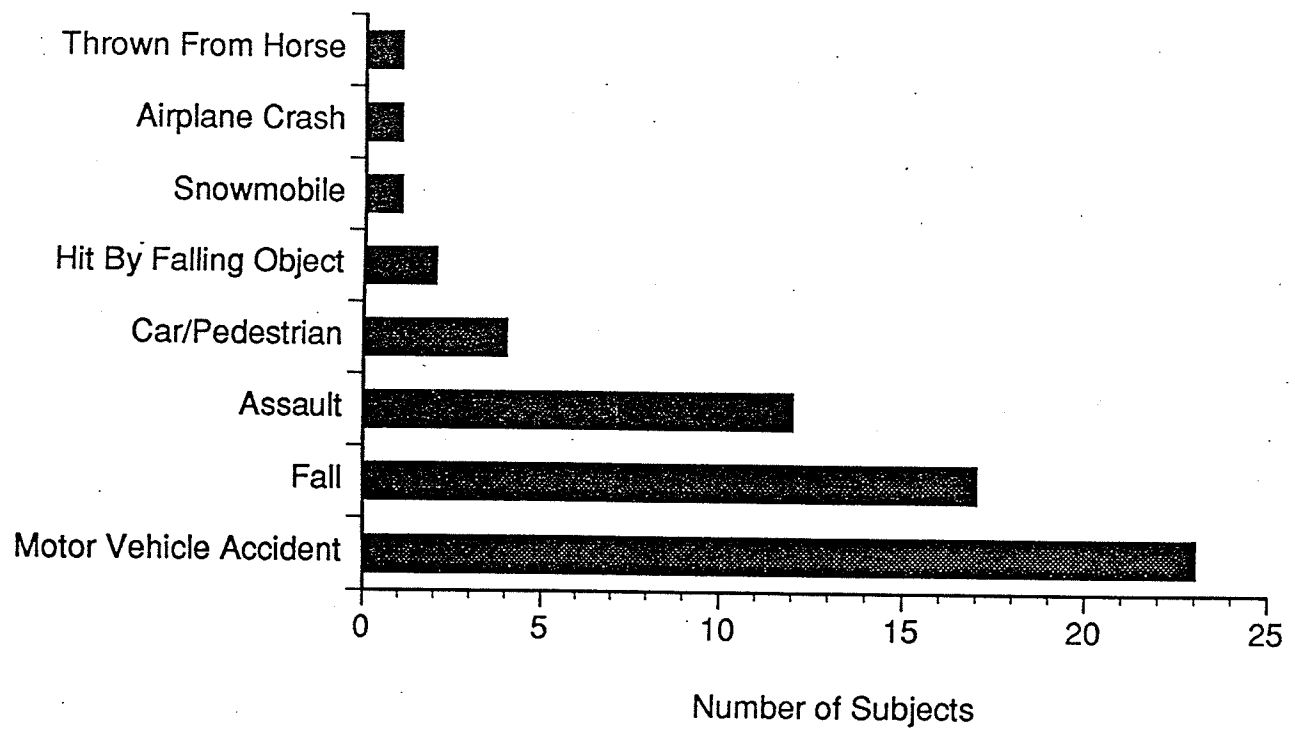


Figure R6:
Type of Accident: Full Sample



Instruments

Cognitive Moderators

As discussed previously, the following instruments selected from a group of 28 measures formed the core of the assessment package.

Cognitive Distortion. Two instruments were used to measure automatic thoughts. The Automatic Thoughts Questionnaire-Positive (ATQ-P; Ingram & Wisniki, 1988), consists of 30 items which assess positive thoughts based on Beck's model of depression using a 5 point likert format. Psychometric information is provided in Appendix A, and the instrument is reproduced in Appendix B. The Automatic Thoughts Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980) consists of 30 items tapping automatic negative thoughts using a 5 point likert format. Psychometric information is provided in Appendix A, and the instrument is reproduced in Appendix C.

Attributional Style. Attributional Style was assessed using the Causal Dimension Scale (Russell, 1982). This scale consists of 9 items using a 9 point likert scale assessing the locus of causality, stability and controllability to situational statements provided by the examiner. The situations used in the present study consisted of the following 2 statements:

1) Think for a moment about the causes involved in the distressing or negative things that have happened to you since your head injury. Write down the cause(s) you think explain why distressing or negative things have happened to you since your head injury.

2) Think for a moment about the causes involved in the pleasant or positive things that have happened to you since your head injury. Write down the cause(s) you think explain why pleasant or positive things have happened to you since your head injury.

Psychometric data on the CDS is presented in Appendix A, while the scale is reproduced in Appendix O.

Locus of Control. The Multidimensional Health Locus of Control Scale (MHLC; Wallston, Wallston, & DeVellis, 1978) measures health related LOC beliefs using a 6 point likert format. To maximize the psychometric validity and reliability of the scale, both forms A and B were combined. Psychometric data is provided in Appendix A, and the scale is reproduced in Appendix U. It should be noted that Umlauf and Frank (1986) assessed a group of 107 inpatient rehabilitation patients to validate the independence of the Internal, Chance, and Powerful Others scales, and found evidence that in this population the Chance and Powerful Others scales appear to overlap. They found a .44 correlation

between the C and PO scales, while the I scale was not significantly correlated with either the C or PO scales.

Coping

Two scales were used to assess coping behavior in the current study. The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) consists of 48 items using 5 point likert scales. Psychometric data is presented in Appendix A, and the instrument is reproduced in Appendix W. The Ways of Coping Questionnaire-Revised (WOC-R; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) consists of 67 items using a 4 point likert scale. Psychometric data is presented in Appendix A, and the instrument is reproduced in Appendix CC. The main difference between the CISS and the WOC-R involves their specificity. The CISS focuses on differentiating between problem-focused and emotion-focused coping, while the WOC-R is more descriptive, consisting of 8 subscales involving more diverse kinds of coping within these domains.

Outcome

Three scales were used to assess outcome. All three have been used in previous studies in TBI populations. The Sickness Impact Profile (SIP;

Bergner, Bobbitt, & Pollard, 1976), is a patient self-reported measure of psychological and physical problems. It consists of statements to which the patient responds using a true/false format. Scores include three global measures of physical, psychosocial, and overall adjustment, as well as subscale scores measuring adjustment in specific physical and psychosocial domains.

The Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) is a patient self-report of emotional status. This instrument consists of emotional adjectives to which subjects rate the extent to which they have felt this way during the past week. Scores consist of a Total Mood Disturbance score as well as subscale scores assessing Confusion, Anxiety, Depression, Anger, and Vigor. Internal consistency for the subscales ranges between .84 to .95 on two large samples of psychiatric outpatients. Test-retest reliability estimates range between .65 and .74 in a large sample of waiting list psychotherapy patients with an approximate three week test-retest interval.

The Center For Epidemiological Studies - Depression scale (CES-D; Radloff, 1977) is a brief 20 item scale focusing specifically on the experience of depression, and is designed for use in both clinical and general populations. Corcoran and Fisher (1987)

report coefficient alphas for the CES-D ranging between .85 for the general population to .90 for psychiatric samples. Test-retest reliability of the CES-D with three month to one year test-retest intervals range between .32 to .54. This relatively low reliability figure is expected as depression ratings vary considerably over such a long time interval.

Procedure

This study involved data collection over a one-year period for each subject with administration of the entire self-report questionnaire battery during data collection "windows". The first data collection window consisted of the time period between six to nine months post-injury, while the second data collection window consisted of the time period between 12 to 15 months post-injury. For each subject, data collection took place during two sessions separated by a six-month test interval.

Subjects were recruited by mail and telephone. The initial participation request was made by mail and included a consent form describing the project, the voluntary nature of their participation, data-security procedures, and the group nature of the data collected. Telephone follow up calls were then made to improve understanding of the objectives of the project and

prompt return of the consent form. Upon receipt of the consent form, the questionnaire booklet was mailed to subjects to complete at home and mail back to the investigator using a self-addressed and stamped envelope. Included with the questionnaire booklet is a cover letter including detailed directions for completion and a telephone number subjects could use to contact the researchers to obtain assistance in completing the questionnaires. When possible and necessary, arrangements were made for a significant other to assist in questionnaire completion. On the first follow-up, 5 subjects (8.2%) stated that they received help in completing the battery while on the second follow-up, 6 subjects (9.6%) stated that they received help. Prompting of questionnaire return involved a minimum of three contacts designed to maximize compliance while minimizing potential annoyance. The first, carried out two-weeks following initial mailing of the questionnaire, consisted of a reminder letter asking if the subject had received the questionnaire booklet and requesting that it be returned at the subjects earliest convenience. It also stated that telephone contacts would be made over the next month to offer assistance if questionnaires were not returned. The following two telephone contacts were made at further two-week intervals to prompt completion and return as well as offer assistance in

completion. In the large majority of cases, subjects stated that they would promptly return the questionnaires after being contacted.

The second (12-15 month follow-up) questionnaire booklet was mailed six months following the initial mailing. Identical follow-up procedures to those described for the first assessment were followed. A final letter describing the purpose and findings of the study was sent to participants following completion of the study. Copies of the recruitment, consent form, reminder, and feedback correspondence can be found in Appendix EE.

Initial Inspection of Data

As the data from the study came in, the most striking difficulty subjects appeared to experience was with the CDS. A substantial number of subjects wrote on the questionnaire that they did not fully understand either how the questionnaire worked or how it applied to them. A larger number stated that they were unable to come up with explanations accounting for the positive or negative events that had happened to them since their injury. Inspection of those CDS protocols that were completed revealed a great amount of missing data. At Time 1, sixteen (26.2%) and at Time 2, twenty-two (36.1%) subjects provided no CDS data points

due to blank or incompletely filled out questionnaires. Of those completed, inspection of the reasons for positive and negative events revealed many respondents who completed the scales without providing a written reason that their rating were based on. This made evaluating the validity of their responses difficult. On some protocols, responses reflected potentially poor understanding of the task or the absence of engaging in causal search. A representative sample of the stated reasons for positive and negative events is provided in Table R3 and R4. Despite the difficulties in evaluating the data from the CDS, the responses given provide "snap-shot" glimpses into the lives of people living with head injury. Because of the large amount of missing data and difficulties in evaluating the validity and accuracy of questionnaire completion, the CDS data was excluded from further analysis.

Insert Table R3 and R4 about here

Table R3

Representative Responses from CDS Positive Events

-
- more emotional unstable [sic]
 - life is what you make it
 - nothing positive has happened to me relating my head injury
 - strong willed
 - people relate to me
 - socializing, outdoor activity
 - my persistent positive attitude and self-talk and optimism
 - accident was a life experience
 - recovery, my daughter
 - new baby coming
 - healing and more energy
 - recently moved to Southern Ontario close to friends and family
 - my wife, friends, church people, family are a support to me
 - I value life more, have more respect for life and God
 - I take life a little more serious [sic]
 - good outlook on life, positive attitude
 - change in lifestyle
 - more determined to achieve goals
 - I must be a good person because people care about me
 - love of life
 - I am more careful and attentive because of the injury
 - worked harder to compensate for negatives
 - taking care of condo, laundry and being alone
 - the only positive thing is that I am determined to overcome this
 - changed doctors
 - I got married
 - I am much more aware of being alive and am grateful for it
 - the injury has made me more assertive and stronger
 - the accident could have killed me and left me paralyzed
 - we are just thankful for "life" and try to accept everything that comes with it (good and bad).
-

Table R4

Representative Responses from CDS Negative Events

-
- outside walking in winter
 - politics / world events
 - I speak before thinking
 - time was lost
 - I have a more "positive" attitude since the accident
 - nothing negative has happened to me since head injury
 - this section does not apply to me as I have not felt this way
 - I was told a person died in the same accident I was in
 - For 15 months after my accident I faced incarceration. Now I'm in jail for 2 years.
 - can't relate sometimes and my memory lapses
 - difficulty expressing self (finding words), focusing and concentration, depression
 - things that happen are a part of life
 - can't do as much or as quickly, Divorce
 - the accident has left me dizzy and ringing in my left ear which is very hard to live with
 - helplessness, anger, and self-pity
 - I can't work or be with my friends at work
 - they probably would have happened anyway
 - I can't do things like before and I look a little different
 - going out at night is my main fear
 - loss of smell, loss of hearing in one ear
 - stress from peers, university, personal problems, family troubles
 - lost my job, my brother died
 - I get headaches, I feel tired, I have a low tolerance level
 - I do not believe my head injury has anything to do with things that have happened to me since it
 - waiting for 8 to 12 months for eye surgery
 - loss of license, reputation, arthritis, inability to 'do'
 - I think about my family and myself in the future that my dreams have failed
 - all the things that have been taken away from me because of the accident. I have had to learn to adjust to a different way of life.
-

Data Preparation

As several of the statistical techniques used subsequently are not robust to outliers or to non-normal distributions, data screening and preparation analyses suggested by Tabachnick and Fidell (1989) were carried out on the 6-9 and 12-15 month MHLC, ATQ-P, ATQ-N, CISS, WOC-R, SIP Physical, Psychosocial and Total scores, POMS Total Mood Disturbance, and CES-D scores. No outliers were found using SPSS Regression procedures. However, a number of scales were found to have non-normal distributions using SPSS Frequency procedures. These consisted of examining the ratio of the skewness and the standard error of skewness and by determining the ratio of kurtosis and its standard error, finally finding its' probability of occurrence using a z-score table. ATQ-N 6-9 and 12-15 month scores, WOC-R Confrontative Coping 12-15 month score, POMS Total Mood Disturbance 6-9 month score, both 6-9 and 12-15 month CES-D, and both 6-9 and 12-15 month SIP Physical, Psychosocial, and Total scores were subsequently logarithmically transformed using procedures outlined by Tabachnick and Fidell (1989). Subsequent reinspection of the distribution revealed that skewness and kurtosis ratios fell within appropriate ranges.

For all subsequent analyses, calculations were conducted by removing subjects with missing data on a case wide basis for each analysis. Unless otherwise specified, this resulted in an N of 58 for each of the following analyses.

RESULTS

Hypothesis 1: Cognitive Beliefs at Time 1 and Coping at Time 2

Hypothesis 1 states that external LOC and high levels of cognitive distortion at Time 1 are related to selection of high levels of overall coping and high levels of emotion-focused coping strategies at Time 2.

Canonical correlation was performed between the set of belief variables measured at 6-9 months and, individually, the set of WOC-R and CISS 12-15 month variables using SPSS MANOVA for the Macintosh Version 4.0 (SPSS, 1990). Belief variables included ATQ-P, logarthmically transformed ATQ-N, and MHLC Internal, Powerful Others, and Chance scores. Coping variables included the complete set of subscales for the WOCR and CISS. Higher scores reflect greater endorsement of the belief concept or greater use of a particular coping strategy.

A Brief Review of Canonical Correlation Interpretation. Canonical correlation is the linear combination of independent (IV) and dependent (DV) variables that maximize the correlation between the complete sets of IV's and DV's. It is expressed as a

single correlation coefficient and expresses a summary measure of the strength of association between both sets of variables. Canonical variates are pairs of variables, one IV and one DV extracted from the sets of IV's and DV's that account for the maximum unique intercorrelation between the sets of IV's and DV's. The number of canonical correlations is determined by examining the magnitude of the correlation coefficients to justify interpretation of its variates. In the current study, a cutoff of .30 was used. Next, the canonical variates are interpreted, in the current study, by examining standardized canonical variate coefficients (canonical weights). Canonical weights are values representing the unique contribution of that variable to the canonical function (the canonical correlation and its variates). They are bounded by 1.0 and -1.0 and are interpreted much like factor weightings in factor analysis (i.e., use a rough guideline of values $> .40$ or $< -.40$ as interpretable). The redundancy index is an approximation of the amount of variance accounted for by the sets of variables and consists of the square of the squared multiple correlation coefficient calculated between all IV's and each DV in the set. Conceptually, it is similar to the R-squared value in regression analysis.

Ways of Coping-Revised. The first canonical correlation was .78 (60% of variance), while the second was .62 (23% of variance). Subsequent correlations were less than .30. Together, these two canonical correlations accounted for 83.4% of cumulative variance (Hotelling's $T^2 = 2.63$, Equivalent Multivariate $F(40,277) = 2.99$, $p < .001$). Data on the first two canonical variate pairs is presented in Table R5. Included in the table are correlations between the variables and the canonical variates, standardized canonical variate coefficients, within-set variance accounted for by the canonical variates (percent of variance), redundancies, and canonical correlations. Total percent of variance and total redundancy indicate that the first and second pair of canonical variates are moderately related.

Using a cutoff correlation of .3 for interpretation, variables in the first belief set correlated with the first canonical variate were ATQ-P, log of ATQ-N, and MHLC Powerful Others and Chance LOC beliefs. WOC-R coping variables associated with the first canonical variate were confrontative coping, distancing, self-control, seeking social support, accepting responsibility, and escape avoidance. The first pair of canonical variates indicate that those having high ATQ-P (.39) and low ATQ-N (-.68), MHLC

Powerful Others (-.30) and MHLC Chance beliefs (-.77) also tended to report low use of WOC-R confrontative coping (-.61), distancing (-.32), self-control (-.49), seeking social support (-.46), accepting responsibility (-.54), and escape avoidance (-.95) coping strategies.

In the second canonical variate correlated variables in the belief set include ATQ-P, MHLC Internal and Chance LOC beliefs. WOC-R coping variables include the log of confrontative coping, distancing, self-control, accepting responsibility, planful problem-solving, and positive reappraisal. The second pair of canonical variates indicates a relationship between low endorsement of ATQ-P (-.31), low MHLC Internal LOC (-.91) and high MHLC Chance LOC (.31) with low use of WOC-R confrontative coping (-.34), distancing (-.66), self-control (-.34), accepting responsibility (-.65), planful problem-solving (-.58) and positive reappraisal (-.43). On the whole, these results support Hypothesis 1.

Insert Table R5 About Here

Table R5

Correlations, Standardized Canonical Coefficients, Canonical Correlations, Percents of Variance, and Redundancies Between Belief and WOC-R Coping Variables and Their Corresponding Canonical Variates

	First Canon. Var.		Second Canon. Var.	
	Correl.	Coeffic.	Correl.	Coeffic.
Beliefs Set				
ATQ-P	.39	.21	-.31	-.28
Log ATQ-N	-.68	-.58	.07	-.43
MHLC-I	.09	-.34	-.91	-.98
MHLC-PO	-.30	-.21	.03	-.12
MHLC-C	-.77	-.63	.31	.18
% variance	.26		.20	Total = .46
redundancy	.16		.08	.24
WOC-R Coping Set				
Log Confrontative				
Coping	-.61	-.16	-.34	-.35
Distancing	-.32	-.20	-.66	-.49
Self-Control	-.49	-.11	-.34	.34
Seek Social				
Support	-.46	.11	-.19	-.08
Accepting				
Responsibility	-.54	-.16	-.65	-.76
Escape				
Avoidance	-.95	-.84	.11	.70
Plan Problem				
Solving	-.18	.20	-.58	-.26
Positive				
Reappraisal	-.11	.24	-.43	.15
% variance	.16		.27	Total = .43
redundancy	.08		.21	.29
Canonical Corr	.78		.62	

Coping Inventory For Stressful Situations. The first canonical correlation was .78 (60% of variance), while the second was .35 (12% of variance). Subsequent correlations on the second canonical variate were less than .30. Together, these two canonical correlations accounted for 72% of cumulative variance (Hotelling's $T^2 = 1.79$, Equivalent Multivariate $F(15,152) = 6.05$, $p < .001$). Interpretation of the second canonical variate is marginal and was not conducted. Data on the first canonical variate pair is presented in Table R6.

Correlated variables in the belief set included ATQ-P, log of ATQ-N, and MHLC Powerful Others and Chance LOC beliefs. All CISS scales were significantly associated with the canonical variate. This pair of canonical variates indicates a relationship between high endorsement of ATQ-P (.38), and low endorsement of ATQ-N (-.73), MHLC Powerful Others LOC (-.37) and MHLC Chance LOC (-.75) with high use of CISS Task Oriented coping (.39), low use of Emotion Oriented coping (-.92) and low use of Avoidance Oriented coping (-.70). These results are also consistent with Hypothesis 1. Of particular note in these results are the significant amount of variance and redundancy for the sets (measuring the amount of variance accounted for by the variate within the beliefs and coping variable set respectively).

Insert Table R6 About Here

Table R6

Correlations, Standardized Canonical Coefficients,
Canonical Correlations, Percents of Variance, and
Redundancies Between Belief and CISS Coping Variables
and First Canonical Variate

	First Canon. Var.	
	Correl. Coeffic.	
<hr/>		
Beliefs Set		
ATQ-P	.38	.18
Log ATQ-N	-.73	-.61
MHLC-I	.22	-.21
MHLC-PO	-.37	-.28
MHLC-C	-.75	-.56
% variance	.29	
redundancy	.17	
CISS Coping Set		
Task Oriented	.39	.39
Emotion		
Oriented	-.92	-.70
Avoidance		
Oriented	-.70	-.29
% variance	.30	
redundancy	.50	
Canonical Corr	.78	
<hr/>		

Hypothesis 2: Cognitive Beliefs at Time 1 and Outcome at Time 2

Hypothesis 2 predicts that external LOC and high levels of cognitive distortion at Time 1 are related to poorer emotional, physical and psychosocial self-reports of adjustment at Time 2. Canonical correlation was carried out on 6-9 month belief set, consisting of ATQ-P, log of ATQ-N, MHLC Internal, Powerful Others, and Chance LOC measures and the outcome set, consisting of POMS Total Mood Disturbance, SIP Physical and Psychosocial summary scores and CES-D depression 12-15 month scores.

The first canonical correlation coefficient was .78 (61% variance) while the second was .53 (28% variance). Subsequent correlations were less than .30. Together, the first two canonical correlations accounted for 89% variance (Hotelling's $T^2 = 2.02$, Equivalent Multivariate $F(20,190) = 4.80$, $p < .001$). Data on the first and second canonical variates are presented in Table R7.

In the first canonical variate, correlated variables in the belief set included ATQ-P, log of ATQ-N, and MHLC Chance LOC beliefs. All outcome variables had interpretable correlations with the canonical variate. Low ATQ-P (-.65) and high ATQ-N (.81) and MHLC Chance LOC beliefs (.63) were associated with

increased reports of POMS emotional disturbance (.99), SIP Physical (.31) and Psychosocial (.65) disturbance and CES-D depression (.85) scores. Percent variance and redundancy figures demonstrate strong relationships between variable sets on this variate.

In the second canonical variate, only MHLC Powerful Others LOC was significantly associated in the belief set while SIP Physical and Psychosocial scores were significantly associated in the outcome set. Higher reports of Powerful Others LOC (.94) was associated with greater difficulties in SIP Physical (.81) and Psychosocial Domains (.65). Results from both canonical correlates provide support to Hypothesis 2.

Table R7

Correlations, Standardized Canonical Coefficients,
Canonical Correlations, Percents of Variance, and
Redundancies Between Belief and Outcome Variables and
Their Corresponding Canonical Variates

	First Canon. Var.		Second Canon. Var.	
	Correl. Coeffic.		Correl. Coeffic.	
Beliefs Set				
ATQ-P	-.65	-.42	.01	-.06
Log ATQ-N	.81	.51	.10	.30
MHLC-I	-.28	.05	.04	.14
MHLC-PO	-.10	-.14	.94	1.07
MHLC-C	.63	.50	.17	-.23
% variance	.31		.18	Total = .49
redundancy	.19		.05	.24
Outcome Set				
POMS TMD	.99	-.25	.04	.04
Log SIP Phy	.31	.67	.81	.81
Log SIP Psy	.65	.75	.65	.65
Log CES-D	.85	-.54	.05	.05
% variance	.33		.07	Total = .40
redundancy	.55		.27	.92
Canonical Corr	.78		.53	

Hypothesis 3: Coping at Time 1 and Outcome at Time 2

Hypothesis 3 predicts that high overall coping and use of emotion-focused coping strategies at Time 1 will be related to poorer emotional, physical and psychosocial self-reports of adjustment at Time 2.

Subscales from the 6-9 month WOC-R as a group and CISS as a group served as the basis for two sets of cluster analysis using Ward's method of minimum variance clustering with the squared Euclidean distance as the metric. These calculations were performed using the SPSS statistical analysis program for the Macintosh (version 4.0; SPSS, 1990), following the data-analysis techniques of Frank et al (1987) as a model. Cluster analysis (rather than canonical correlation) was used for consistency with prior analytical techniques reported in the literature (i.e., Frank et al, 1987, Moore & Stambrook, 1992). The number of clusters was determined by inspecting inter-cluster coefficients looking for discontinuity, and then examining the clusters themselves for clinical relevance following suggestions by Hair, Anderson, and Tatham (1987). Three sets of MANOVAs (Multivariate Analysis of Variance) were subsequently performed using cluster membership as the grouping variable. The first was designed to evaluate precise coping style differences between the clusters by performing a MANOVA on the

cluster solution itself. It should be emphasized that this procedure was not designed to confirm the presence of significant inter-cluster differences in coping styles as the clustering procedure performs this function. The second MANOVA was performed to determine whether the coping groups differed on the basis of medical or demographic variables. This analysis consisted of evaluating inter-group differences on age at injury, Glasgow Coma Scale score on admission, length of coma and post-traumatic amnesia, and length of hospital stay. The final MANOVA evaluated validation measures of outcome at the 12-15 month follow-up. Measures included the POMS Total Mood Disturbance score, the log of SIP Physical and Psychosocial Dimension subscales and the log of CES-D depression score.

Ways Of Coping - Revised. After examination of the cluster results from the WOC-R, the two cluster solution was selected as best fitting statistical and clinical criteria for interpretation.

The MANOVA on the cluster solution yielded an overall significant effect (Hotelling's $T^2 = 3.25$, Equivalent Multivariate $F(8,49) = 19.96$, $p < .001$). Univariate F tests on the coping subscales revealed significant inter-cluster differences in coping use on all subscales apart from Distancing ($F(1,56) = 2.35$, $p < .131$). Cluster 1 (Low Use) consisted then of 32

subjects using the following coping strategies: Significantly less confrontative, selfcontrol, seeking social support, accepting responsibility, escape avoidance, planful problem solving, and positive reappraisal coping strategies than Cluster 2 (High Use) subjects ($N = 26$).

No significant differences were found between Cluster 1 (Low Use) and Cluster 2 (High Use) subjects on the medical or demographic variables (Hotelling's $T^2 = 0.09$, Equivalent Multivariate $F(5,52) = 0.95$, $p < .456$).

However, significant differences were found between cluster groups on 12-15 month outcome variables. The overall MANOVA was found to be significant (Hotelling's $T^2 = 0.26$ Equivalent Multivariate $F(4,51) = 3.33$, $p < .017$). Follow-up univariate F -tests found significant differences between cluster groups on the log of SIP Psychosocial Dimension subscale ($F(1,54) = 12.81$, $p < .001$) and the log of CES-D depression score ($F(1,54) = 6.96$, $p < .001$). Trends were found for the remaining two validation measures as well. Specifically, trends were identified for POMS Total Mood Disturbance ($F(1,54) = 3.48$, $p < .068$) and the log of SIP Physical Dimension subscale ($F(1,54) = 3.47$, $p < .068$). Cluster 1 (low use) subjects reported fewer difficulties on all scales

compared to Cluster 2 (high use) subjects. These findings are consistent with Hypothesis 3. Results from these analyses are summarized in Table R8.

Insert Table R8 About Here

Table R8WOC-R Cluster Analysis Results

Variable	Cluster 1		Cluster 2		F (1,54)	p
	Mean	S.D.	Mean	S.D.		
<u>WOC-R subscale</u>						
Confrontative	3.50	2.78	7.92	3.05	33.16	.001
Distancing	6.88	2.94	8.15	3.41	2.35	.131
Self-Control	6.34	3.26	10.92	2.70	32.96	.001
Social Support	5.06	3.13	10.50	4.20	31.90	.001
Accept Resp.	2.50	2.14	5.34	2.80	19.25	.001
Escape Avoid.	4.53	3.47	12.42	5.03	49.72	.001
Problem Solv.	5.25	3.84	9.54	4.24	16.30	.001
Pos. Reapprais.	5.09	3.50	11.77	4.39	41.56	.001
<u>Demographic/Medical Variables</u>						
Age at Injury	38.72	15.77	37.23	16.91	0.12	.731
Coma Length	0.45	2.47	0.43	1.41	0.01	.959
PTA Length	1.98	8.81	3.04	8.55	0.21	.645
Glasgow Coma Sc.	13.91	2.36	12.62	3.77	2.53	.117
Length Hospital Stay	13.34	37.84	17.19	40.12	0.14	.709
<u>12-15 Month Outcome Variables</u>						
POMS Total Mood						
Disturbance	67.41	38.59	87.42	41.25	3.48	.068
Log SIP Phys	0.37	0.59	0.66	0.58	3.47	.068
Log SIP Psycho-social	0.68	0.57	1.19	0.57	12.82	.001
Log CES-D	1.47	0.11	1.55	0.13	6.96	.001

Coping Inventory For Stressful Situations. After examination of the cluster results from the CISS, the two cluster solution was selected as best fitting statistical and clinical criteria for interpretation.

The MANOVA on the cluster solution yielded an overall significant effect (Hotelling's $T^2 = 1.62$, Equivalent Multivariate $F(3,54) = 29.18$, $p < .001$). Univariate F tests on the coping subscales revealed significant inter-cluster differences in coping use on Emotion-oriented ($F(1,56) = 78.06$, $p < .001$) and Avoidance-oriented ($F(1,56) = 14.19$, $p < .001$) coping. Cluster 1 (Low Emotion/Avoidance) consisted then of 36 subjects who used relatively low emotion and avoidance oriented coping styles compared to 22 Cluster 2 (High Emotion/Avoidance) subjects.

The MANOVA on the demographic/medical variable set yielded no significant multivariate effects (Hotelling's $T^2 = 0.08$, Equivalent Multivariate $F(5,52) = 0.88$, $p < .504$) or univariate effects (p 's $> .3$). However, significant findings were obtained on the 12-15 month outcome variable set. The MANOVA results were significant (Hotelling's $T^2 = 0.23$, Equivalent Multivariate $F(4,51) = 2.93$, $p < .029$) and follow-up univariate F tests revealed significant intercluster differences on the log of SIP Psychosocial dimension subscale ($F(1,54) = 6.04$, $p < .017$), and the log of

CES-D Depression subscale ($F(1,54) = 9.89, p < .003$). A trend was also noted for POMS Total Mood Disturbance scores ($F(1,54) = 3.75, p < .058$). Cluster 1 (Low Emotion/Avoidance) subjects reported less depression and psychosocial disturbance along with a trend for lower total mood disturbance at 12-15 months post injury compared to Cluster 2 (High Emotion/Avoidance) subjects. These findings are also consistent with Hypothesis 3. Results from these analyses are summarized in Table R9.

Insert Table R9 About Here

Table R9CISS Cluster Analysis Results

Variable	Cluster 1		Cluster 2		F (1,54)	p
	Mean	S.D.	Mean	S.D.		
<u>CISS Subscale</u>						
Task	48.67	14.94	51.46	12.08	0.55	.463
Emotion	33.06	9.12	54.86	9.12	78.07	.001
Avoidance	37.25	8.84	46.82	10.23	14.19	.001
<u>Demographic/Medical Variables</u>						
Age at Injury	40.11	16.07	35.82	16.04	0.98	.327
Coma Length	0.60	2.58	0.16	0.42	0.62	.436
PTA Length	2.73	9.98	1.95	6.00	0.11	.742
Glasgow Coma Sc.	13.61	2.87	13.18	3.25	0.28	.601
Length Hospital Stay	14.11	37.42	15.91	41.38	0.03	.865
<u>12-15 Month Outcome Variables</u>						
POMS Total Mood						
Disturbance	67.19	39.26	88.40	39.21	3.75	.058
Log SIP Phys	0.44	0.58	0.57	0.63	0.62	.433
Log SIP Psycho-social	0.73	0.56	1.12	0.55	6.04	.017
Log CES-D	1.46	0.12	1.56	0.11	9.89	.003

Hypothesis 4: Interaction of Time and Severity on Cognitive Beliefs and Outcome

Hypothesis 4 predicts an interaction effect on both dependent measures of cognitive beliefs and outcome for the independent variables of time post-injury and severity of injury. More specifically, measures of outcome are predicted to improve with increasing time post-TBI for mild and moderate TBI patients, while measures of outcome are predicted to decline for patients with severe TBI. Cognitive beliefs are expected to be characterized by increased external LOC and greater cognitive distortion for patients with severe TBI, while the opposite pattern is hypothesized for mild and moderate TBI patients.

These analyses were conducted using a 3 x 2 (time x severity group) repeated measures analysis of variance (ANOVA) on each of the dependent measures of cognitive beliefs and summary measures of outcome. Follow-up exploratory one-tailed t -tests were planned a priori to further investigate potential main and interaction effects.

Automatic Thoughts - Positive. Repeated measures ANOVA on ATQ-P variables at 6-9 and 12-15 months revealed a nonsignificant Group and Time effect (p 's > .1), but a significant Group x Time interaction ($F(2,58) = 4.13, p > .021$). A plot of the data is

found in Figure R7, showing a significant increase in ATQ-P responses among mild TBI patients ($t(40) = -3.25$, $p < .001$) and a trend of decreased ATQ-P endorsement among moderate subjects ($t(10) = 1.74$, $p < .061$) over follow-up. These findings are consistent with Hypothesis 4.

Insert Figure R7 About Here

Automatic Thoughts - Negative. Repeated measures ANOVA on the log of ATQ-N variables at the two follow-ups revealed no significant effects for Group, Time, or Group x Time interaction (p 's $> .1$). Data points for both ATQ-P and ATQ-N questionnaires are found in Table R10. These findings do not support Hypothesis 4.

Insert Table R10 About Here

Figure R7:
Automatic Thoughts Questionnaire - Positive
6-9 and 12-15 month Follow-Up

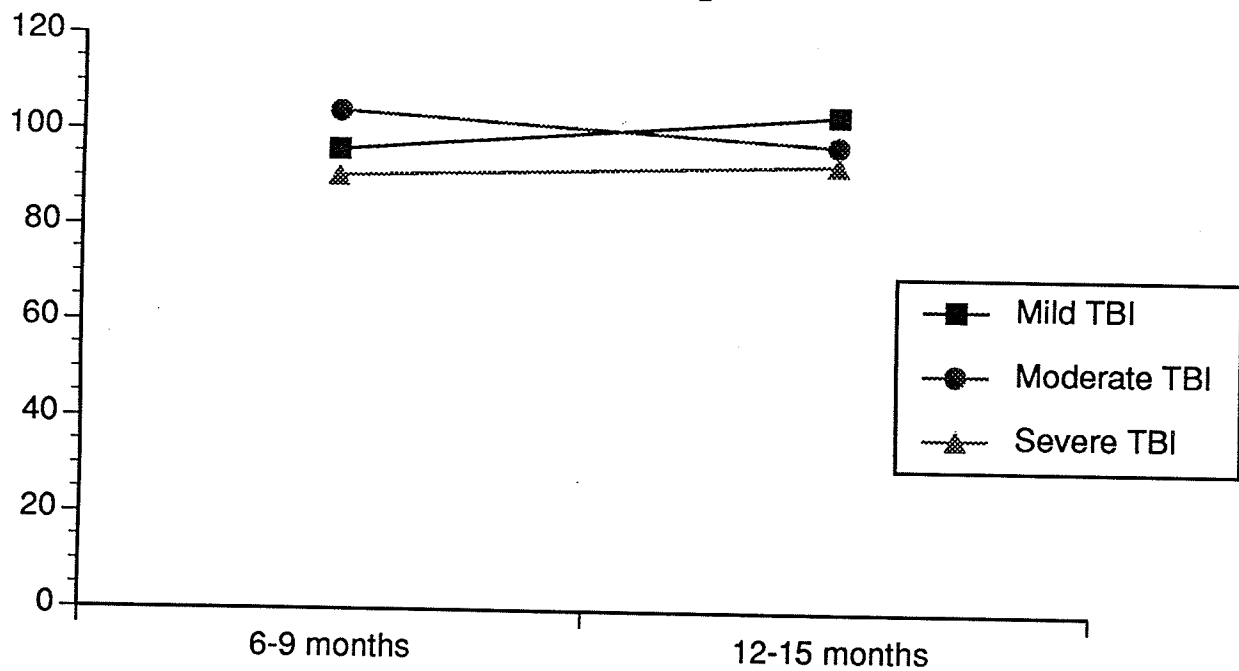


Table R10

Automatic Thoughts Questionnaire - Positive and
Negative Scores over 6-9 and 12-15 Month Follow-Up

Severity Group	<u>N</u>	6 - 9 months		12-15 months		<u>t</u>	<u>p</u>
		Mean	S.D.	Mean	S.D.		

ATQ-P Scores

Mild	41	95.90	23.24	103.65	21.24	-3.25	.001
Moderate	11	104.00	17.73	97.27	13.65	1.74	.061
Severe	9	90.33	18.37	93.33	13.80	0.58	.290

Log ATQ-N Scores

Mild	41	1.72	0.18	1.74	0.18	-0.76	.227
Moderate	10	1.73	0.13	1.76	0.19	-0.77	.231
Severe	9	1.77	0.17	1.81	0.21	-1.03	.167

Multidimensional Health Locus of Control.

Repeated measures ANOVA on MHLC Internal LOC scores revealed a trend for the Time effect ($F(1,57) = 3.38$, $p < .071$), but non-significant results for Group and Group x Time effects (p 's $> .10$). On a priori t -tests, no significant changes in MHLC Internal were found for any severity group (p 's $> .10$). However, on the 12-15 month follow-up, severe severity group subjects were found to have significantly lower Internal scores compared to mild severity group subjects ($t(48) = 2.20$, $p < .016$). At 6-9 months, severe and mild subjects' scores were not significantly different. A trend was also noted that severe severity subjects had lower Internal scores on 12-15 month follow-up compared to their 6-9 month score ($t(8) = 1.49$, $p < .087$). All other comparisons were non-significant (p 's $> .10$).

Repeated measures ANOVA analyses using Powerful Others scores revealed no significant main or interaction effects (p 's $< .10$). The single significant follow-up t -test was found between severe severity group subjects and mild severity group subjects at the 6-9 month assessment ($t(48) = -1.55$, $p < .043$). However, there was no significant difference in Powerful Others beliefs between severe and mild group subjects by the 12-15 month follow-up.

Main and interaction repeated measures ANOVA's were also nonsignificant (p 's < .10) on Chance LOC scores. A priori t -tests revealed two significant findings. First, severe and mild severity groups differed significantly at the 6-9 month assessment ($t(48) = -1.98$, $p < .026$) with subjects recovering from severe TBI endorsing greater Chance LOC beliefs. This difference disappeared at the 12-15 month follow-up. Second, the severe TBI group was also the only group to show significant differences in endorsement between assessments ($t(8) = 2.53$, $p < .018$), moving in the direction of endorsing less Chance LOC beliefs. On the whole, the findings from the MHLC provide little or weak support for Hypothesis 4. Data from the MHLC scales at both follow-ups is presented in Table R11.

Insert Table R11 About Here

Table R11Multidimensional Health Locus of Control Scores over
6-9 and 12-15 Month Follow-Up

Severity Group	N	6 - 9 months		12-15 months		t	p
		Mean	S.D.	Mean	S.D.		
<u>MHLC Internal</u>							
Mild	41	10.81	11.90	11.10	11.09	-0.23	.409
Moderate	10	8.00	11.23	6.00	11.55	1.38	.101
Severe	9	7.22	12.03	1.66	14.00*	1.49	.087

MHLC Powerful Others

Mild	41	-6.90	14.35	-7.59	12.95	0.46	.325
Moderate	10	-3.40	12.61	-4.00	8.92	0.36	.365
Severe	9	1.00	10.98*	-1.22	12.00	0.73	.244

MHLC Chance

Mild	41	-8.39	12.87	-8.54	13.14	0.11	.457
Moderate	10	-5.50	7.15	-4.10	10.21	-0.43	.338
Severe	9	0.78	11.04*	-4.56	12.84	2.53	.035

Note. * denotes significant group differences between severe and mild groups ($p < .05$, one-tailed t-test).

Sickness Impact Profile. On the log of Physical Dimension subscale, repeated measures ANOVA results found a significant Group main effect ($F(2,57) = 3.96$, $p < .025$), but nonsignificant Time and Group x Time interaction terms (p 's $> .10$). A priori t -tests found a significant change between follow-ups for the mild group ($t(40) = 2.12$, $p < .020$) with their reports of physical difficulties decreasing over time. The single group difference was found between the mild and severe group at the 12-15 month follow up ($t(48) = -2.81$, $p < .004$) with severe group subjects scoring significantly higher. This data is graphed in Figure R8.

Trends for both main effects were revealed on repeated measures ANOVA conducted on SIP Psychosocial Dimension subscores. The main effect of Group approached significance ($F(2,57) = 2.94$, $p < .061$) as did the main effect of Time ($F(1,57) = 3.07$, $p < .085$). The interaction term was nonsignificant ($p > .10$). A priori t -tests revealed a similar pattern of change over follow-up with mild group subjects reporting significant decreases in psychosocial disturbance between follow-ups ($t(40) = 2.17$, $p < .018$). A trend was also noted in the severe group with the t -test approaching significance ($t(8) = 1.80$, $p < .060$). Reports of Psychosocial difficulties decreased over follow-up for the severe group as well. Significant

group differences were found at both follow-ups with severe group subjects reporting significantly greater psychosocial difficulties compared to both mild and moderate subjects (6-9 month follow-up, Mild vs. Severe: $t(25.37) = -3.31$, $p < .002$, Moderate vs. Severe $t(17) = -2.61$, $p < .009$. 12-15 month follow-up, Mild vs. Severe: $t(48) = -2.32$, $p < .013$, Moderate vs. Severe: $t(17) = -1.95$, $p < .034$). This data is graphed in Figure R9.

A similar pattern of effects was noted on SIP Total scores. The main effect of Group was significant ($F(2,57) = 3.68$, $p < .031$) as was the main effect for Time ($F(1,57) = 4.11$, $p < .047$). The interaction term was nonsignificant ($p > .10$). A priori t -tests revealed significant decreases in overall SIP endorsement for mild subjects over follow-ups ($t(40) = 2.66$, $p > .006$). An identical pattern of inter-group differences to SIP Physical results was found for SIP Total score with severe group subjects reporting higher levels of distress at both follow-ups (6-9 month follow-up, Mild vs. Severe: $t(48) = -2.49$, $p < .008$, Moderate vs. Severe $t(17) = -2.32$, $p < .017$. 12-15 month follow-up, Mild vs. Severe: $t(48) = -2.72$, $p < .005$, Moderate vs. Severe: $t(17) = -2.16$, $p < .023$). Overall, these results partially support Hypothesis 4. The data from these analyses are presented in Table R12 and are graphed in Figure R10.

Insert Table R12 About Here

Insert Figures R8 to R10 About Here

Table R12Sickness Impact Profile Summary Scores over 6-9 and
12-15 Month Follow-Up

Severity Group	N	6 - 9 months		12-15 months		t	p
		Mean	S.D.	Mean	S.D.		
<u>Log SIP Physical</u>							
Mild	41	0.51	0.51	0.39	0.54	2.12	.020
Moderate	10	0.67	0.64	0.71	0.56	-0.42	.343
Severe	9	0.99	0.67	0.99	0.74*	0.02	.491

Log SIP Psychosocial

Mild	41	0.96	0.61	0.83	0.60	2.17	.018
Moderate	10	0.89	0.52	0.82	0.66	0.69	.254
Severe	9	1.41	0.30**	1.32	0.41**	1.80	.060

Log SIP Total

Mild	41	0.93	0.47	0.83	0.48	2.66	.006
Moderate	10	0.92	0.45	0.83	0.55	1.07	.157
Severe	9	1.34	0.32**	1.30	0.36**	0.78	.229

Note. * denotes significant group differences between severe and mild groups ($p < .05$, one-tailed t -test).
 ** denotes significant group differences between severe and moderate groups ($p < .05$, one-tailed t -test).

Figure R8:
Log of Sickness Impact Profile - Physical
6-9 and 12-15 month Follow-Up

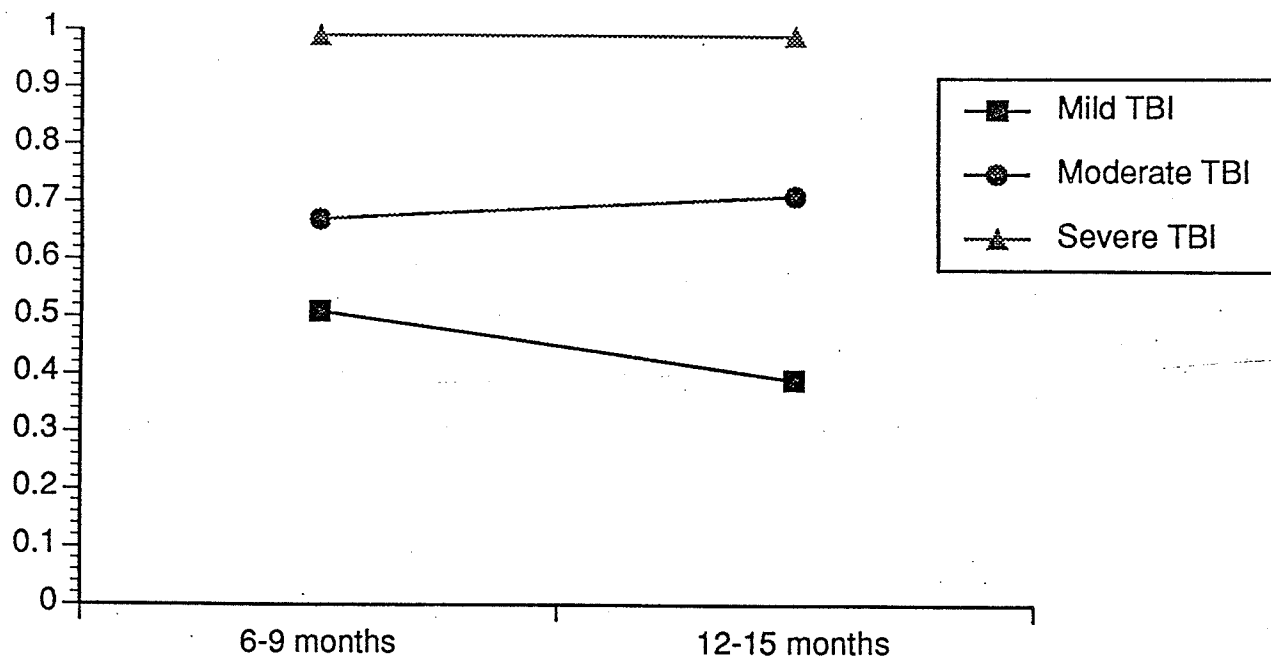


Figure R9:
Log of Sickness Impact Profile - Psychosocial
6-9 and 12-15 month Follow-Up

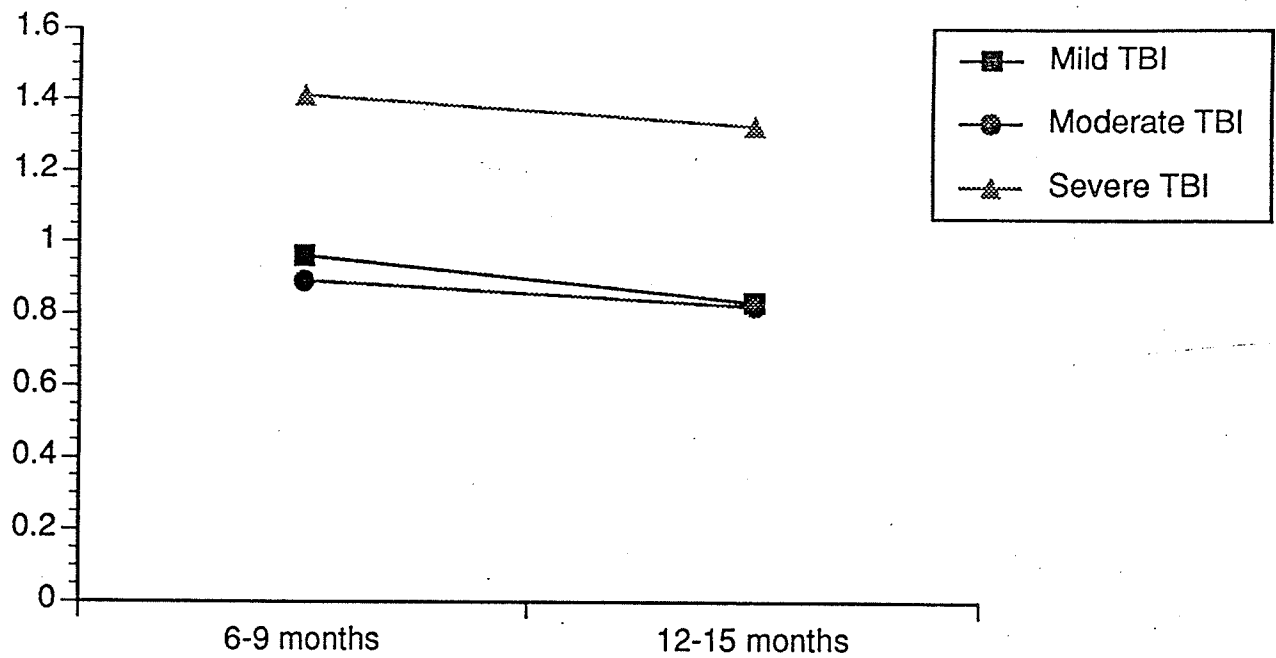
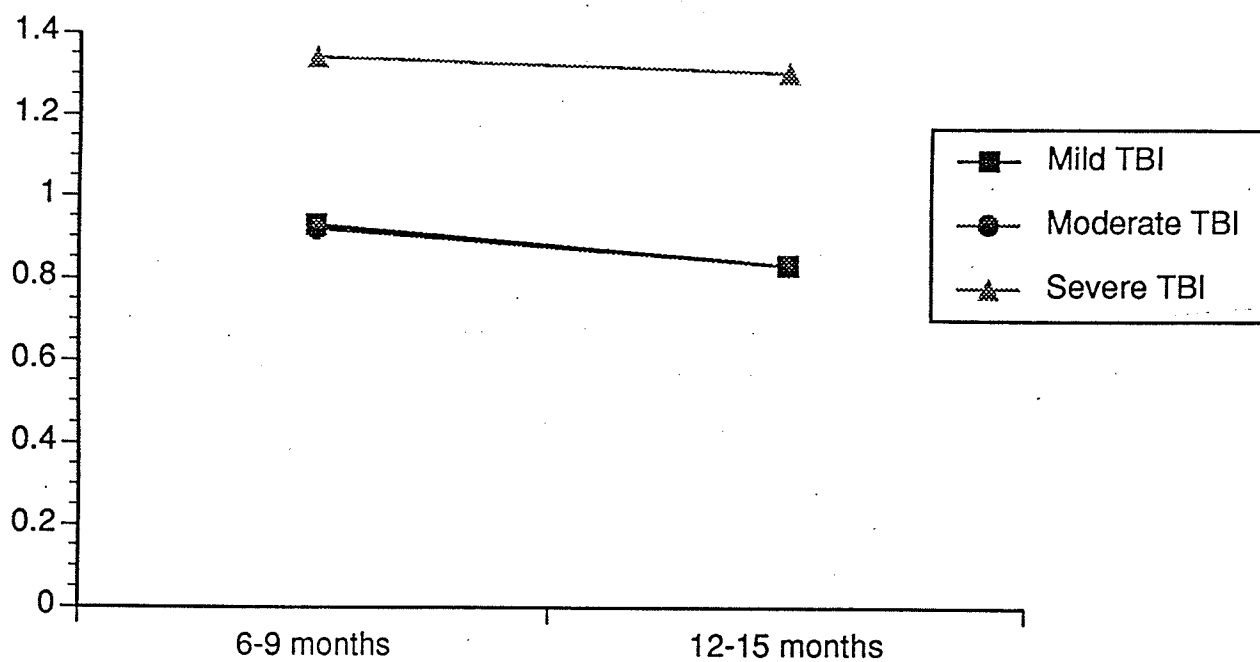


Figure R10:
Log of Sickness Impact Profile - Total
6-9 and 12-15 month Follow-Up



CES-D Depression and POMS Total Mood Disturbance.

Repeated measures ANOVAs for POMS Total Mood Disturbance scores were nonsignificant for both main effects (p 's $> .10$) but the interaction term was significant ($F(2,57) = 4.24, p < .019$). Follow-up t -tests found trends or significant differences for all groups over follow-ups. The severe group showed significant decreases in mood disturbance over follow-up ($t(8) = 1.96, p < .043$), while trends were realized for both mild ($t(40) = 1.62, p < .057$) and moderate ($t(9) = -1.43, p < .093$) subjects. Mild subjects reported less disturbance while moderate subjects reported increases in emotional disturbance over follow-up. Group differences were found only on the 6-9 month follow-up between severe and both mild and moderate subjects with severe group subjects reporting greater mood disturbance (Mild vs. Severe: $t(48) = -2.39, p < .020$, Moderate vs. Severe: $t(17) = -3.26, p < .003$). This data is graphed in Figure R11.

Repeated measures ANOVA results for the CES-D revealed a significant main effect for Group ($F(2,54) = 4.35, p < .018$) but nonsignificant time and Group x Time interaction terms (p 's $< .10$). A priori t -tests revealed only significant group differences between severe and both mild and moderate subjects at both follow-ups with severe subjects reporting higher

depression (6-9 month follow-up, Mild vs. Severe: $t(46) = -2.15$, $p < .019$, Moderate vs. Severe $t(17) = -3.24$, $p < .003$. 12-15 month follow-up, Mild vs. Severe: $t(47) = -2.10$, $p < .021$, Moderate vs. Severe: $t(16) = -2.62$, $p < .009$). Overall, these results also lend partial support to Hypothesis 4. Data from these analyses are presented in Table R13 and are graphed in Figure R12.

Insert Table R13 About Here

Insert Figure R11 to R12 About Here

Table R13

CES-D Depression and POMS Total Mood Disturbance Scores
over 6-9 and 12-15 Month Follow-Up

Severity Group	N	6 - 9 months		12-15 months		t	p
		Mean	S.D.	Mean	S.D.		
<u>POMS Total Mood Disturbance</u>							
Mild	41	81.12	51.92	74.02	43.60	1.62	.057
Moderate	10	67.10	27.52	80.90	31.71	-1.43	.093
Severe	9	120.44	42.85**	93.33	48.02	1.96	.043

Log CES-D Scores

Mild	39	1.51	0.14	1.50	0.12	0.71	.241
Moderate	9	1.45	0.09	1.45	0.08	-0.29	.389
Severe	9	1.62	0.11**	1.59	0.13**	0.73	.244

Figure R11:
Profile Of Mood States - Total Mood Disturbance
6-9 and 12-15 month Follow-Up

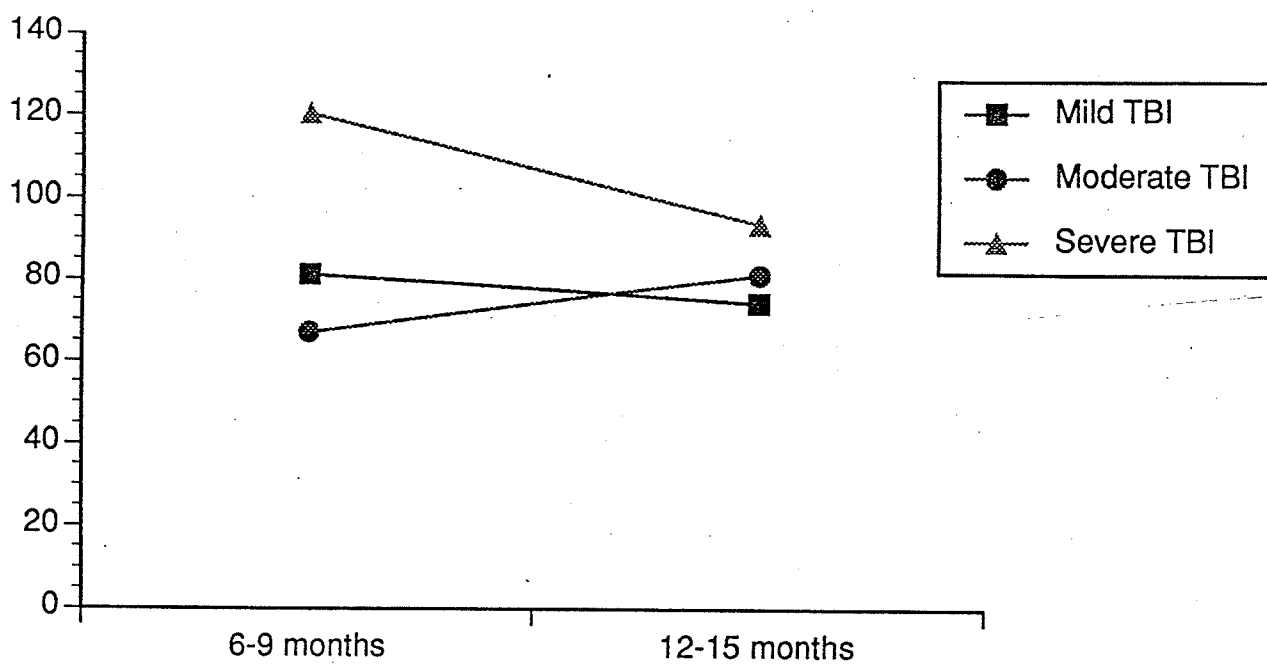
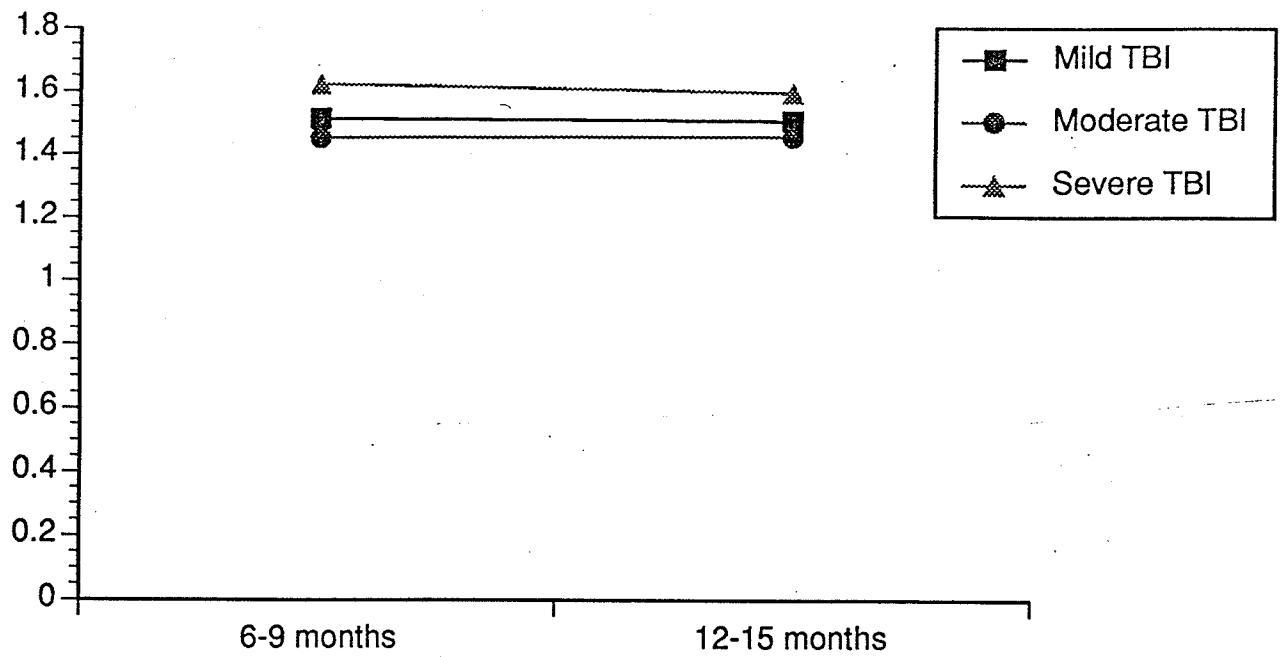


Figure R12:
Log of CES-D Depression Scores
6-9 and 12-15 month Follow-Up



Hypothesis 5: Evaluation of Model

Initial Fitting of Hypothesized Model

LISREL version 6.0 (Joreskog & Sorbom, 1986) run through SPSSx version 2.2 as a USERPROCEDURE was utilized for the subsequently reported path analyses. Initial analysis consisted of setting latent and observed paths in accordance with the hypothesized conceptual model (See Figure R13). LISREL provides four indices of goodness of fit of the overall model: 1) The chi-square (with it's associated sensitivity to small sample size) which must be nonsignificant to indicate a good fitting model (rejecting the null hypothesis that the model does not fit), 2) a Goodness of Fit Index (GFI; $GFI > .90$ is a good fitting model; Joreskog & Sorbom, 1986), 3) an adjusted GFI for sample size (AGFI), and 4) the root mean square residual (RMSR; conceptually, this index provides model described variance).

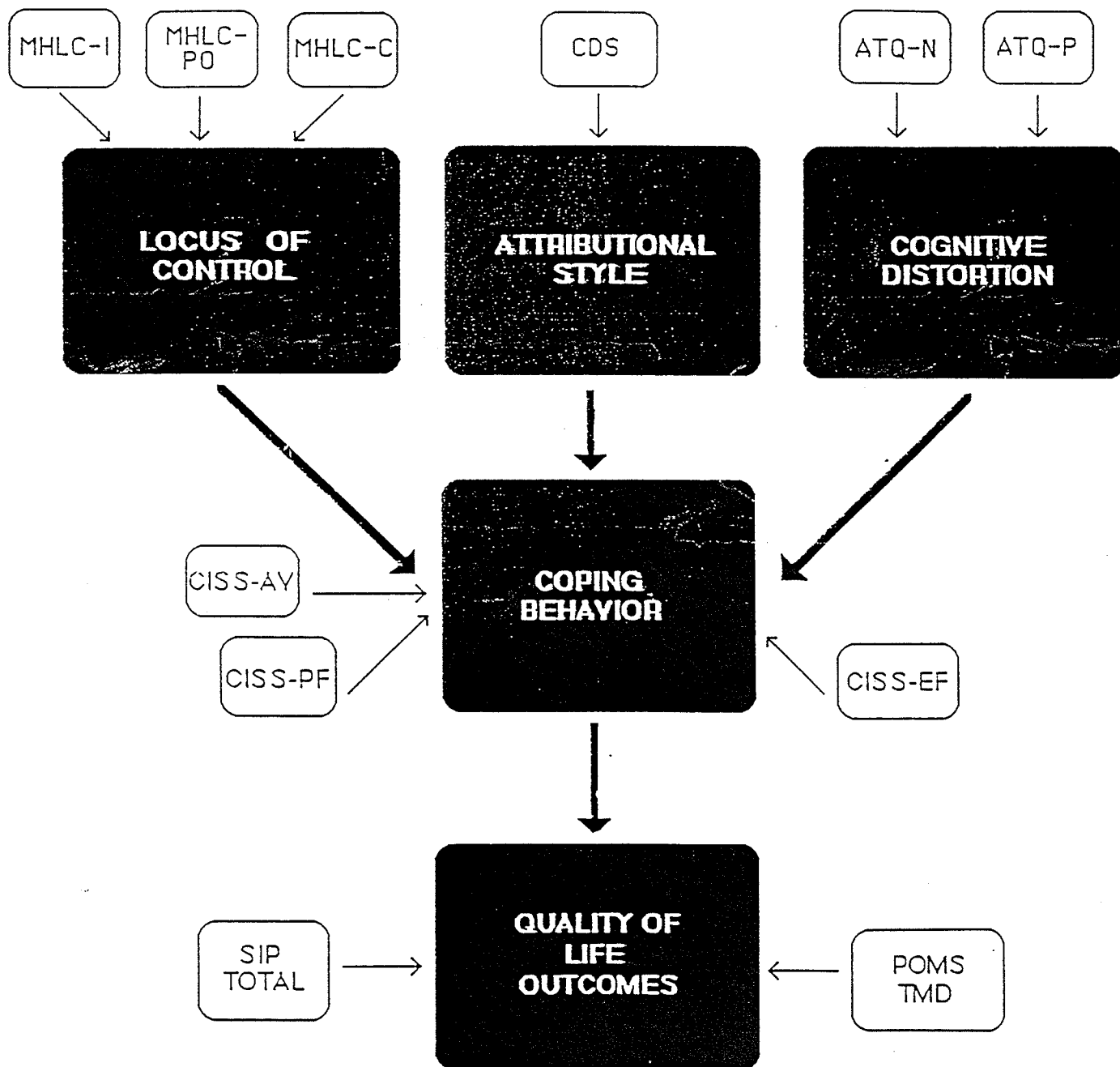
The first fitting of the model yielded goodness-of-fit indicies reflecting a poorly fitting model. A Chi-square with 31 degrees of freedom was 141.62 ($p > .001$), GFI was .69, AGFI was .44, and RMSR was .23. Examination of the matrix output revealed several potential problems with the original model. Primarily, these consisted of requesting LISREL to utilize observed variables which measured different concepts

and combine these to form a latent variable. For example, the original model specifies combining all MHLC variables to produce a latent omnibus MHLC variable. LISREL diagnostics suggested separating all variables within the model.

Insert Figure R13 About Here

Hypothesis 5

EVALUATION OF CONCEPTUAL MODEL



Model Building

Subsequent runs of the model involved separating both cognitive moderator and quality of life outcome variables into "pure" rather than omnibus latent variables and refitting the model. MHLC measures were split into two latent variables, an Internal MHLC and a Powerful Others/Chance MHLC latent variable (consistent with findings by Umlauf and Frank (1986)). ATQ-P and lagged ATQ-N variables were also split. CISS variables were split into Emotion-Oriented, Task-Oriented and Avoidance-Oriented Coping latent variables. Subsequent fitting of the model found that Avoidance-Oriented Coping added little to the model as a whole and was dropped from the model. Finally, lagged SIP Total scores were dropped from the latent quality of life variable as it contributed relatively little to the model. Relationships between remaining observed and latent variables were fitted according to the original theoretical model and another run was initiated. Although goodness-of fit indices do not reach strict levels of significance, they do approach them and reflect significant improvement in model fit (Chisquare with 13 degrees of freedom was 43.25 ($p < .001$), GFI = .84, AGFI = .56, and RMSR = .17). Readers should be aware that several authorities note that relatively small N attenuates goodness of fit indicators (Anderson

& Gerbing, 1984; McDonald & Walsh, 1990) particularly when models are complex (Bearden, Sharma, & Tell, 1982). The current model, with a moderate degree of complexity may be affected by both these factors. With a larger sample size, relationships within the current data set may have reached significance. The path coefficients for the final revised model are shown in Figure R14, and reflect agreement of the fitted LISREL model with the conceptual model. As previously noted the model does not meet strictly defined criteria for goodness-of-fit, although the model does appear to account for the amount of variance one would initially predict cognitive moderators would have on quality of life at this stage in recovery based on previous studies.

Insert Figure R14 About Here

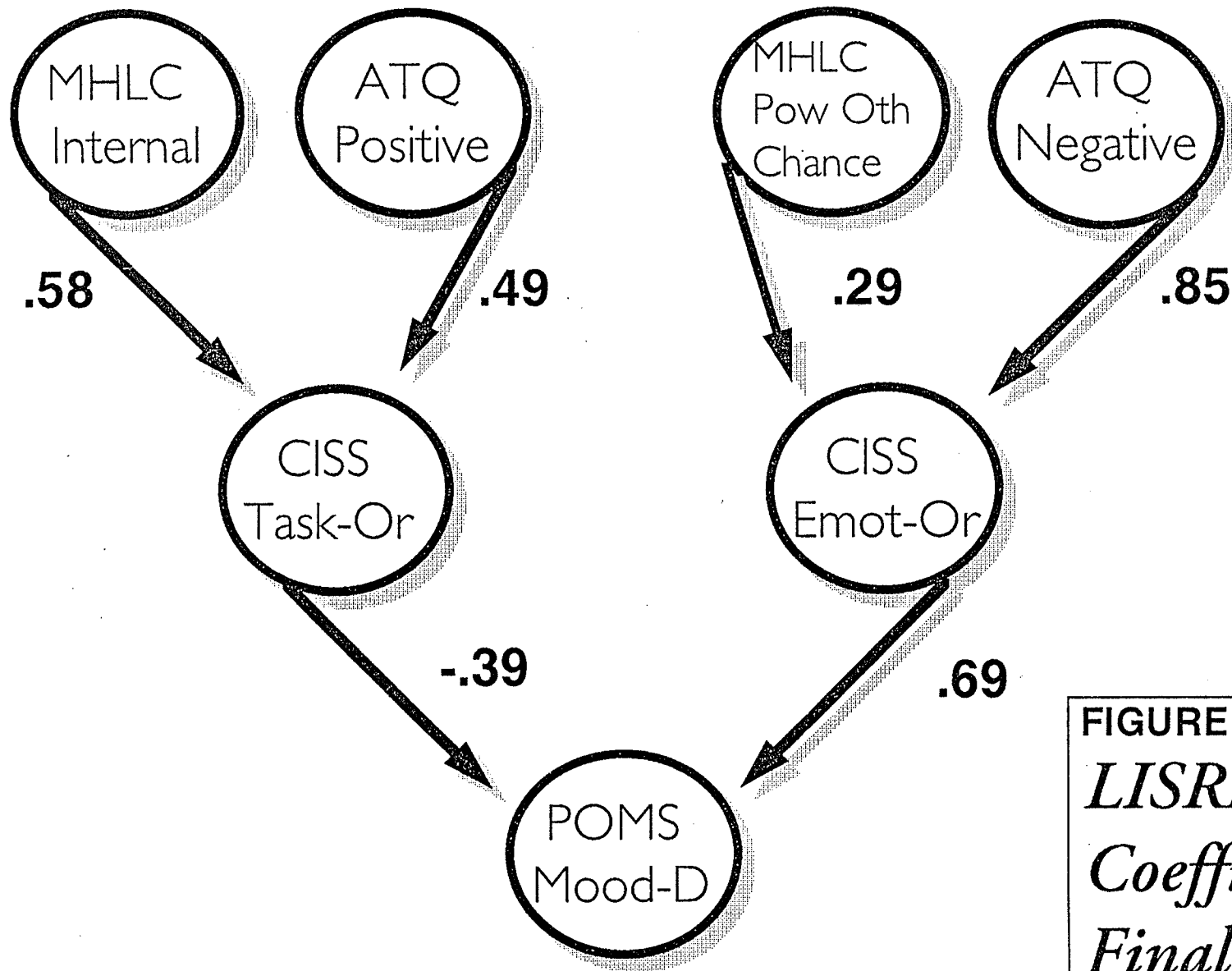


FIGURE R14:
*LISREL Path
Coefficients -
Final Model*

DISCUSSION

Summary of Results

Before we turn to examining the question of how the results from the current study fit within the larger literature, let us first review the main findings of the study and their support of the hypotheses advanced. In general, the results from the current study did support most of the hypotheses proposed, reflecting what appears to be a good understanding of the relationships between cognitive moderators and outcome, but a less well developed understanding of the development of these relationships.

Hypothesis 1

Hypothesis 1 investigated the relationship between cognitive beliefs and coping over time, suggesting that external LOC and cognitive distortion would be related to high levels of coping and emotion-focused coping specifically. These predictions were confirmed. High ATQ-P, low ATQ-N and low MHLC Powerful Others and Chance LOC were associated with low overall use of WOC-

R coping strategies (particularly emotion focused coping strategies). Results from the CISS also confirmed these findings with relationship of high ATQ-P, low ATQ-N and low MHLC Powerful Others and Chance LOC beliefs associated with low use of emotion-oriented and avoidance-oriented coping strategies, and high use of task-oriented coping strategies. Problem-solving coping strategies in the WOC-R were also associated with more positive cognitive beliefs. High ATQ-P and MHLC Internal along with low MHLC Chance LOC were associated with relatively high use of problem-focused and reframing coping strategies.

Together, these results suggest a relationship, over time, of positive automatic thoughts and internal LOC beliefs with later task/problem-focused and reframing coping strategies. As well, a relationship between negative automatic thoughts and external LOC with emotion-oriented and high levels of general coping was also noted over follow-ups. These results confirm Hypothesis 1, and show for the first time in a TBI population, a temporal relationship of these constructs.

Hypothesis 2

Hypothesis 2 predicts a relationship between cognitive moderators (LOC and automatic thoughts) and later outcome (SIP Physical and Psychosocial scores, POMS Total Mood Disturbance, and CES-D Depression scores). Results confirmed this hypothesis as well. Low ATQ-P, high ATQ-N, high MHLC Chance, and high MHLC Powerful Others beliefs at 6-9 months were associated with poorer outcome on 12-15 month measures. As with Hypothesis 1, this finding demonstrates a temporal association between cognitive beliefs and outcome for the first time in a TBI population.

Hypothesis 3

Investigation of the relationship between coping and later outcome was the focus of Hypothesis 3. High overall and emotion-focused coping strategies at 6-9 months post-injury were predicted to be associated with poorer outcome at 12-15 month follow-up. These predictions were also confirmed. On the WOC-R, Cluster 2 subjects, who used all WOC-R measured coping strategies (apart from Distancing) significantly greater than their Cluster 1 counterparts reported significantly greater SIP Psychosocial and CES-D Depression. Tendencies for the remaining outcome measures, POMS Total Mood Disturbance and SIP Physical

were also noted. On the CISS, Cluster 2, characterized by high use of emotion and avoidance-oriented coping, reported significantly higher scores on the entire set of outcome measures. In neither of these analyses were their inter-cluster differences on demographic or injury severity indices. These positive findings demonstrate an association over time of coping and outcome following TBI.

Hypothesis 4

The first three hypotheses investigated relationships between variables within the conceptual model, and, for the most part, covered "old" ground in that some of the relationships had been tested through previous retrospective and cross-sectional research in TBI samples. Previous research however, had been conducted significantly later in the recovery process and used a single ("snapshot") assessment design. In contrast, Hypothesis 4 involves exploration of the developmental change aspects of cognitive moderators and outcome, and represents a new area of investigation made possible by the longitudinal design. In general, the majority of results from these analyses tended not to lend support to the current model.

Hypothesis 4 predicted an interaction effect on between cognitive moderators and outcome based on time post-injury and severity of injury. Subjects

recovering from severe TBI were predicted to report lower quality of life outcomes, higher external LOC beliefs, and more negative automatic thoughts. Mild and moderate TBI subjects were expected to report improved quality of life outcomes over time, more internal LOC beliefs, and positive automatic thoughts over time.

Some results from analyses investigating change on cognitive moderator variables did support this hypothesis. Mild TBI patients were found to report significantly more ATQ-P endorsement on 12-15 month follow-up, and a trend was noted that patients with severe TBI reported less MHLC Internal LOC on 12-15 month follow-up. However, the majority of findings did not support Hypothesis 4. Moderate patients with TBI reported less ATQ-P thoughts over time and severe patients with TBI reported less MHLC Chance LOC over time. No group differences were noted between groups on either the ATQ-P or ATQ-N, and those that were seen on the MHLC at 6-9 months disappeared on follow-up when Hypothesis 4 would predict they would become greater (severe group reported significantly more MHLC Powerful Others and Chance LOC, a trend to report less Internal LOC at 6-9 months).

A similar pattern of results was obtained on outcome measures. Results consistent with Hypothesis 4

included findings that mild TBI group subjects reported less SIP Physical, Psychosocial, and Total disturbance and a trend to report less POMS Total Mood disturbance. Although significant differences between groups were found between the severe and mild and moderate groups within follow-up on all outcome measures, these did not change in strength, and in fact, on most analyses, the degree of difference decreased somewhat. These findings do not fully validate the expected increasing divergence between groups predicted. As well, disconfirming findings included findings that subjects recovering from severe TBI subjects reported less SIP Psychosocial and a trend to report less POMS Total Mood Disturbance difficulties on follow-up. A final disconfirming trend was also noted on the POMS Total Mood Disturbance analysis with moderate TBI subjects tending to report more disturbance on 12-15 month follow-up. An issue we will return to when evaluating the limitations of the present research involves sample size, and this was particularly felt in the severe and moderate severity groups. It should be noted that while the majority of confirmatory evidence was found in mild patients with TBI (which had relatively large N), disconfirmatory evidence was in the smaller moderate and severe groups.

Hypothesis 5

Fitting of the LISREL path analysis represented a combination of the hypotheses advanced to this point as well as an opportunity to further investigate and refine the conceptual model. While the original model was found not to meet goodness-of-fit criteria, subsequent revisions to the model did improve fit considerably. The relationships and concepts in the final revised model form a subset of the original model and are somewhat more specific than the more general original conceptual model. Overall, the results obtained in the path analysis are consistent with the amount of variance that cognitive moderators have been found to contribute to outcome previous research in TBI (Moore, Stambrook, & Wilson, 1991).

Other Findings

Three other main points are important to discuss briefly before moving on. While these points can be considered "findings" in a broad sense, they are probably more accurately understood as design and/or theoretical implications of the design and instruments used in the study.

The first of these "findings" involves the failure of the CDS to provide interpretable data. Despite the fact that efforts were made in using the CDS to make

the task more concrete and less abstract than previous attempts with the Attributional Style Questionnaire, tasks of this sort appear to be unsuccessful in a mail-out, unsupervised format with this population. Future research investigating this important construct might turn to more proven techniques used in previous research with persons with head injuries. The Beck Hopelessness Scale, for example, taps a similar construct while using a likert format which appears to be one that is appropriate for a range of TBI severity. Jay Uomoto (personal communication) at the University of Washington uses a very simple scale to tap similar constructs in clinical assessment. Assessment subjects are asked, as part of an interview conducted by the psychometrist to estimate on a 0- 100 scale how much they expect the aftereffects of TBI to affect their lives in a global, stable, and internal ways. Either of these assessment techniques might be a way to more successfully tap the hopelessness/learned helplessness construct in future research.

Secondly, this study also adds some support to findings previously in the literature that the Powerful Others and Chance subscales in the MHLC may be non-orthogonal in a rehabilitation population. Our results in the LISREL path analysis combined MHLC Powerful Others and Chance LOC scales to produce a single latent

variable. This suggests that for this TBI population, beliefs in fate, chance, and faith in physicians and health care professionals, may be a single concept. Certainly this notion has some conceptual validity when one considers how we view the hospital environment and procedures as decreasing control and promoting helplessness in patients. In addition, when we consider the black and white nature of thinking and reasoning which often follows TBI, a blurring of these external types of LOC is understandable. Further research investigating the development, precipitants, and outcomes of this change in LOC beliefs might prove helpful. If we understand how LOC beliefs develop, what prompts change, and how outcomes are associated with beliefs, new directions for intervention may be found.

Finally, the efficacy of mailouts as "homework" for persons sustaining head injury appears to be questionable when considering the compliance rate achieved for the first follow-up (44.8%). The potential reasons for this relative failure include motivational reasons (low interest, feeling that the questionnaire has little personal relevance), design components (too many questionnaires, small printing for some), low reward (minimal personal contact apart from telephone or mail, no monetary compensation for time,

no personal feedback), and a potential cognitive/memory component (forgetting, misplacing questionnaire). Examining all these potential components for future research suggest that greater personal contact and perhaps the introduction of rewards (monetary, educational, concomitant service provision) for participation might increase compliance.

Limitations

Before we look at the potential implications of the results of this study, it is important to consider the potential limitations inherent in this study. The main limitations of the study involve the sample (size, composition) which decreases the generalizability of the results.

An important concern involves the overall size of the sample, and in turn, the low compliance rate achieved. We have already discussed briefly some of the design difficulties that may have contributed to decreasing compliance. Additionally, it is important to consider the relatively low representation of moderate and severe TBI subjects in the sample. A part of the reason for this finding may involve the effects that recent changes to the Highway Safety Act and automobile design have had on the number and severity of head injuries arising from motor vehicle accidents.

Certainly a significant number of severe and moderate TBI subjects in our previous retrospective series came from this accident type, and the extent of injury from these kinds of accidents appears to be decreasing. If this is indeed a major factor in decreasing the pool of severe and moderate subjects, then this cause is an desirable one. Of course, given a potentially shrinking pool of moderate and severe TBI subjects, those lost to follow-up because of moving, illness, or cognitive problems becomes a greater concern and may have also contributed in the current study.

The sample also differed from epidemiological norms in that there were significantly more women in the sample and the sample as a whole was older. These may be additional problems to be addressed in recruiting and tracking subjects in longitudinal studies such as this. Young, single males are likely much more mobile and potentially less motivated to participate in "altruistic" research such as this that has no tangible personal benefit apart from the knowledge that one has contributed to "science". Perhaps small honoraria or the provision of concomitant psychological services would increase compliance rates for this segment of the TBI population.

Although the sample provides some limitations in the applicability of the results to people with head

injuries in general, it does point nonetheless to demographic markers that can alert clinicians to potential follow-up difficulties, and the necessity of providing additional supports and, perhaps motivators to participation in clinical and therapeutic efforts. Additionally, the results may also give us some additional insights into the status of somewhat under-represented clusters of persons sustaining TBI.

Implications

Having reviewed the main results of the study as well as the limitations involved in applying the results to the larger population of persons with head injuries, let us now turn to discussing three main implications of the results.

Overall, comparing the predictions and actual results of the study appears to suggest that while understanding of the relationships between the concepts of cognitive moderators, coping, and outcome appear relatively well understood, understanding of the developmental aspects of the conceptual model are much less well understood. Specifically, the largely disconfirming findings evaluating Hypothesis 4 suggesting that cognitive moderators do not appear to differ greatly either over time or between groups is puzzling. There are four potential reasons that may account for this pattern of results.

Is premorbid personality a more powerful variable?. One potential reason that may account for the present results is that the premorbid personality contributes a greater influence than an injury does on the sum of a person's post-injury cognitive beliefs. Certainly this suggestion finds some support clinically. A "difficult patient" on a rehabilitation ward can involve working with a person with a premorbid personality that was antisocial, aggressive, and had difficulty with authority figures. Other "patient-types" include those persons presenting with a substance abuse history or history of depression. In these instances, it may be somewhat easier to appreciate the contribution of premorbid ways of understanding, interacting, and reacting to the intense stress involved in experiencing and recovering from a head injury. Understanding the experience of head injury as a devastating and overwhelming one (i.e., looking at the injury as an experience that could have been fatal), reliance on and in some cases "regression" to basic and more primitive kinds of understanding the world and reacting to it might also be a part of the premorbid personality.

Do changes that take place occur earlier and/or last longer?. This latter explanation also subsumes another possibility, that is, that changes to cognitive beliefs take place much closer to the point of injury

and last longer than the data collection "windows" used in the current study. This explanation also has some support clinically when we consider the lengths of effects of some traumatic life experiences in post-traumatic stress disorder - a condition that can last years.

Does any experience of TBI cause similar changes?.

This possibility is one that explored earlier in our retrospective series by comparing norms of "normal" and TBI samples on LOC variables (Moore, Stambrook, & Wilson, 1991). Findings suggested no difference between TBI and "normal" populations. A question for future research certainly involves making these comparisons at this point in the recovery process.

Are cognitive beliefs more robust than we think?.

Perhaps another related question to this one involves discussing whether the cognitive effects from head injury limits the extent to which cognitive beliefs change. We can find some evidence for this suggestion in the current results showing that the mild group was the one that showed the most change of any group over time (although they were also the largest group and least likely to have sampling bias of the severity groups in the study). However, this potential response also links up with the earlier one suggesting that the personality of the person with a head injury may be a

much more powerful determinant of ultimate outcome than perhaps has been proposed.

The fact that the results from this study provoke such discussion and supposition demonstrate the importance of the longitudinal, multidimensional approach in investigating outcome from chronic illness states such as head injury. A deeper understanding of the process of recovery and how cognitive moderators as well as other predictors and moderators fit into it, may lead to more clinically powerful means of helping those recovering from TBI.

Finally, the implications of the results lend additional support to the assertion that cognitive beliefs play an important, but not all-encompassing role in predicting outcome following TBI. However, cognitive beliefs are an aspect of functioning that can form the basis of intervention and treatment to an extent larger than repairing of organic damage at the present time. Findings that cognitive moderators are related to outcome 6 months later lend important weight to the importance of psychological intervention for persons at risk and suggest the potential importance of early intervention and immunization.

Clinical Implications

As this study forms a link in an ongoing research programme with the goal of leading ultimately to intervention, it is also important to evaluate the contribution of the current study to clinical practice. Perhaps most importantly, the current results lend important weight to suggestions made in the literature that were based on the results of single assessment design studies. It appears that cognitive beliefs are associated with indices of quality of life outcome both late and early in the recovery process and are related over time. The implications of these findings for clinical practice are also made stronger given the results of this current study. Specifically, interventions designed to assist persons with head injury identify, evaluate, and modify their ways of reacting to, attributing causes for and coping with events and disabilities arising from their head injury appear to be an important avenue of intervention within this population. The main theme of this intervention strategy would be to help promote a sense of control and self-efficacy within the person (see Moore and Patterson (1993) for suggestions of putting this strategy into place in a spinal cord injured population, one that is similar demographically). The most successful interventions of this type would

involve the treatment team, family, and client in a coordinated and individually tailored approach to maximize successes in therapy. Additional components include provide a safe environment in which to work through issues arising from the injury, and a consistent and supportive social milieu which gently reinforces attitudes, beliefs, and behaviors consistent with optimal recovery.

Based on the current results, it appears that this process could begin relatively early in the recovery process (i.e., within the first year post-injury). This suggestion has theoretical support when we consider a) how the model hypothesizes a negative self-limiting spiral of suboptimal beliefs and behaviors increasing over time and b) the potential benefits of immunizing interventions designed to assist the client to develop disputing self-statements and thoughts to combat suboptimal automatic thoughts and beliefs.

A variety of therapy modalities also appear to have potential benefit when doing work of this kind. In addition to individual therapy sessions, very powerful experiences can be achieved in group therapy sessions (for example, while on the rehabilitation ward or on an outpatient/transitional basis) and during therapy sessions (i.e., physical therapy, occupational therapy, speech pathology, nursing, on ward rounds). A

consistent team approach designed to: 1) model, encourage, and assist patients in modifying beliefs through actual success experiences, and 2) working through and understanding failures, and suggesting new and more positive ways to reframe and understand what has, is, and will happen would provide the most complete and holistic intervention milieu. It is perhaps these concrete success experiences and skill training that provide the some of the most tangible experiences promoting change of cognitive beliefs.

Specifically, the current study suggests that specific coping skill, and patterns of automatic thoughts and LOC beliefs may be associated with improved quality of life. Promoting a client's focus on solvable problems involves an emphasis on the future and on providing hope and encouragement. Particularly in the early stages of rehabilitation, serving an "executive" function and assisting the person through the process of self-reflection, determining the effectiveness of past coping strategies and planning future coping strategies would be helpful. On the basis of the current results, it appears that a primary goal of this sort of work would be to identify persons who tend to use a "shotgun" approach to coping. This kind of strategy, conceptualized as a desperate attempt to regain control, can create difficulties by both working

at cross-purposes (i.e., working to eliminate a stressor while attempting to ignore the stressor) and difficulties in evaluating coping success. By guiding the client through a structured and systematic process of coping strategy selection, implementation, evaluation, and modification, desired outcomes and control can be achieved.

Similarly, the current results also provide programming implications in terms of promoting more optimal automatic thoughts and LOC beliefs. Perhaps one of the most obvious ways the treatment team can assist in this is during therapy or ADL (activities of daily living) tasks where the person experiences difficulty and frustration. Accepting (and in some cases labelling and communicating) the client's frustration is an important first step. Reframing the situation and reactions provides important modeling experiences. For example, difficulty does not indicate "stupidity", but it does show where a person needs to re-learn a skill. Modeling more appropriate and motivating self-statements is also an important intervention. The occurrence of frustration and failure also involves an important and difficult aspect of re-training: keeping the client working at the upper limits of his or her ability, while maintaining adequate success experiences to motivate and encourage the clients sense of self-efficacy.

Future Research

Two main lines of future research arise from the results of this study: further developmental investigations and investigations examining the efficacy of intervention. Developmental research with a more representative sample that can be tracked over longer periods of time would assist us further in developing our understanding. Potentially, this research could identify "critical periods" where intervention could be more efficacious. Certainly the use of simpler questionnaires designed to tap hopelessness/learned helplessness constructs should be incorporated into such a research design. Future research may should involve implementing efforts to improve compliance among young, single males (improved tracking, implementing tangible rewards for participation). A comprehensive research program would use part of such a sample as an intervention group, potentially at different points in the recovery process so that all subjects would obtain service and the effect of recovery on effectiveness of intervention could be assessed.

In sum, this study has endeavored to extend our understanding of how people, faced with a situation which represents what can be permanent and devastating changes to one's life, understand, cope, and adjust to

changed life circumstances. The results represent another component in ongoing efforts as health care providers and researchers to comprehend and intervene effectively to optimize the adjustment of those persons we work with. Despite the fact that TBI is a significant medical condition, and one that represents significant damage to the body and brain, this study lends support to the argument that the person inside plays a significant role in ultimate outcome. Our challenge is to assist those we work with to find and utilize these resources and strengths they have inside.

REFERENCES

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. Psychological Review, 96, 358-372.
- Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. Journal of Abnormal Psychology, 87, 49-74.
- Affleck, G., Tennen, H., Pfeiffer, C., & Fifield, J. (1987). Appraisals of control and predictability in adapting to a chronic disease. Journal of Personality and Social Psychology, 53, 273-279.
- American Psychiatric Association. (1987). Diagnostic and statistical manual of mental disorders (3rd ed, revised). Washington: American Psychiatric Association.
- Anastasi, A. (1988). Psychological Testing. (6th ed.). NY: MacMillan.
- Anderson, C.A., Horowitz, L.M., & French, R. (1983). Attributional style of lonely and depressed people. Journal of Personality and Social Psychology, 45, 127-136.
- Anderson, J.C., & Gerbing, D.W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. Psychometrika, 49, 155-173.
- Anderson, K.O., Keefe, F.J., Bradley, L.A., McDaniel, L.K., Young, L.D., Turner, R.A., Agudelo, C.A., Semble, E.L., & Pisko, E.J. (1988). Prediction of pain behavior and functional status of rheumatoid arthritis patients using medical status and psychological variables. Pain, 33, 25-32.
- Barrett, B.H., Johnson, J.M., & Pennypacker, H.S. (1986). Behavior: It's units, dimensions, and measurement. In R.O. Nelson, & S.C. Hayes (Eds.), Conceptual foundations of behavior assessment. (pp. 156-200). NY: Guilford.

- Bearden, W.O., Sharma, S., & Teel, J.E. (1982). Sample size effects on chi-square and other statistics used in evaluating causal models. Journal of Marketing Research, 19, 425-430.
- Beck, A.T. (1967). Depression: Clinical, experimental, and theoretical aspects. NY: Hoeber.
- Beck, A.T. (1972). Depression: Causes and Treatment. University of Pennsylvania Press: Philadelphia.
- Beck, A.T., Brown, G., Steer, R.A., Eidelson, J.I., & Riskind, J.H. (1987). Differentiating anxiety and depression: A test of the cognitive content-specificity hypothesis. Journal of Abnormal Psychology, 96, 179-183.
- Beck, A.T., & Emory, G. (1985). Anxiety disorders and phobias: A cognitive perspective. NY: Basic Books.
- Beck, A.T., & Weissman, A. (1974). The measurement of pessimism: The hopelessness scale. Journal of Consulting and Clinical Psychology, 42, 861-865.
- Beidel, D.C., & Turner, S.M. (1986). A critique of the theoretical bases of cognitive-behavioral theories and therapy. Clinical Psychology Review, 6, 177-197.
- Bellack, A.S., & Hersen, M. (1977). Self-report in behavioral assessment. In J.D. Cone, & R.P. Hawkins (Eds.), Behavioral assessment: New directions in clinical psychology (pp. 52-76). NY: Brunner-Mazel.
- Benedict, R.H.B. (1989). The effectiveness of cognitive rehabilitation strategies for victims of traumatic head injury: A review of the literature. Clinical Psychology Review, 9, 605-626.
- Bergner, M., Bobbitt, R. A., & Pollard, W. E. (1976). The Sickness Impact Profile: Validation of a health status measure. Medical Care, 14, 57-67.
- Billings, A.G., & Moos, R.H. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4, 139-157.
- Bond, M. (1984). The psychiatry of closed head injury. In N. Brooks (Ed.), Closed head injury: Psychological, social, and family consequences (pp. 148-178). NY: Oxford University Press.

- Bond, M. R. (1986). Neurobehavioral sequelae of closed head injury. In I. Grant, & K. M. Adams (Eds.), Neuropsychological assessment of neuropsychiatric disorders (pp. 347-373). NY: Oxford University Press.
- Brooks, N. (1976). Wechsler Memory Scale performance and its relationship to brain damage after severe closed head injury. Journal of Neurology, Neurosurgery, and Psychiatry, 39, 593-601.
- Brooks, N. (1984). Cognitive deficits after head injury. In N. Brooks (Ed.), Closed head injury: Psychological, social and family consequences (pp. 44-73). NY: Oxford University Press.
- Brooks, N., Aughton, M.E., Bond, M.R., Jones, P., & Rivzi, S. (1980). Cognitive sequelae in relation to early indices of severity of brain damage after severe blunt head injury. Journal of Neurology, Neurosurgery, and Psychiatry, 43, 529-534.
- Bulman, R.J., & Wortman, C.B. (1977). Attributions of blame and coping in the "real world": Severe accident victims react to their lot. Journal of Personality and Social Psychology, 35, 351-363.
- Burns, M.O., & Seligman, M.E.P. (1989). Explanatory style over the life span: Evidence for stability over 52 years. Journal of Personality and Social Psychology, 56, 471-477.
- Butler, R.W., & Satz, P. (1988). Individual psychotherapy with head injured adults: Clinical notes for the practitioner. Professional Psychology: Research and Practice, 19, 536-541.
- Campbell, D.T., & Fiske, D.W. (1959). Convergent and discriminant validations by the multitrait-multimethod matrix. Psychological Bulletin, 56, 81-103.
- Cicerone, K.D., (1989). Psychotherapeutic interventions with traumatic brain injured patients. Rehabilitation Psychology, 34, 105-114.
- Cicerone, K.D., & Wood, J.C. (1987). Planning disorder after closed head injury: A case study. Archives of Physical Medicine and Rehabilitation, 68, 111-115.
- Cooper, P.R. (1987). Gunshot wounds of the brain. In P.R. Cooper (Ed.) Head Injury (2nd. ed., pp. 313-326). Los Angeles: Williams and Wilkins.

- Corcoran, K., & Fischer, J. (1987). Measures for clinical practice: A sourcebook. NY: The Free Press.
- Crisson, J.E., & Keefe, F.J. (1988). The relationship of locus of control to pain coping strategies and psychological distress in chronic pain patients. Pain, 35, 147-154.
- Dacey, R., Dikmen, S., Temkin, N., McLean, A., Armsden, G., & Winn, H.R. (1991). Relative effects of brain and non-brain injuries on neuropsychological and psychosocial outcome. The Journal of Trauma, 31, 217-222.
- DeRubis, R.J., & Beck, A.T. (1988). Cognitive therapy. In K. Dobson (Ed.), Handbook of cognitive-behavioral theories. (pp. 273-306). NY: Guilford.
- Derogatis, L.R. (1983). SCL-90R Administration, Scoring, and Procedures Manual. Clinical Psychometric Research: Towson, MD.
- Devins, G.M., Binik, Y.M., Hutchinson, T.A., Hollomby, D.J., Barre, P.E., Guttman, R.D. (1981). Helplessness and depression in end-stage renal disease. Journal of Abnormal Psychology, 90, 531-535.
- Devins, G.M., Mandin, H., Burgess, E.D., Taub, E.D., Letourneau, P.K., Buckle, S., Binik, Y.M., & Low, G.L. (1986). Denial as a defense against depression in end-stage renal disease: An empirical test. International Journal of Psychiatry in Medicine, 16, 151-162.
- Dikmen, S., Machamer, J., Temkin, N., & McLean, A. (1990). Neuropsychological recovery in patients with moderate to severe head injury: Two year follow-up. Journal of Clinical and Experimental Neuropsychology, 12, 509-519.
- Dikmen, S., McLean, A., & Temkin, R. (1986). Neuropsychological and psychosocial consequences of minor head injury. Journal of Neurology, Neurosurgery, and Psychiatry, 49, 1227-1232.
- Dikmen, S., McLean, A., Temkin, N.R., & Wyler, A.R. (1986). Neuropsychological outcome at one-month postinjury. Archives of Physical Medicine and Rehabilitation, 67, 507-513.

- Dikmen, S., & Reitan, R.M. (1977). MMPI correlates of adaptive ability deficits in patients with brain lesions. Journal of Nervous and Mental Disease, 165, 247-254.
- Dikman, S.S., Temkin, N., & Armsden, G. (1989). Neuropsychological recovery: Relationship to psychosocial functioning and postconcussional complaints. In Levin, H.S., Eisenberg, H.M., & Benton, A.L. (Eds), Mild Head Injury (pp. 229-244). NY: Oxford.
- Dikmen, S., Temkin, N., McLean, A., Wyler, A., & Machamer, J. (1987). Memory and head injury severity. Journal of Neurology, Neurosurgery, and Psychiatry, 50, 1613-1618.
- DuCette, J., & Keane, A. (1984). "Why me?": An attributional analysis of a major illness. Research in Nursing and Health, 7, 257-264.
- Dunkel-Schetter, C., Feinstein, L.G., Taylor, S.E., & Falke, R.L. (1992). Patterns of coping with cancer. Health Psychology, 11, 79-87.
- Endler, N.S., & Parker, J.D.A. (1990). Towards a reliable and valid method for the multidimensional assessment of coping [abstract]. Canadian Psychology, 31(2a), 223.
- Farid, B.T., Johnson, R.D., Lucas, E.G., & Williams, R. (1988). Perception of illness among patients with alcoholic liver disease. Journal of Studies on Alcohol, 49, 375-377.
- Feifel, H., Strack, S., Nagy, V.T. (1987). Coping strategies and associated features of medically ill patients. Psychosomatic Medicine, 49, 616-625.
- Felton, B.J., & Revenson, T.A. (1987). Age differences in coping with chronic illness. Psychology and Aging, 2, 164-170.
- Felton, B.J., Revenson, T.A., & Hinrichsen, G.A. (1984). Stress and coping in the explanation of psychological adjustment among chronically ill adults. Social Science and Medicine, 10, 889-898.
- Fibel, B., & Hale, W.D. (1978). The generalized expectancy for success scale-a new measure. Journal of Clinical and Consulting Psychology, 46, 924-931.

- Finlayson, M.A.J., & Rourke, B.P. (1978). Locus of control as a predictor variable in rehabilitation medicine Journal of Clinical Psychology, 34, 367-368.
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. (1986). The dynamics of a stressful encounter: cognitive appraisal, coping and encounter outcomes. Journal of Personality and Social Psychology, 50, 992-1003.
- Fordyce, D.J., Roueche, J.R., Prigatano, G.P. (1983). Enhanced emotional reactions in chronic head trauma patients. Journal of Neurology, Neurosurgery, and Psychiatry, 46, 620-624.
- Forrest, D.V. (1987). Psychosocial treatment in neuropsychiatry. In Hales, R.E., & Yudofsky, S.C. (Eds.) The american psychiatric press textbook of neuropsychiatry. (pp. 387-410). Washington, DC: American Psychiatric Press.
- Frank, R.G., & Elliott, T.R. (1989). Spinal cord injury and health locus of control beliefs. Paraplegia, 27, 250-256.
- Frank, R. G., Umlauf, R. L., Wonderlich, S. A., Askanazi, G. S., Bucklew, S. P., & Elliott, T. R. (1987). Differences in coping styles among persons with spinal cord injury: A cluster analytic approach. Journal of Consulting and Clinical Psychology, 55, 727-731.
- Frisch, M.B., & Higgins, R.L. (1986). Instructional demand effects and the correspondenc among role-play, self-report, and naturalistic measures of social skill. Behavioral Assessment, 8, 221-236.
- Gentilini, M., Nichelli, P., & Schoenhuber, R. (1989). Assessment of attention in mild head injury. In Levin, H.S., Eisenberg, H.M., & Benton, A.L. (Eds.), Mild Head Injury (pp. 163-175). NY: Oxford.
- Gill, D.D., Stambrook, M., Moore, A.D., & Peters, L.C. (1989). Predictors of alcohol use after head injury. [Abstract.] Canadian Psychology, 30(2a), 235. Presented at the Canadian Psychological Association Convention, Halifax, June 1989.
- Goebel, M., Spalthoff, G., Schulze, C., & Florin, I. (1989). Dysfunctional cognitions, attributional style, and depression in bulimia. Journal of Psychosomatic Research, 33, 747-752.

- Gouvier, D., Webster, J.S., & Blanton, P.D. (1986). Cognitive retraining with brain-damaged patients. In Wedding, D., Horton, A.M., & Webster, J. (Eds.), The neuropsychology handbook: Behavioral and clinical perspectives. (pp. 278-322). NY: Springer.
- Gronwall, D. (1989). Cumulative and persisting effects of concussion on attention and cognition. In Levin, H.S., Eisenberg, H.M., & Benton, A.L. (Eds.), Mild Head Injury (pp. 153-162). NY: Oxford.
- Guidano, V.F., & Liotti, G. (1983). Cognitive processes and emotional disorders: A structural approach to psychotherapy. NY: Guilford Press.
- Hammen, C.L. (1985). Predicting depression: A cognitive-behavioral perspective. In P.C. Kendall (Ed.), Advances in cognitive therapy and research. (Vol. 6, pp. 29-71). NY: Academic Press.
- Hammen, C.L., & Krantz, S.E. (1986). Measures of psychological processes in depression. In Beckham, E.E., & Weber, W.R. (Eds.), Handbook of depression: Treatment, assessment, and research. (pp. 408-444). Homewood, IL: Dorsey Press.
- Hardiker, P., Pedley, J., Littlewood, J., & Olley, D. (1986). Coping with chronic renal failure. British Journal of Social Work, 16, 203-222.
- Hartman, L.M. (1984). Cognitive components of social anxiety. Journal of Clinical Psychology, 40, 137-139.
- Hawkins, R.P. (1986). Selection of target behaviors In R.O Nelson, & S.C. Hayes (Eds.), Conceptual foundations of behavior assessment. (pp. 331-387). NY: Guilford.
- Hawryluk, G.A., Gill, D.D., Stambrook, M, Moore, A.D., & Peters, L.C. (1989). Legal and illicit drug use after head injury. [Abstract.] Canadian Psychology, 30(2a), 235. Presented at the Canadian Psychological Association Convention, Halifax, June 1989.
- Hayes, S.C., Nelson, R.O., & Jarrett, R.B. (1986). Evaluating the quality of behavioral assessment. In R.O. Nelson, & S.C. Hayes (Eds.), Conceptual foundations of behavior assessment. (pp. 461-504). NY: Guilford.

- Hiroto, D. S. (1974). Locus of control and learned helplessness. Journal of Experimental Psychology, 102, 187-193.
- Hiroto, D. S., & Seligman, M. E. (1975). Generality of learned helplessness in man. Journal of Personality and Social Psychology, 31, 311-327.
- Hollon, S.D., & Kendall, P.C. (1980). Cognitive self-statements in depression: Development of an Automatic Thoughts Questionnaire. Cognitive Therapy and Research, 4, 383-395.
- Ingram, R.E., & Wisnicki, K.S. (1988). Assessment of positive automatic cognition. Journal of Consulting and Clinical Psychology, 56, 898-902.
- Jalowiec, A., & Powers, M.J. (1981). Stress and coping in hypertensive and emergency room patients. Nursing Research, 30, 10-15.
- James, W. H. (1957). Internal versus external control of reinforcement as a basic variable in learning theory (Unpublished doctoral dissertation, Ohio State University).
- Joreskog, K.G., & Sorbom, D. (1986). LISREL VI User Manual. Mooresville, Indiana: Scientific Software Inc.
- Kassum, D.A., Thomas, E.J., & Wong, C.J. (1984). Early determinants of outcome in blunt injury. Canadian Journal of Surgery, 27, 64-69.
- Keefe, F.J., Caldwell, D.S., Queen, K., Gil, K.M., Martinez, S., Crisson, J.E., Ogden, W., & Nunley, J. (1987). Osteoarthritic knee pain: A behavioral analysis Pain, 28, 309-321.
- Keefe, F.J., Crisson, J., Urban, B.J., & Williams, D.A. (1990). Analyzing chronic low back pain: the relative contribution of pain coping strategies. Pain, 40, 293-301.
- Kirsch, C.A., Blanchard, E.B., & Parnes, S.M. (1989). Psychological characteristics of individuals high and low in their ability to cope with tinnitus. Psychosomatic Medicine, 51, 209-217.
- Krefting, L. (1990). Double bind and disability: The case of traumatic head injury. Social Science and Medicine, 30, 859-865.

- Kendall, P.C., & Hollon, S.D. (1989). Anxious self-talk: Development of the anxious self-statements questionnaire (ASSQ). Cognitive Therapy and Research, 13, 81-93.
- Kline, P. (1986). A handbook of test construction: Introduction to psychometric design. NY: Methuen
- Kolb, B., & Whishaw, I. Q. (1985). Fundamentals of human neuropsychology (2nd ed.). NY: W.H. Freeman.
- Lau, R.R., Bernard, T.M., & Hartman, K.A. (1989). Further explorations of common-sense representations of common illnesses Health Psychology, 8, 195-219.
- Lazarus, R.S., & Folkman, S. (1984). Stress, appraisal, and coping. NY: Springer.
- Lefcourt, H. M. (1981). The locus of control as a moderator variable: Stress In H.M. Lefcourt (Ed.), Research with the locus of control construct (Volume 2): Development and social problems (pp. 253-268). NY: Academic Press.
- Lefcourt, H.M., von Baeyer, C.L., Ware, E.E., & Cox, D.J. (1979). The multidimensional-multiattributational causality scale: The development of a goal specific locus of control scale. Canadian Journal of Behavioral Science, 11, 286-304.
- Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. Journal of Personality Assessment, 38, 377-383.
- Levin, H.S. (1989). Neurobehavioral outcome of mild to moderate head injury. In Hoff, J.T., Anderson, T.E., & Cole, T.M. (Eds.), Mild to moderate head injury. (pp. 153-186). Boston: Blackwell Scientific Publications.
- Levin, H.S. (1990, November) Memory defects after closed head injury. Paper presented at the meeting of the National Academy of Neuropsychology, Reno, NV.
- Levin, H.S., & Grossman, R.G. (1978). Behavioral sequelae of closed head injury: A quantitative study. Archives of Neurology, 35, 720-727.
- Levin, H.S., Eisenberg, H.M., & Benton, A.L. (Eds.) (1989). Mild Head Injury. NY: Oxford.

- Levin, H.S., Handel, S.F., Goldman, A.M., Eisenberg, H.M., & Guinto, F.C. (1985). Magnetic resonance imaging agter 'Diffuse' nonmissile head injury. Archives of Neurology, 42, 963-968.
- Levin, H.S., Hugh, W.M., Goethe, K.E., Sisson, R.A., Overall, J.E., Rhoades, H.M., Eisenberg, H.M., Kalisky, Z., & Garry, H.E. (1987). The Neurobehavioral Rating Scale: Assessment of the behavioral sequelae of head injury by the clinician. Journal of Neurology, Neurosurgery, and Psychiatry, 50, 183-193.
- Lezak, M. D. (1978). Living with the characterologically altered brain-injured patient. Journal of Clinical Psychiatry, 39, 592-598.
- Lezak, M.D. (1983) Neuropsychological Assessment (2nd ed). NY: Oxford.
- Long, C.J., & Haban, G. (1986). Strategies for developing a plan of intervention for head injured patients. Psychotherapy in Private Practice, 4, 71-80.
- Lowery, B.J., & Jacobsen, B.S. (1984). Attributional analysis of chronic illness outcomes. Nursing Research, 34, 82-88.
- Lowery, B.J., Jacobsen, B.S., & McCauley, K. (1987). On the prevalence of causal search in illness situations. Nursing Research, 36, 88-93.
- Lubusko, A.A., Moore, A.D., Stambrook, M., Gill, D.D., Blumenschein, S., and Peters, L.C. (in press). Cognitive beliefs following severe traumatic brain injury: Association with post-injury employment status. [Abstract]. Archives of Clinical Neuropsychology, 6 Presented at the National Academy of Neuropsychology Conference, Reno, Nevada, U.S.A., November 1990.
- Luria, A.R. (1973). The working brain: An introduction to neuropsychology. NY: Penguin.
- Mandelberg, I.A. (1976). Cognitive recovery after severe head injury. III. WAIS verbal and performance IQ's as a function of post-traumatic amnesia duration and time from injury. Journal of Neurology, Neurosurgery, and Psychiatry, 39, 1001-1007.

- Mandelberg, I.A., & Brooks, D.N. (1975). Cognitive recovery after severe head injury. I. Serial testing on WAIS. Journal of Neurology, Neurosurgery, and Psychiatry, 38, 1121-1126.
- McDonald, R.P., & Walsh, H.W. (1990). Choosing a multivariate model: Noncentrality and goodness-of-fit. Psychological Bulletin, 107, 247-255.
- McGlashan, T.H., & Carpenter, W.T. (1981). Does attitude towards psychosis relate to outcome? American Journal of Psychiatry, 138, 797-801.
- McGlashan, T.H., Levy, S.T., & Carpenter, W.T. (1975). Integration and sealing over. Archives of General Psychiatry, 32, 1269-1272.
- McKinlay, W.W., Brooks, D.N., Bond, M.R., Martinage, D.P., & Marshall, M.M. (1981). The short-term outcome of severe blunt head injury as reported by the relatives of the injured persons. Journal of Neurology, Neurosurgery, and Psychiatry, 44, 527-533.
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). EDITS manual for Profile of Mood States. San Diego: Educational and Industrial Testing Service.
- Miller, L. (1991). Psychotherapy of the brain injured patient: Principles and practices. Cognitive Rehabilitation, 9, 24-30.
- Miller, W. G. (1986). The neuropsychology of head injuries. In D. Wedding, A. M. Horton, Jr., & J. Webster (Eds.), The neuropsychology handbook: Behavioral and clinical perspectives (pp. 347-375). NY: Springer.
- Miller, S.M. (1987). Monitoring and blunting: Validation of a questionnaire to assess styles of information seeking under threat. Journal of Personality and Social Psychology, 52, 345-353.
- Miller, W. R., & Seligman, M. E. (1975). Depression and learned helplessness in man. Journal of Abnormal Psychology, 84, 228-238.
- Moore, A.D. (1989). Belief structure and coping style following closed head injury: Relationship to injury severity and psychosocial outcome. Unpublished masters thesis, University of Manitoba, Winnipeg, Manitoba, Canada.

- Moore, A.D., & Patterson, D.G. (1993). Promoting a sense of control following spinal cord injury: A theme of intervention. SCI Psychosocial Process, 6, 1-15.
- Moore, A.D. & Stambrook, M. (1992). Coping strategies and locus of control following traumatic brain injury: Relationship to long-term outcome. Brain Injury, 6, 89-94.
- Moore, A.D., Stambrook, M., Hawryluk, G.A., Peters, L.C., Gill, D.D. & Hymans, M.M. (1990). Test-retest stability of the Wechsler Adult Intelligence Scale-Revised in the assessment of head injured patients. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2, 98-100.
- Moore, A. D., Stambrook, M., & Peters, L. C. (1989). Coping strategies and adjustment after closed-head injury: A cluster analytic approach. Brain Injury, 3, 171-175.
- Moore, A.D., Stambrook, M., & Peters, L.C. (1992). Centripetal and centrifugal family life cycle factors in long-term outcome following brain injury. Brain Injury, 6,
- Moore, A.D., Stambrook, M., Peters, L.C., Cardoso, E.R., & Kassum, D.A. (1990). Long-term multidimensional outcome following isolated traumatic brain injuries and traumatic brain injuries associated with multiple trauma. Brain Injury, 4, 379-389.
- Moore, A.D., Stambrook, M., Peters, L.C., & Lubusko, A. (1991). Family coping and marital adjustment after head injury. Journal of Head Trauma Rehabilitation, 6, 83-89
- Moore, A.D., Stambrook, M., & Wilson, K.G. (1991). Cognitive moderators in adjustment to chronic illness: Locus of control beliefs following traumatic brain injury. Neuropsychological Rehabilitation, 1, 185-198.
- Morris, P.L.P., & Jones, B. (1989). Life satisfaction across treatment methods for patients with end-stage renal failure. The Medical Journal of Australia, 150, 428-432.
- Nicassio, P.M., Wallston, K.A., Callahan, L.F., Herbert, M., & Pincus, T. (1985). The measurement of helplessness in rheumatoid arthritis, the development of the arthritis helplessness index. Journal of Rheumatology, 12, 462-467.

- Niemann, H., Ruff, R.M., & Baser, C.A. (1990). Computer -assisted attention retraining in head-injured individuals: A controlled efficacy study of an outpatient program. Journal of Consulting and Clinical Psychology, 58, 811-817.
- Nielson, W.R., & MacDonald, M.R. (1988). Attributions of blame and coping following spinal cord injury: Is self-blame adaptive? Journal of Social and Clinical Psychology, 7, 163-175.
- Nietzel, M.T., & Bernstein, D.A. (1987). Introduction to clinical psychology (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- O'Hara, C. (1988). Emotional adjustment following minor head injury. Cognitive Rehabilitation, 6, 26-33.
- Paniak, C.E., Shore, D.L., Rourke, B.P., Finlayson, M.A., & Moustacalis, E. (1991). Long-term vocational functioning after severe closed head injury: A controlled study. Archives of Clinical Neuropsychology, 7, 529-540.
- Parkinson, D., Stephensen, S., & Phillips, S. (1985). Head injuries: A prospective computerized study. Canadian Journal of Surgery, 28, 79-83.
- Parks, C.W., & Hollon, S.D. (1988). Cognitive assessment. In A.S. Bellack, & M. Hersen (Eds.) Behavioral assessment: A practical handbook (3rd ed., pp. 161-212). NY: Pergamon Press.
- Peters (1989). Psychosocial impact of head injury in families: The wife's perspective. Unpublished doctoral dissertation, University of Manitoba, Winnipeg, Manitoba, Canada.
- Peters, L. C., Stambrook, M., & Moore, A. D. (1988). Stress-related adjustment problems in the wives of head injury patients. Canadian Journal of Rehabilitation, 1 (Suppl. 4), 60.
- Peters, L. C., Stambrook, M., Moore, A. D., & Esses, L. (1990). The psychosocial impact of head injury on the marital relationship. Brain Injury, 4, 39-47
- Peterson, C., Seligman, M.E.P., & Valliant, G.E. (1988). Pessimistic explanatory style is a risk factor for physical illness: A thirty-five-year longitudinal study. Journal of Personality and Social Psychology, 55, 23-27.

- Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. (1982). The attributional style questionnaire. Cognitive Therapy and Research, 6, 287-300.
- Persons, J.B. (1989). Cognitive therapy in practice: A case formulation approach. NY: W.W. Norton.
- Phares, E. J. (1955). Changes in expectancy in skill and chance situations. (Unpublished doctoral dissertation, Ohio State University).
- Prigatano, G.P. (1991). Disordered mind, wounded soul: The emerging role of psychotherapy in rehabilitation after brain injury. Journal of Head Trauma Rehabilitation, 6, 1-10.
- Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement, 1, 385-401.
- Rehm, L.P., Fuchs, C.Z., Roth, D.M., Kornblith, S.J., & Romano, J.M. (1979). A comparison of self-control and assertion skills treatments of depression. Behavior Therapy, 10, 429-442.
- Rosenbaum, M. (1980). A schedule for assessing self-control behaviors: Preliminary findings. Behavior Therapy, 11, 109-121.
- Rosenbaum, M., & Raz, D. (1977). Denial, locus of control and depression among physically disabled and nondisabled men. Journal of Clinical Psychology, 33, 672-676.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80 (1), Whole No. 609.
- Rude, S.S. (1989). Dimensions of self-control in a sample of depressed women. Cognitive Therapy and Research, 13, 363-375.
- Russell, D. (1982). The causal dimension scale: A measure of how individuals perceive causes. Journal of Personality and Social Psychology, 42, 1137-1145.
- Rutherford, W.H. (1989). Postconcussion symptoms: Relationship to acute neurological indices, individual differences, and circumstances of injury. In Levin, H.S., Eisenberg, H.M., & Benton, A.L. (Eds.), Mild head injury (pp. 217-228). NY: Oxford.

- Seeman, M., & Seeman, T.E. (1983). Health behavior and personal autonomy: A longitudinal study of the sense of control in illness. Journal of Health and Social Behavior, 24, 144-160.
- Seligman, M. E. (1975). Helplessness: On depression, development and death. NY: W.H. Freeman.
- Shadish, W.R., Hickman, D., & Arrick, M.C. (1981). Psychological problems of spinal cord injury patients: Emotional distress as a function of time and locus of control. Journal of Consulting and Clinical Psychology, 49, 297.
- Shorkey, C.T., & Whiteman, V.L. (1977). Development of the rational behavior inventory: Initial validity and reliability. Educational and Psychological Measurement, 37, 527-534.
- Silver, J.M., Yudofsky, S.C., & Hales, R.E. (1987). Neuropsychiatric aspects of traumatic brain injury. In Hales, R.E., & Yudofsky, S.C. (Eds.) The american psychiatric press textbook of neuropsychiatry. (pp. 179-190). Washington, DC: American Psychiatric Press.
- Sohlberg, M.M., & Mateer, C.A. (1989). Introduction to Clinical Rehabilitation. New York: Guilford.
- Solomon, Z., Mikulincer, M., & Benbenishty, R. (1989). Locus of control and combat-related post-traumatic stress disorder: The intervening role of battle intensity, threat appraisal and coping. British Journal of Clinical Psychology, 28, 131-144.
- Soskis, D.A., & Bowers, M.B. (1969). The schizophrenic experience: A follow-up study of attitude and posthospital adjustment. Journal of Nervous and Mental Disease, 149, 443-449.
- Sparadeo, F.R., & Gill, D. (1989). Effects of prior alcohol use on head injury recovery. Journal of Head Trauma Rehabilitation, 4, 75-81.
- Stambrook, M., Moore, A.D., Kowalchuk, S., Kassum, D.A., Peters, L.C., McClarty, B.M., & Hawryluk, G.A. (1990). Early metabolic and neurological predictors of long term quality of life following closed head injury. Canadian Journal of Surgery, 33, 115-118.

- Stambrook, M., Moore, A.D., & Peters, L.C. (1990). Adjustment and social behavior following moderate and severe closed head injury: Comparison to normal and psychiatric groups. Cognitive Rehabilitation, 8, 26-30.
- Stambrook, M., Peters, L.C., & Moore, A.D. (1989). Issues in the rehabilitation of severe traumatic brain injury: A focus on the neuropsychologist's role. Canadian Journal of Rehabilitation, 3, 87-98.
- Stambrook, M., Peters, L. C., Moore, A. D., & Hawryluk, G. A. (1988). Psychological and social burden following moderate and severe traumatic brain injury. Canadian Journal of Rehabilitation, 1 (Suppl. 4), 74.
- Stambrook, M., Moore, A.D., Peters, L.C., Zubek, E., MacBeath, S., & Friesen, I.C. (1991). Head injury and spinal cord injury: Differential effects on psychosocial functioning. Journal of Experimental and Clinical Neuropsychology, 13, 521-530.
- Stuss, D.T., Mateer, C.A., & Sohlberg, M.M. (1994). Innovative approaches to frontal lobe deficits. In M.A.J. Finlayson & S.H. Garner (Eds.) Brain injury rehabilitation: Clinical considerations (pp. 212-237). Baltimore: Williams & Wilkins.
- Tate, R.L. (1987). Behavior management techniques for organic psychosocial deficit incurred by severe head injury. Scandinavian Journal of Rehabilitation Medicine, 19, 19-24.
- Tabachnick, B.G., & Fidell, L.S. (1989). Using multivariate statistics (2nd ed.). NY: Harper and Row.
- Taylor, S.E. (1986). Health Psychology. NY: Random House.
- Taylor, S.E., Lichtman, R.R., & Wood, J.V. (1984). Attributions, beliefs about control, and adjustment to breast cancer. Journal of Personality and Social Psychology, 46, 489-502.
- Teasdale, E., Cardoso, E., Galbraith, S., & Teasdale, G. (1984). CT scan in severe diffuse head injury: Physiological and clinical correlations. Journal of Neurology, Neurosurgery, and Psychiatry, 47, 600-603.
- Teasdale, G., & Jennett, B. (1974). Assessment of coma and impaired consciousness. The Lancet, 2, 81-84.

- Ten Kroode, H., Oosterwijk, M., Steverink, N. (1989). Three conflicts as a result of causal attributions. Social Science and Medicine, 28, 93-97.
- Thompson, S.C., Sobolew-Shubin, A., Galbraith, M.E., Schwankovsky, L., & Cruzen, D. (1993). Maintaining perceptions of control: Finding perceived control in low-control circumstances. Journal of Personality and Social Psychology, 64, 293-304.
- Toutant, S.M., Klauber, M.R., Marshall, L.F., Toole, B.M., Bowers, S.A., Seelig, J.M., Varnell, J.B. (1984). Absent or compressed basal cisterns on first CT scan: Ominous predictors of outcome in severe head injury. Journal of Neurosurgery, 61, 691-694.
- Turnqvist, D.C., Harvey, J.H., & Andersen, B.L. (1988). Attributions and adjustment to life-threatening illness. British Journal of Clinical Psychology, 27, 55-65.
- Umlauf, R.L., & Frank, R.G. (1986). Multidimensional Health Locus of Control in a rehabilitation setting. Journal of Clinical Psychology, 42, 126-128.
- van Zomeren, A. H., Brouwer, W. H., & Deelman, B. G. (1984). Attentional deficits: The riddles of selectivity, speed and alertness. In N. Brooks (Ed.), Closed head injury: Psychological, social, and family consequences (pp. 74-107). NY: Oxford University Press.
- Viney, L.L., & Westbrook, M.T. (1982). Coping with chronic illness: The mediating role of biographic and illness-related factors. Journal of Psychosomatic Research, 26, 595-605.
- Wallston, K.A., Wallston, B.S., & DeVellis, R. (1978). Development of the multidimensional health locus of control (MHLC) scales. Health Education Monographs, 6, 160-170.
- Warner, R., Taylor, D., Powers, M., & Hyman, J. (1989). Acceptance of the mental illness label by psychotic patients: Effects on functioning. American Journal of Orthopsychiatry, 59, 398-409.
- Watson, D., & Kendall, P.C. (1983). Methodological issues in research on coping with chronic disease. In Burish, T.G., & Bradley, L.A. (Eds.), Coping with chronic disease: Research and applications. (pp.39-84). NY: Academic Press.

- Watson, M., Greer, S., Pruyn, J., & Van Den Borne, B. (1990). Locus of control and adjustment to cancer. Psychological Reports, 66, 39-48.
- Wechsler, D. (1981). Manual for the Wechsler Adult Intelligence Scale-Revised. NY: Psychological Corporation.
- Wilson, B.A. (1987). Rehabilitation of Memory. New York: Guilford.
- Wise, T.N., & Rosenthal, J.B. (1988). Depression, illness beliefs and severity of illness. Journal of Psychosomatic Research, 26, 247-253.
- Wood, R. L. (1984). Behavior disorders following severe brain injury: Their presentation and psychological management. In N. Brooks (Ed.), Closed head injury: Psychological, social and family consequences (pp. 195-219). NY: Oxford University Press.

APPENDIX A
Psychometric Properties of Assessment Instruments

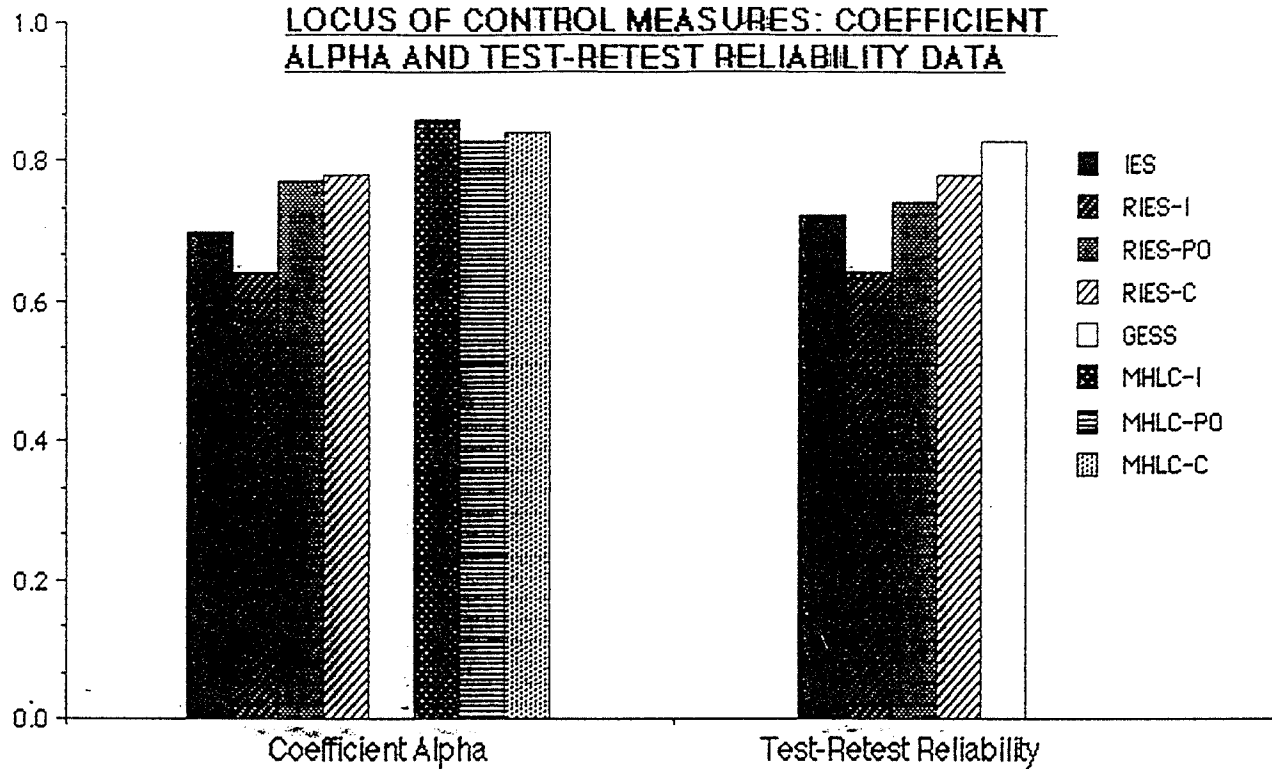
Each of the summaries that follow contain:

- 1) the primary reference
- 2) scale description - number of items, scaling, purpose
- 3) scoring/factors - subscale items (* following item number indicates reverse scoring), factor loadings (%V = percent variance accounted for)
- 4) internal consistency and test-retest reliability
(a = coefficient alpha; KR-20 = Kuder-Richardson Formula 20; SHR = Split-half reliability; TRT = test-retest reliability)
- 5) normative data
- 6) availability

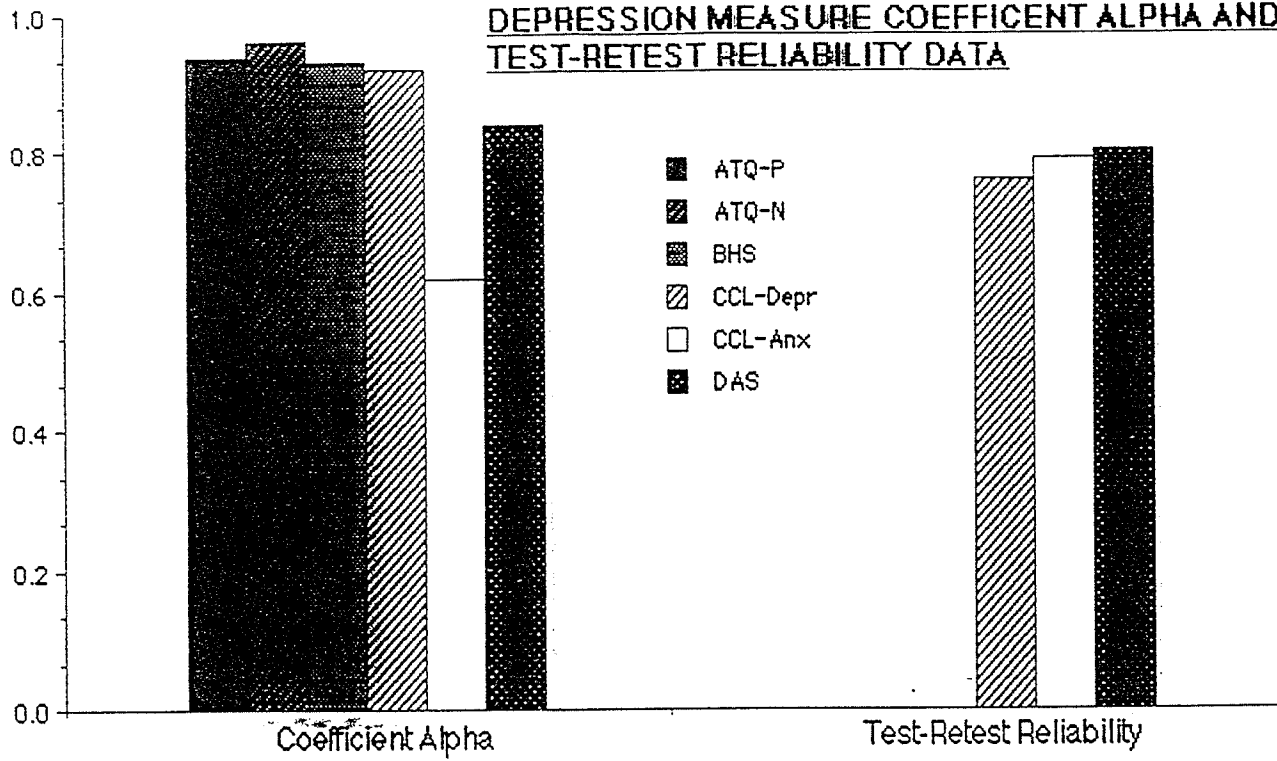
Sections 4 and 5 contain descriptions of the samples used to derive the reported data. Figures 2 to 5 which follow contain graphs using data from the primary references on internal consistency and test-retest reliability for quick cross-instrument comparisons.

Insert Figures 2, 3, 4 and 5 about here

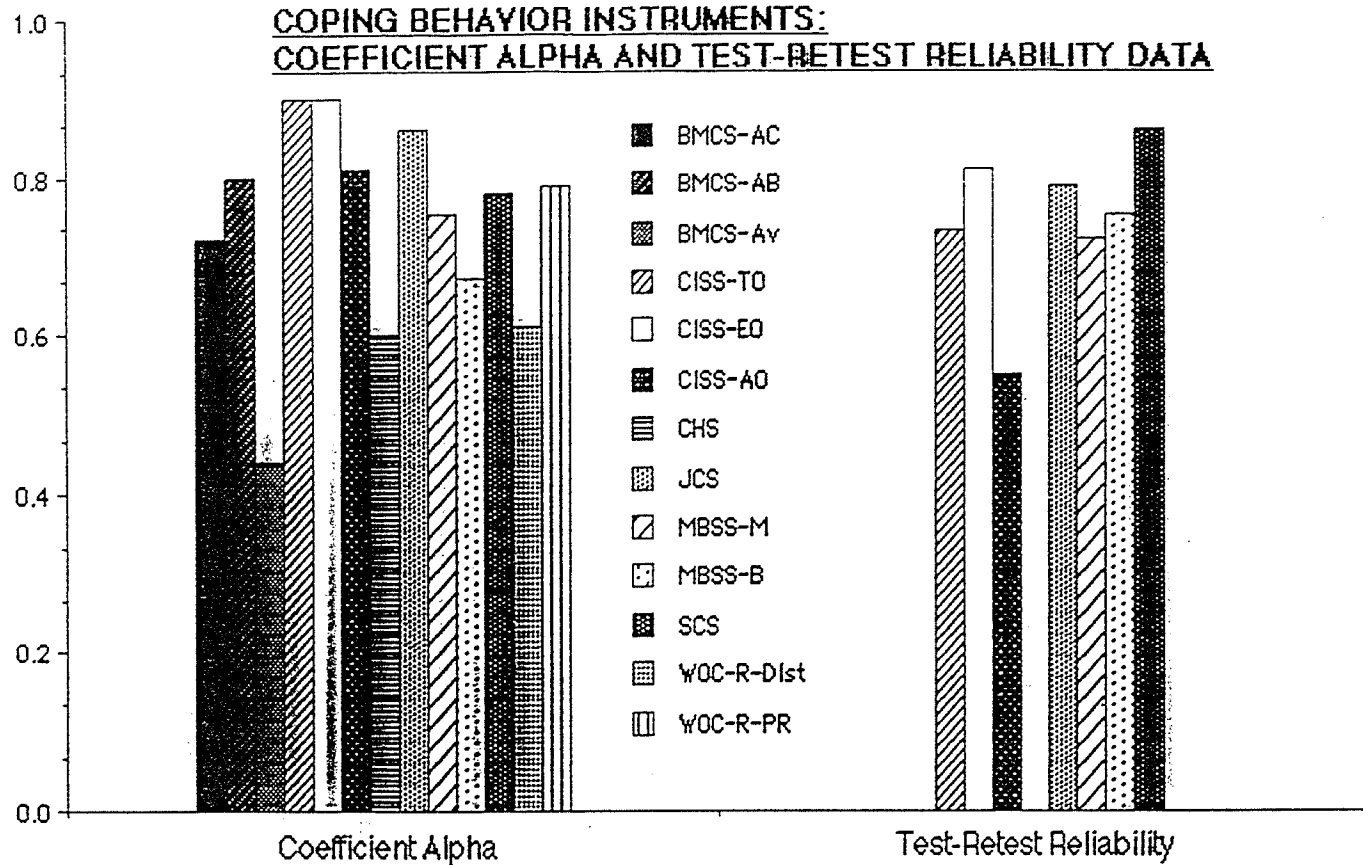
LOCUS OF CONTROL MEASURES: COEFFICIENT
ALPHA AND TEST-RETEST RELIABILITY DATA



DEPRESSION MEASURE COEFFICIENT ALPHA AND
TEST-RETEST RELIABILITY DATA



COPING BEHAVIOR INSTRUMENTS:
COEFFICIENT ALPHA AND TEST-RETEST RELIABILITY DATA



DEPRESSION RELATED MEASURES

Automatic Thoughts Questionnaire - PositivePrimary Reference: Ingram & Wisniki (1988)Scale Description: 30 items, 5 point likert, assesses automatic positive thoughts based on Beck's model of depressionScoring: Sum likert ratings for subscale and total scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Positive Daily Functioning	6,7,11,13,14,15,17,19,20,29	75.2	NR	NR	NR	NR	33.54	NR
Positive Self-Evaluation	10,21,22,23,25,28	6.8	NR	NR	NR	NR	21.20	NR
Others Evaluation of Self	1,2,5,12	5.7	NR	NR	NR	NR	14.26	NR
Positive Future Expectations	3,4	4.8	NR	NR	NR	NR	7.65	NR
TOTAL ATQ-R	all		.94		.95	NR	103.31	NR

Sample=480 male and female undergraduates; NR = not reported

Availability: Journal article - Scale reproduced in APPENDIX B

Automatic Thoughts Questionnaire - NegativePrimary Reference: Hollon & Kendall (1980)Scale Description: 30 items, 5 point likert, assesses automatic negative thoughts based on Beck's model of depressionScoring: Sum likert ratings for subscale and total scores

Factor Label	Subscale Items	%V	KR		SHR	TRT	x	SD
			a	20				
Personal Maladj/ Desire Change	7,10,14,20,26	45.9	NR	NR	NR	NR	NR	NR
Neg Self-Concept Neg Expectation	2,3,9,21,23,24,28	5.2	NR	NR	NR	NR	NR	NR
Low Self-Esteem	17,18	4.4	NR	NR	NR	NR	NR	NR
Giving-up/ Helplessness	29,30	3.5	NR	NR	NR	NR	NR	NR
TOTAL ATQ-N	all		.96		.97	NR	48.57	10.89
Sample=21 nondepressed college students; NR = not reported								

Availability: Journal article - SCALE REPRODUCED IN APPENDIX C

Beck Hopelessness ScalePrimary Reference: Beck & Weissman (1974)Scale Description: 20 items, True/False, assesses negative expectancies/statements of the futureScoring: Sum keyed items for subscale and total scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Feelings About Future	1,6,13,15,19	41.7	NR	NR	NR	NR	NR	NR
Loss of Motivation	2,3,9,11,12,16,17, 20	6.2	NR	NR	NR	NR	NR	NR
Future Expectations	4,7,8,14,18	5.6	NR	NR	NR	NR	NR	NR
BHS Total Score	T=2,4,7,9,11,12,14 16,17,18,20 F=1,3,5,6,8,10,13, 15,19			.93	NR	NR	NR	NR
Sample=294 male and female suicidal psychaitric inpatients; NR = not reported								

Availability: Journal article - Scale reproduced in APPENDIX D

Beck Self Concept TestPrimary Reference: Beck & Steer, 1978Scale Description: 25 item, 5 point likert, measures negative view of self by asking respondent to make comparisons to people her or she knows.Scoring: Sum likert ratings to obtain total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
BSCT-Total Score	1*,2,3,4*,5*,6,7* 8,9*,10*,11,12*, 13,14*,15*,16*,17* 18*,19,20*,21,22* 23,24*,25*		.80		NR	.88	71.57	10.74
* reverse scored items Sample=reliability and normative data from K.A. Madden (personal communication 15 September 1990). Normative data based on a sample of 130 recurrent major depression patients. NR = not reported								

Availability: Author Reproduced in APPENDIE

Cognitive Bias QuestionnairePrimary Reference: Hammen and Krantz (!976)

Scale Description: 6 situations common to college students, subjects after reading situation indicate their responses to 4 multiple choice questions of what they would do in a similar situation. Measures cognitive distortions and depression.

Scoring: Requires scoring key

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
CBQ-Total Score	requires scoring key		.62 to .69		NR	.48 to .60	NR	NR
Sample=reliability and normative data from Hammen & Krantz (1986) Test-retest interval=4 to 8 weeks. NR = not reported								

Availability: Author Reproduced in APPENDIX F

Cognitive Self Management TestPrimary Reference: Rude (1989)Scale Description: 26 item, 5 point likert assesses extent of derogatory self-talk in situations requiring self-control.Scoring: Sum likert responses

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
CSMT-Total Score	sum likert ratings		.79		NR	NR	NR	NR
Sample=reliability data from S. Rude (personal communication, 2 October, 1990) on a sample of approximately 140 subjects. NR = not reported								

Availability: Author Reproduced in APPENDIX G

Cognition Checklist

Primary Reference: Beck, Brown, Steer, Eidelson, & Riskind (1987)

Scale Description: 26 items, 5 point likert, assesses and differentiates between automatic positive thoughts based on Beck's model of depression and anxiety

Scoring: Sum likert ratings for subscale scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
CCL-Depression	1-14	80.0	.92		NR	.76	53.46	8.50
CCL-Anxiety	15-26	20.0	.62		NR	.79	49.14	8.54

Sample=for coefficient alpha, n=210 psychiatric outpatients; for test-retest reliability, n=66 psychiatric outpatients, interval = 6 weeks; for normative data, n=71 depressed outpatients; NR= not reported

Availability: Journal article - Scale reproduced in APPENDIX H

Dysfunctional Attitudes Scale

Primary Reference: Weissman (1980) as cited in Corcoran & Fisher (1987).

Scale Description: 40 items, 7 point likert, identifies and measures cognitive distortions based on Beck's model of depression

Scoring: Sum likert ratings for total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
DAS-Total Score	all		.84-		NR	.80-	NR	NR
			.92		NR	.84		

Sample=citation in Corcoran & Fisher (1987) does not report specific sample data, reported coefficients are the range of reported scores.
Test-retest interval = 8 weeks NR = not reported

Availability: Corcoran & Fisher (1987) - Scale reproduced in APPENDIX I

ANXIETY RELATED INSTRUMENTS

Social Anxiety Thoughts QuestionnairePrimary Reference: Hartman (1984)Scale Description: 21 items, 5 point likert, assesses distressing cognitions in social situationsScoring: Sum likert ratings for total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
SATQ-Total Score	all		.95		NR	NR	42.3	15.2
Sample=102 male and female undergraduate college students; NR= not reported								

Availability: Journal article/Corcoran & Fischer (1987) - Scale Reproduced in APPENDIX J

Anxious Self-Statements QuestionnairePrimary Reference: Kendall & Hollon (1989)Scale Description: 32 items, 5 point likert, measures global anxiety self-statementsScoring: Sum likert ratings for subscale and total scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Inability Coping/ Neg Future	6,8,10,20,23,24,25 26,27,31	44.1	NR	NR	NR	NR	NR	NR
Self Doubt	2,5,15,18	5.8	NR	NR	NR	NR	NR	NR
Confusion+Worry	4,11,12,13,21,30	4.6	NR	NR	NR	NR	NR	NR
ASSQ Total Score	all	.94			.92	NR	60.43	10.84

Sample=for coefficient alpha and split-half reliability, n=159 male and female undergraduates; for normative data, n=14 nonanxious male and female undergraduates; NR = not reported

Availability: Journal article - Scale reproduced in APPENDIX K

RATIONAL EMOTIVE THERAPY RELATED

Rational Behavior Inventory

Primary Reference: Shorkey & Whiteman (1977) - scale reproduced in Corcoran & Fischer (1987)

Scale Description: 37 items, 5 point likert, identifies irrational beliefs based on Ellis's Rational Emotive Therapy approach

Scoring: Complex scoring strategy, requires scoring manual. For each item rated over 3 or 4 on likert scale, a number of points is added to the total score.

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
RBI Total Score	all		NR		.73	.71	26.35	4.4
Sample=for coefficient alpha and normative data n=235 male and female undergraduate college students; for test-retest reliability, n=90 undergraduates, interval = 10 days NR= not reported								

Availability: Journal article - scale in Corcoran & Fischer (1987) - Scale reproduced in APPENDIX L

Attributional Style Assessment Test (Form I)Primary Reference: Anderson, Horowitz, and French (1983)Scale Description: 20 items, multiple choice format assesses attributions of strategy, effort, ability, personality traits, mood, circumstances in common situations.Scoring: Sum of attributions in each category

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
<hr/>								
ASAT-Form I								
Strategy	sum all "a"'s			.51	NR	NR	NR	NR
Effort	sum all "b"'s			.51	NR	NR	NR	NR
Ability	sum all "c"'s			.56	NR	NR	NR	NR
Personality Tr	sum all "d"'s			.34	NR	NR	NR	NR
Mood	sum all "e"'s			.44	NR	NR	NR	NR
Circumstances	sum all "f"'s			.54	NR	NR	NR	NR
<hr/>								
Sample=reliability data from 600 undergraduate subjects, NR = not reported								

Availability: Author Reproduced in APPENDIX M

ATTRIBUTIONAL STYLE INSTRUMENTS

Attributional Style Questionnaire

Primary Reference: Peterson, Semmel, von Baeyer, Abrahamson & Seligman (1982).

Scale Description: 12 hypothetical events, 6 good and 6 bad outcomes, 6 interpersonal/affiliation events, 6 achievement events. Subject asked to write major cause of outcome and rate cause on its globality, stability and internality.

Scoring: twenty possible subscales, authors recommend using 2 composite scores, for good and bad outcomes. Requires scoring manual.

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
ASQ-Comp Good	Requires scoring manual	.75		NR	.70	5.25	0.62	
ASQ-Comp Bad		.72		NR	.64	4.12	0.64	

Sample=for coefficient alpha and normative data n=130 male and female college students; for test-retest reliability, n=100 male and female college students, interval=5 weeks; NR = not reported

Availability: Journal article, authors *** PERMISSION REQUIRED TO USE INSTRUMENT - COPYRIGHTED *** - Scale reproduced in APPENDIX N

Causal Dimension ScalePrimary Reference: Russell (1982)

Scale Description: 9 items, 9 point likert Subjects given a situation(s) to imagine vividly and are asked to write down causes for an outcome. Subjects then make ratings on locus of causality, stability, and controllability. Scale does not include situations, only rating scale.

Scoring: Sum likert ratings for total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Locus causality	1-3			.87	NR	NR	NR	NR
Stability	4-6			.84	NR	NR	NR	NR
Controllability	7-9			.73	NR	NR	NR	NR

Sample=189 male and female undergraduate students. Alpha coefficients based on eight achievement situations. NR = not reported

Availability: Journal article - Scale Reproduced in APPENDIX O

LOCUS OF CONTROL INSTRUMENTS

James Internal-External ScalePrimary Reference: James (1957)Scale Description: 60 item, 4 point likert single dimension locus of control scale.Scoring: Sum even numbered likert scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
JIES-Total Score	sum even items			.74 to .92	NR	.62 to .84	37.0	10.0
Sample=reliability and normative data from W.H. James (personal communication, 19 August 1990); overall data based on several years research using the scale. Test-retest intervals from 1 year (.62) to 1 week (.84). NR = not reported								

Availability: Author Reproduced in APPENDIX P

Internal-External ScalePrimary Reference: Rotter (1966)Scale Description: 29 item pairs, subjects asked to choose alternative they believe in most. Assesses global locus of control beliefs.Scoring: Sum keyed alternatives to obtain total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
IES-Total Score	Keyed Items-score 1 2a,3b,4b,5b,6a,7a,9a 10b,11b,12b,13b,15b, 16a,17a,18a,20a,21a, 22b,23a,25a,26b,28b, 29a Fillers=1,8,14, 19,24,27			.70	.73	.72	8.29	3.97
Sample=for KR-20, n=400 male and female undergraduates; for split-half reliability, n=100 male and female undergraduates; for test-retest reliability, n=60 male and female undergraduates, interval=1 month; for normative data, n=1180 male and female undergraduates								

Availability: Journal article - Scale reproduced in APPENDIX Q

Revised Internal-External ScalePrimary Reference: Levenson (1974)Scale Description: 24 items, 6 point likert, Assessment of global locus of control beliefs using 3 dimensions.Scoring: Sum likert ratings for subscale scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Internal	1,4,5,9,18,19,21,23		.64		.62	.64	35.48	NR
Powerful Others	3,8,11,13,15,17,20,22		.77		.66	.74	16.65	NR
Chance	2,6,7,10,12,14,16,24		.78		.64	.78	13.94	NR
Sample=n=96 male and female adults; NR=not reported								

Availability: Journal article - SCALE REPRODUCED IN APPENDIX R

Generalized Expectancy For Success ScalePrimary Reference: Fibel & Hale (1978)Scale Description: 30 items, 5 point likert, measure of generalized expectancy of success in the futureScoring: Sum likert ratings for total and subscale scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
General efficacy	4,8,9,10,12,13,15 16,21,22	63.9	NR	NR	NR	NR	NR	NR
Long-range career expectancies	14,17,24,25,26,29, 30	13.4	NR	NR	NR	NR	NR	NR
Personal problem solving	3,5,6,11,19,20,23, 28	12.7	NR	NR	NR	NR	NR	NR
Not interpreted	1,2,7,18,27	10.1	NR	NR	NR	NR	NR	NR
GESS Total Score	all		NR		.91	.83	112.32	13.8

Sample= for split-half reliability n=207 male and female undergraduate college students; for test-retest reliability, n=74 male and female undergraduates; for normative data n=75 male undergraduates; NR = not reported

Availability: Journal article - Scale reproduced in APPENDIX S

Multidimensional Multiattributonal Causality ScalePrimary Reference: Lefcourt, von Baeyer, Ware, & Cox (1979)Scale Description: 48 items, 5 point likert, measuring 9 aspects of locus of control/attributional styles for achievement and affiliation events.Scoring: Sum subscale scores to derive subscale scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Achieve-Ability	3,11,19,27,35,43		.58		.67	.51	14.37	3.4
Achieve-Effort	1,9,17,25,33,41	to	.80*	to	.76*	to .62*	18.30	3.0
Achieve-Context	6,14,22,30,38,46						13.38	4.0
Acheive-Luck	8,16,24,32,40,48						11.96	4.3
Achieve-Success	6,8,11,22,24,25,27,38,40,41,43						18.17	4.8
Achieve-Failure	1,3,14,16,17,19,30,32,33,35,46,48						22.50	5.7
Acheive-Internal	sum achieve-ability and achieve-effort						32.68	5.0
Achieve-External	sum achieve-context and acheive-luck						25.34	6.5
Achieve-Total	sum achieve-internal and achieve-external						40.67	8.0
Affil-Ability	7,15,23,31,39,47		.58		.61	.50	13.37	4.4
Affil-Effort	5,13,21,29,37,45	to	.81*	to	.65*	to .70*	13.06	4.5
Affil-Context	2,10,18,26,34,42						13.89	3.6
Affil-Luck	4,12,20,28,36,44						8.73	4.1
Affil-Success	2,4,13,15,18,20,29,31,34,36,45,47						21.07	5.0
Affil-Failure	5,7,10,12,21,23,26,28,37,39,42,44						23.12	6.3
Affil-Internal	sum affil-ability and affil-effort						26.43	7.7
Affil-External	sum affil-context and affil-luck						22.62	6.4
Affil-Total	sum affil-internal and affil external						44.19	8.9

* article reports overall ranges for all subscales over several samples. Test-retest intervals range from 1 week to 4 months. Normative data, n=102 male undergraduate college students.

Availability: Journal article - Scale reproduced in APPENDIX T

Multidimensional Health Locus of Control

Primary Reference: Wallston, Wallston & DeVellis (1978)

Scale Description: 2 forms of 18 items, 6 point likert, measures locus of control beliefs on three dimensions with regard to health.

Scoring: Sum likert ratings for total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Internal*	1,4,11,12,14,15, 22,23,25,26,33,36	.86			NR	NR	50.41	9.05
Powerful Others*	2,5,9,10,13,18,19, 24,27,28,32,35	.83			NR	NR	40.97	10.05
Chance*	3,6,7,8,16,17,20, 21,29,30,31,34	.84			NR	NR	31.04	10.20
* Sum of forms A and B. Sample=adults recruited at an airport, n=115 male and female subjects; NR = not reported								

Availability: Journal article. - Scale reproduced in APPENDIX U

COPING MEASURES

Billings and Moos Coping Scale

Primary Reference: Billings and Moos (1981)

Scale Description: 19 items, true/false, assesses how people deal with personal crises, stressful life events.

Scoring: percent of items answered yes for each subscale

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Active-cognitive	1-6	.72			NR	NR	61.5%	NR
Active-behavioral	7-12	.80			NR	NR	58.1%	NR
Avoidance	13-17	.44			NR	NR	21.0%	NR
Problem-focused	1,2,3,12,13,14,15, 16,17,18,19	NR			NR	NR	49.7%	NR
Emotion-focused	4-10		NR		NR	NR	34.5%	NR
Sample=194 randomly selected married males. NR = not reported								

Availability: Journal article - Scale Reproduced in APPENDIX V

Coping Inventory For Stressful EventsPrimary Reference: Endler & Parker (1990)Scale Description: 48 items, 5 point likert, measures three types of coping stylesScoring: Sum likert ratings for subscale scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
CSSI-Task Oriented	1,2,6,10,15,21,24,26,27,36,39,41,42,43,46,47		.90		NR	.73	55.82	9.98
CSSI-Emotion Oriented	5,7,8,13,14,16,17,19,22,25,28,30,33,34,38,45		.90		NR	.68	43.18	10.96
CSSI-Avoidance Oriented	3,4,9,11,12,18,20,23,29,31,32,35,37,40,44,48		.81		NR	.55	42.62	10.81

Sample=for coefficient alpha, n=249 "normal" adult males; for test-retest reliability, n=74 male undergraduates; for normative data, n=471 male undergraduates. NR = not reported

Availability: Journal article/Authors - *** THIS INSTRUMENT IS COPYRIGHTED - REQUIRES PERMISSION TO USE *** - Scale reproduced in APPENDIX W

Coping Humour Scale

Primary Reference: Lefcourt & Martin (1986)

Scale Description: 7 items, 4 point likert, assess the degree to which individuals use humor to cope with stressful life events

Scoring: Sum likert ratings to obtain total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
CHS-Total Score	1*,2,3,4*,5,6,7		.60 to .70*		NR	NR	19.9	3.87
RBI Total Score	all			NR	.73	.71	26.35	4.4 *

coefficient alpha reported over a range of samples. Sample= normative data, n=120 male undergraduate students; NR = not reported

Availability: Book chapter - Scale reproduced in APPENDIX X

Jalowiec Coping ScalePrimary Reference: Jalowiec and Powers (1981)Scale Description: 40 items, 5 point likert, measures coping strategies used in coping with medical procedures and physical disease.Scoring: Sum likert ratings to obtain total scores

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
JCS-Total Score	all		.86		NR	.79	28.88	5.39
Sample=for coefficient alpha, n=141 male and female general hospital patients; for test-retest reliability, n=28 adult volunteers; for normative data, n=25 hypertensive patients; NR = not reported								

Availability: Journal article - Scale reproduced in APPENDIX Y

Miller Behavioral Style ScalePrimary Reference: Miller (1987)

Scale Description: 4 imagined events are presented, and subjects are asked to indicate which of 8 possible responses they would likely engage in. Four of the responses each are information seeking (monitoring) and information avoiding (blunting) strategies.

Scoring: Sum total number of monitoring and blunting responses endorsed to obtain total monitoring and blunting scores.

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
MBSS-Monitoring	1a,1d,1f,1g		.75		NR	.72	NR	NR
	2b,2d,2e,2h	to	.79*					
	3a,3b,3d,3g							
	4a,4d,4f,4g							
MBSS-Blunting	1b,1c,1e,1h		.67		NR	.75	NR	NR
	2a,2c,2f,2g	to	.69*					
	3c,3e,3f,3h							
	4b,4c,4e,4h							

* coefficient alpha reported ranges over several samples. Sample= test-retest reliability, n=110 subjects, 4 month interval; NR = not reported

Availability: Journal Article/Author - Scale Reproduced in APPENDIX Z

Self Control SchedulePrimary Reference: Rosenbaum (1980)Scale Description: 36 item, 6 point likert, measures cognitive behavioral self-control behaviors used in stressful situations.Scoring: Sum likert ratings to obtain total score

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
SCS-Total Score	1,2,3,4*,5,6*,7,8*, 9*,10,11,12,13,14*, 15,16*,17,18*,19,20, 21*,22,23,24,25,26, 27,28,29*,30,31,32, 33,34,35*,36	.78			NR	.86	25.9	20.6
* reverse scored items Sample=for coefficient alpha, n=111 male and female undergraduate students, for test-retest reliability, n=82 undergraduates, interval = 4 weeks; for normative data, n=35 male undergraduate students; NR = not reported								

Availability: Journal Article - Scale Reproduced in APPENDIX AA

Self-Control Questionnaire

Primary Reference: Rehm, Fuchs, Roth, Kornblith, and Romano (1979)

Scale Description: 40 item, 5 point likert measure of attitudes and beliefs concerning self-control behavior.

Scoring: Sum likert ratings.

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
SCQ-Total Score	sum likert ratings		.82 to .88		NR	.86	NR	NR
Sample=reliability and normative data from Rush (1987) based on several research reports. Test retest interval = 5 weeks. NR = not reported								

Availability: Author Reproduced in APPENDIX BB

Ways of Coping Questionnaire - Revised

Primary Reference: Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen (1986).

Scale Description: 67 items, 4 point likert, measures a broad range of cognitive and behavioral strategies used to manage internal and/or external demands in specific stressful encounters.

Scoring: Sum likert ratings to obtain subscale scores (there are a variety of factor analytic studies with different subscales, the set presented here is from the primary reference).

Factor Label	Subscale Items	%V	a	KR 20	SHR	TRT	x	SD
Confrontative coping	6,7,17,28,34,46	.70			NR	NR	3.94	2.09
Distancing	12,13,15,21,41,44	.61			NR	NR	3.05	1.78
Self-control	10,14,35,43,54,62,63	.70			NR	NR	5.77	2.87
Seeking social support	8,18,22,31,42,45	.76			NR	NR	5.40	2.40
Accepting Responsibility	9,25,29,51	.66			NR	NR	1.87	1.44
Escape-avoidance	11,16,33,40,47,50,58,59	.72			NR	NR	3.18	2.48
Planful problem solving	1,26,39,48,49,52	.68			NR	NR	7.25	2.35
Positive reappraisal	20,23,30,36,38,56,60	.79			NR	NR	3.48	2.96
Sample=for coefficient alpha, n=85 randomly sampled married couples (total n=170); same subjects used to obtain normative data, however, this is from Folkman, Lazarus, Gruen & DeLongis (1986). NR = not reported.								

Availability: Journal Article - Scale Reproduced in APPENDIX CC

APPENDIX B

Automatic Thoughts Questionnaire - Positive

Directions: Read each item below and indicate to what extent each thought, or a similar thought, occurred to you during the past week in the following manner:

1 = never
3 = sometimes
5 = all the time

	Never				All the time
1. I am respected by my peers	1	2	3	4	5
2. I have a good sense of humour	1	2	3	4	5
3. My future looks bright	1	2	3	4	5
4. I will be successful	1	2	3	4	5
5. I'm fun to be with	1	2	3	4	5
6. I am in a great mood	1	2	3	4	5
7. There are many people who care about me	1	2	3	4	5
8. I'm proud of my achievements	1	2	3	4	5
9. I will finish what I start	1	2	3	4	5
10. I have many good qualities	1	2	3	4	5
11. I am comfortable with life	1	2	3	4	5
12. I have a good way with others	1	2	3	4	5
13. I am a lucky person	1	2	3	4	5
14. I have friends who support me	1	2	3	4	5
15. Life is exciting	1	2	3	4	5
16. I enjoy a challenge	1	2	3	4	5
17. My social life is terrific	1	2	3	4	5
18. There's nothing to worry about	1	2	3	4	5
19. I'm so relaxed	1	2	3	4	5
20. My life is running smoothly	1	2	3	4	5
21. I'm happy with the way I look	1	2	3	4	5
22. I take good care of myself	1	2	3	4	5
23. I deserve the best in life	1	2	3	4	5
24. Bad days are rare	1	2	3	4	5
25. I have many useful qualities	1	2	3	4	5
26. There is no problem that is hopeless	1	2	3	4	5
27. I won't give up	1	2	3	4	5
28. I state my opinions with confidence	1	2	3	4	5
29. My life keeps getting better	1	2	3	4	5
30. Today I've accomplished a lot	1	2	3	4	5

APPENDIX C
Automatic Thoughts Questionnaire - Negative

Directions: Listed below are a variety of thoughts that pop into people's heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last week. Please read each item carefully and circle the appropriate number on the questionnaire in the following fashion (1 = "not at all", 2 = "sometimes", 3 = "moderately often" 4 = "often" and 5 = "all the time").

	Never				All the time
1. I feel like I'm up against the world	1	2	3	4	5
2. I'm no good	1	2	3	4	5
3. Why can't I ever succeed	1	2	3	4	5
4. No one understands me	1	2	3	4	5
5. I've let people down	1	2	3	4	5
6. I don't think I can go on	1	2	3	4	5
7. I wish I were a better person	1	2	3	4	5
8. I'm so weak	1	2	3	4	5
9. My life's not going the way I want it to	1	2	3	4	5
10. I'm so dissapointed in myself	1	2	3	4	5
11. Nothing feels good anymore	1	2	3	4	5
12. I can't stand this anymore	1	2	3	4	5
13. I can't get started	1	2	3	4	5
14. What's wrong with me?	1	2	3	4	5
15. I wish I were somewhere else	1	2	3	4	5
16. I can't get things together	1	2	3	4	5
17. I hate myself	1	2	3	4	5
18. I'm worthless	1	2	3	4	5
19. Wish I could just disappear	1	2	3	4	5
20. What's the matter with me?	1	2	3	4	5
21. I'm a loser	1	2	3	4	5
22. My life is a mess	1	2	3	4	5
23. I'm a failure	1	2	3	4	5
24. I'll never make it	1	2	3	4	5
25. I feel so helpless	1	2	3	4	5
26. Something has to change	1	2	3	4	5
27. There must be something wrong with me	1	2	3	4	5
28. My future is bleak	1	2	3	4	5
29. It's just not worth it	1	2	3	4	5
30. I can't finish anything	1	2	3	4	5

APPENDIX D
Beck Hopelessness Scale

Directions. Read each of the following statements carefully. Circle T (for True) if the statement applies to you, or F (for False) if you feel the statement does not apply to you.

- | | | |
|--|---|---|
| 1. I look forward to the future with hope and enthusiasm | T | F |
| 2. I might as well give up because I can't make things better for myself | T | F |
| 3. When things are going badly, I am helped by knowing that they can't stay that way forever | T | F |
| 4. I can't imagine what my life would be like in 10 years | T | F |
| 5. I have enough time to accomplish the things I most want to do | T | F |
| 6. In the future, I expect to succeed in what concerns me most | T | F |
| 7. My future seems dark to me | T | F |
| 8. I expect to get more of the good things in life than the average person | T | F |
| 9. I just don't get the breaks, and there's no reason to believe I will in the future | T | F |
| 10. My past experiences have prepared me well for my future | T | F |
| 11. All I can see ahead of me is unpleasantness rather than pleasantness | T | F |
| 12. I don't expect to get what I really want | T | F |
| 13. When I look ahead to the future, I expect I will be happier than I am now | T | F |
| 14. Things just won't work out the way I want them to | T | F |
| 15. I have great faith in the future | T | F |
| 16. I never get what I want so it's foolish to want anything | T | F |
| 17. It is very unlikely that I will get any real satisfaction in the future | T | F |
| 18. The future seems vague and uncertain to me | T | F |
| 19. I can look forward to more good times than bad times | T | F |
| 20. There's no use in really trying to get something I want because I probably won't get it | T | F |

APPENDIX E
Beck Self-Concept Test

Directions. On this page and the next are statements about various traits such as looks, honesty, and personality. For each trait, please rate yourself in relation to other people you know, by circling the most accurate phrase.

1. Looks
 - a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
2. Knowledge
 - a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
3. Greed
 - a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
4. Telling Jokes
 - a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
5. Intelligence
 - a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
6. Popular
 - a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
7. Tidy
 - a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
8. Successful
 - a) less than nearly anyone I know

- b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
9. Memory
- a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
10. Sex Appeal
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
11. Kind
- a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
12. Personality
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
13. Lazy
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
14. Athletic
- a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
15. Selfish
- a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
16. Reading Ability
- a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
17. Appearance
- a) better than nearly anyone I know
 - b) better than most people I know

- c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
18. Good-Natured
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
19. Independent
- a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know
20. Finishing Things
- a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
21. Self-Conscious
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
22. Learning Things
- a) better than nearly anyone I know
 - b) better than most people I know
 - c) about the same as most people
 - d) worse than most people I know
 - e) worse than nearly anyone I know
23. Jealous
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
24. Working Hard
- a) more than nearly anyone I know
 - b) more than most people I know
 - c) about the same as most people
 - d) less than most people I know
 - e) less than nearly anyone I know
25. Cruel
- a) less than nearly anyone I know
 - b) less than most people I know
 - c) about the same as most people
 - d) more than most people I know
 - e) more than nearly anyone I know

APPENDIX F

Cognitive Bias Questionnaire

Directions. Read the following 6 situations and complete the multiple choice questions that follow each.

SITUATION 1

Peggy had joined a particular organization a couple of years ago because she was very committed to its goals and practices. She knew most of the members by now, and a few had even become fairly close friends. Peggy had never considered herself the "leader" type. Earlier in school she had been fairly active but had never really stood out. Several friends in her current group thought that her ideas were sound and they began to urge her to run for president of the organization in the upcoming election. Peggy was very reluctant at first, feeling she was unqualified, but finally she decided to run because she thought she did have energy and ideas to contribute. No woman had ever held the position before, but her friends thought she had a good chance to win. When elections were held, Peggy ran for presidency but she lost.

Put yourself in Peggy's place, trying as vividly as you can to imagine what she probably thought and felt.

- 1) When you first heard you'd lost, you immediately:
 - a) feel bad and imagine I've lost by a landslide
 - b) shrug it off as unimportant
 - c) feel sad and wonder what the total counts were
 - d) shrug it off, feeling I've tried as hard as I could
- 2) After the election, you conclude
 - a) I feel really depressed about losing, but I'll continue to work for my goals once I get my enthusiasm back
 - b) It's okay that I lost, since it's a useful illustration of the inevitable prejudice against female leadership
 - c) I'm not a winner at anything. I never should have let myself be talked into running
 - d) The campaign was a good experience even though I didn't win
- 3) When you compare the winner's platform to yours, you think
 - a) Mine was good for a first attempt, and was vastly better than my opponents
 - b) Despite what my friends said, mine wasn't good at all

c) I feel badly that I didn't do a better job on it,
but I'll know next time

d) Mine showed some inexperience but was pretty good
for a first attempt

SITUATION 2

Fred had started working in the main office last week. It felt like it had taken forever to find this job after he moved to L.A. He had grown up in a small town some distance away, and since he moved had met few people. The others who worked in the same office seemed friendly, although most of them were considerably older than he. One woman, Carolyn, was about his age, sort of pretty, but she worked down the hall and he saw her only occasionally. Taking his coffee break in the snack bar one afternoon, she came over and sat with him. They talked for awhile. He found her fun and pleasant, and they seemed to enjoy each other. The break ended and he had to get back to his office. He found himself thinking about her that afternoon - fantasizing about going out with her, wondering what she's like. He looked forward to seeing her then next day. At lunch the next afternoon, he sat alone in the snack bar and saw her come in. She saw him, smiled and waved, but she took her lunch to another empty table on the far side of the room.

Put yourself in Fred's place and try to imagine as vividly as you can what he might think and feel.

1) Your first reaction was to think:

- a) I might consider being a little assertive and pursue her
- b) I'm unhappy that she prefers to eat alone this afternoon
- c) She dislikes me and wants me to get the message
- d) She's playing hard to get

2) Seeing her makes you think of your romantic prospects in L.A. You imagine:

- a) I get really discouraged about how hard it is to meet good people, but almost everyone has problems with it too.
- b) I feel like I'll never meet anyone who is interested in me
- c) I can't expect the first woman to come alone to be the Big Romance
- d) Women in L.A. are awfully conceited

3) Thinking back on your conversation with Carolyn, your judgement is:

- a) I know she really was excited by me and I'm mystified about why she's avoiding me
- b) I'm afraid it wasn't as interesting as I first thought
- c) The conversation was pleasant, that probably had nothing to do with whether she's interested in me or not.
- d) I must have failed at making a good impression

- 4) Reflecting on your life here in L.A., you think:
- a) I'll just have to wait and see what the future will bring; it's too soon to tell
 - b) I have just about everything I want and I know I'll be a big hit in this town
 - c) Loneliness is a big problem for me, but then I suppose it's also a problem for all newcomers
 - d) No one in L.A. will ever really care about me, but at least I have a job

SITUATION 3

Lisa and Jason have been dating for the past few months. Lisa is neither pretty nor ugly and has a pleasant personality. Jason is unusually fun to be with and often takes her to nice restaurants and theaters. Tonight she seemed to be somewhat unhappy despite his attempts to start light hearted conversations. He asked her if anything was wrong. She replied that she was having some problems at work that she didn't want to talk about, but was grateful for his concern. She seemed a little more cheerful after that.

Put yourself in Jason's place, trying to imagine as vividly as you can what he probably thought and felt.

1) You think about the future of this relationship and you imagine:

- a) It's a pretty good relationship, and we're getting to know each other better as time goes on
- b) It's a pretty good relationship and I'm generally satisfied although I think the relationship has a few problems
- c) I would probably have a hard time finding someone else who would care about me, so I want to make this relationship work out
- d) It is not what I really want it to be, and that makes me sad, so I will leave myself open to contacts with other women

2) You wonder why Lisa hasn't called for several days

- a) I decide I don't really know why and figure I should ask her
- b) I think of it that she must not care about me
- c) I imagine that she thinks so highly of me that she sometimes is afraid of risking rejection or pushing me too hard
- d) I feel unhappy about it but figure that things sometimes do not happen exactly the way one would like

3) Why do you think her mood changed after you asked her if there was a problem?

- a) I feel pleased and imagine I can be very therapeutic for her and most others
- b) I don't know why since it may have been due to any number of things, but I am happy that her mood changed
- c) I just don't understand her moods, which worries and upsets me even though I know it's very hard to really understand another person
- d) I wish I could believe that I had something to do with it, but I rarely have the ability to cheer anyone up

4) You wonder why she got in the bad mood, and imagine that

a) I feel badly that I don't understand her, but it's really difficult to understand everything about somebody else.

b) Like most people, she has a few problems that bother her

c) It's because she's extremely immature and moody, but I, on the other hand, am calm and happy

d) It's because she's dating the most bleak, plain man in the city

SITUATION 4

Janice is a senior at a large university. She dislikes the lack of faculty-student contact so she usually makes an effort to talk to her teachers outside the classroom. So after she received an average score on a midterm, she went to the professor, Dr. Smith, to talk over the test. Dr. Smith pointed out the correct answers and the reasons for them on the questions she missed. He also gave her some helpful tips on studying. After about 45 minutes, Dr. Smith said he was quite busy and hoped she would excuse him. He then walked her to the door and said it was nice taking to her.

Put yourself in Janice's place, trying to imagine as vividly as you can what she probably thought and felt.

- 1) Are you satisfied with your meeting with Dr. Smith?
 - a) Yes, because he was quite pleased with my visit and will probably give me a good grade in the course
 - b) Although it's upsetting for me to realize it, I probably needed tips on studying
 - c) Yes, he answered all my questions and I made a good contact
 - d) No, he probably thinks I'm dumb, which is why he gave me tips on study habits
- 2) Looking over the questions you missed, you decide:
 - a) It's not my fault, the teacher should make a better test
 - b) Unfortunately, my performance on this test is indicative of my true ability. I'm a mediocre student
 - c) I feel bad that I missed these questions
 - d) Now that you've talked with Dr. Smith, you hope you'll do better on the final exam
- 3) You thought Dr. Smith was rather nice in walking you to the door. Your reaction to his gesture was.
 - a) Embarrassment. He was trying to hurry me out
 - b) Appreciation that he realized it was worth his time to help me
 - c) Appreciation. He seemed interested and concerned
 - d) Sort of sad and let down that the meeting had to end.
- 4) How did your meeting with the professor change your view of the large, impersonal, university?
 - a) Dr. Smith helped to make the university less impersonal
 - b) You realize that the faculty is always happy to talk with students
 - c) Although Dr. Smith was willing to talk to me, I still feel lost and a little lonely at the large, impersonal university

d) Even though the professor was polite, I still felt that he resented my taking up so much of his time, and that made me feel bad

SITUATION 5

Ellen was a graduate student, and she aspired to be a good teacher. It was very important to her to communicate well with others, and she liked the idea of turning students on to particular viewpoints that they may never have considered before. Her father had been a professor in a small college and although their relationship was strained at times, she had always respected her father and thought that being a professor was a good life. Ellen was a sensitive person - perceptive and insightful - and she was aware that part of her motivation stemmed from the role of being an "expert" and having people be impressed by her knowledge. An opportunity to test her teaching skills arrived in the form of a class presentation that all the students in one of her seminars were required to make. Ellen probably put in a bit more than average preparation on her topic. When the day came for her presentation, she seemed calm and poised (although rather nervous on the inside). During her talk, students commented and asked questions, no one yawned or dozed. One question had been rather hard to answer. No one said anything to her afterwards since it was late in the day, everyone left immediately afterward.

Put yourself in Ellen's place and try to imagine as vividly as you can what she probably thought and felt.

1) You try to judge how well your talk went. You decide:

- a) I clearly did the best job of anyone.
- b) According to my own standards, I think it went OK
- c) I'm disappointed no one complimented me
- d) I hope someone would tell me it went well, but since no one said anything, I'm afraid it wasn't very good

2) When you thought about it afterwards, the thing that mostly comes to mind is:

- a) I feel good; relieved that the whole thing is over
- b) I feel disappointed that I didn't get feedback about how I'd done
- c) I feel bad about that one question I couldn't answer. I think it made me look ridiculous
- d) I feel good because now the teacher will see my genius

3) You're wondering what grade you might be given for the presentation by the instructor

- a) I feel that because of that one question that stumped me, he'll conclude that I didn't really prepare well enough to earn an A

b) I saw him nod once or twice, so he was really impressed and I'll get an A

c) I'm quite worried about the grade but I don't know how he'll grade

d) I think I'll get an A because it's a graduate seminar and because I clearly did as much as anyone else and an A is usual under these circumstances

4) With respect to your future career as a college teacher, you conclude:

a) I'm afraid I won't make it because I know the competition for jobs is stiff

b) I'm optimistic because I've always been lucky

c) Since my seminar presentation didn't go well, I feel pretty pessimistic about my chances

d) I'm optimistic since my grades are good

SITUATION 6

Lou is a sophomore, living in one of the dorms. He's moderately good looking, friendly, a bit on the quiet side, an A student. He frequently admires men of his age who appear to be outgoing, although he's aware of the disadvantage of that personality as well. One of his concerns is making friends. In his freshman year he kept busy with school work and maintained relationships he'd had in high school. But this year he has become more aware that he wants to meet people and make friends on campus. He's uncertain quite how to go about it. Tonight is Friday night, and Lou can't deny himself that he feels lonely. Most of the men on his floor are out for the evening or gone for the weekend. At the far end of the hall the men in two or three rooms are in tonight as well. While he's in the shower, he hears one of them mention plans for going out later for pizza to a place where they know some women are going to be.

Put yourself in Lou's place and try to imagine as vividly as you can how he might think and feel

1) Your first reaction when you hear that they are going out is:

- a) Unhappiness. They probably would have asked me to come if they liked me more
- b) Unhappiness and increased loneliness. Sounds like I'll be practically alone on the floor
- c) To wonder if they'd mind if I'd come along
- d) Relief. They seem unfriendly for not asking me, so I'm happy since I don't have to be with them

2) Being alone on Friday night

- a) doesn't bother me because I figure I'll have a date next weekend for sure
- b) upsets me and makes me feel lonely
- c) upsets me and makes me start to imagine endless nights and days by myself
- d) I can handle it because one Friday night alone isn't that important, probably everybody has spent one night alone

3) You sit at your desk trying to get some reading done. Your mind keeps flashing on.

- a) pleasant memories of a recent date I've had
- b) An upcoming blind date which I expect will go very well
- c) I'm lonely and down but everybody is lonely once in a while
- d) The feeling that not having a date tonight is one of the most painful things I can imagine

- 4) People have always told you that you have a nice smile. You're thinking about your looks now and feel
- a) It's unimportant what people think about my looks or anyone else's looks.
 - b) Fairly satisfied about my looks
 - c) Really ugly and undesirable. When someone compliments my looks I think they're just being polite
 - d) Unhappy because even though I feel fairly good looking it didn't seem to be an asset in getting a date tonight

APPENDIX G

Cognitive Self-Management Test

Directions. In answering the questions below, think about how you typically react to the sorts of situations described. Try to disregard thoughts of how you feel you should or would like to react and mark the point along the scale which best describes your actual reactions using the following scale:

- 1) extremely uncharacteristic of me
5) extremely characteristic of me

1.	I am more attentive to evidence that I have been rejected or criticized than to positive or flattering information	1	2	3	4	5
2.	If something bad happens and there's nothing to be done about it I put it out of my thoughts	1	2	3	4	5
3.	When I approach a challenging task I'm fairly good at thinking positively enough to boost my confidence	1	2	3	4	5
4.	I tend to blame myself for things that go wrong	1	2	3	4	5
5.	I am pleased and encouraged for even small or partial successes	1	2	3	4	5
6.	I can't help dwelling on things that have gone wrong	1	2	3	4	5
7.	I can usually overcome any initial difficulties I experience in learning something new	1	2	3	4	5
8.	Insecurities or other negative feelings often make it difficult for me to perceive a situation clearly	1	2	3	4	5
9.	I spend time contemplating and enjoying my successes	1	2	3	4	5
10.	If something good happens I spend more time thinking about it than if something bad happens	1	2	3	4	5
11.	I avoid starting tasks because I doubt I'll finish them	1	2	3	4	5
12.	Once I set my mind to do something I'm confident that I'll do it	1	2	3	4	5
13.	I generally deal with major setbacks, failures, or rejections by gradually looking on the bright side and finding a new strategy	1	2	3	4	5

- | | | | | | |
|--|---|---|---|---|---|
| 14. I usually give myself a "pat on the back" for even small accomplishments | 1 | 2 | 3 | 4 | 5 |
| 15. I have difficulty maintaining a constructive attitude | 1 | 2 | 3 | 4 | 5 |
| 16. I often react to failure or setback by feeling extremely low | 1 | 2 | 3 | 4 | 5 |
| 17. I generally feel fairly accepting of my work and my behavior | 1 | 2 | 3 | 4 | 5 |
| 18. My expectations for myself are often too high for me to reach | 1 | 2 | 3 | 4 | 5 |
| 19. If I have trouble achieving a goal I tend to figure out where the problem lies and then correct it | 1 | 2 | 3 | 4 | 5 |
| 20. When I approach a challenging task I tend to think alot about what might go wrong | 1 | 2 | 3 | 4 | 5 |
| 21. I give myself emotional support much as one friend would give another support | 1 | 2 | 3 | 4 | 5 |
| 22. I feel little confidence when approaching a new task | 1 | 2 | 3 | 4 | 5 |
| 23. I set up step by step plans for what I want to accomplish | 1 | 2 | 3 | 4 | 5 |
| 24. I'm reluctant to scale my goals down even when I can't seem to attain them | 1 | 2 | 3 | 4 | 5 |
| 25. If a task seems too big I break it down into smaller parts and take it one step at a time | 1 | 2 | 3 | 4 | 5 |
| 26. If I do something wrong I tend to make myself suffer for it | 1 | 2 | 3 | 4 | 5 |

APPENDIX H
Cognition Checklist

Directions: Read each item below and indicate to what extent each thought, or a similar thought, occurred to you during the past week in the following manner:

0 = never

4 = always

	Never				Always
1. There's no one left to help me	0	1	2	3	4
2. I'm worse off than they are	0	1	2	3	4
3. I'll never be as good as other people are	0	1	2	3	4
4. Life isn't worth living	0	1	2	3	4
5. I don't deserve to be loved	0	1	2	3	4
6. Nothing ever works out for me anymore	0	1	2	3	4
7. People don't respect me anymore	0	1	2	3	4
8. I'm not worthy of other people's attention or affection	0	1	2	3	4
9. I will never overcome my problems	0	1	2	3	4
10. I have become physically unattractive	0	1	2	3	4
11. I'm worthless	0	1	2	3	4
12. I'm a social failure	0	1	2	3	4
13. I've lost the only friends I've had	0	1	2	3	4
14. No one cares whether I live or die	0	1	2	3	4
15. I'm losing my mind	0	1	2	3	4
16. Something might happen that will ruin my appearance	0	1	2	3	4
17. There's something very wrong with me	0	1	2	3	4
18. I'm going to have an accident	0	1	2	3	4
19. Something awful is going to happen	0	1	2	3	4
20. I am going to be injured	0	1	2	3	4
21. Something will happen to someone I care about	0	1	2	3	4
22. I might be trapped	0	1	2	3	4
23. I am not a healthy person	0	1	2	3	4
24. What if no one reaches me in time to help?	0	1	2	3	4
25. What if I get sick and become an invalid?	0	1	2	3	4
26. I am going to have a heart attack	0	1	2	3	4

APPENDIX I
Dysfunctional Attitudes Scale

Directions. This questionnaire lists different attitudes or beliefs which people sometimes hold. Read each statement carefully and decide how much you agree or disagree with the statement.

For each of the attitudes, indicate to the left of the item the number that best describes how you think. Be sure to choose only one answer for each attitude. Because people are different, there is no right answer or wrong answer to these statements. Your answers are confidential, so please do not put your name on this sheet.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like most of the time.

- 1 = totally agree
- 2 = agree very much
- 3 = agree slightly
- 4 = neutral
- 5 = disagree slightly
- 6 = disagree very much
- 7 = totally disagree

-
- ___ 1. It is difficult to be happy unless one is good looking, intelligent, rich, and creative
 - ___ 2. Happiness is more a matter of my attitude towards myself than the way other people feel about me
 - ___ 3. People will probably think less of me if I make a mistake
 - ___ 4. If I do not do well all the time, people will not respect me
 - ___ 5. Taking even a small risk is foolish because the loss is likely to be a disaster
 - ___ 6. It is possible to gain another person's respect without being especially talented at anything
 - ___ 7. I cannot be happy unless most people I know admire me
 - ___ 8. If a person asks for help, it is a sign of weakness
 - ___ 9. If I do not do as well as other people, it means I am a weak person
 - ___ 10. If I fail at my work, then I am a failure as a person
 - ___ 11. If you cannot do something well, there is little point in doing it at all
 - ___ 12. Making mistakes is fine because I can learn from them
 - ___ 13. If someone disagrees with me, it probably

- indicates he does not like me
- ___ 14. If I fail partly, it is as bad as being a complete failure
 - ___ 15. If other people know what you are really like, they will think less of you
 - ___ 16. I am nothing if a person I love doesn't love me
 - ___ 17. One can get pleasure from an activity regardless of the end result
 - ___ 18. People should have a chance to succeed before doing anything
 - ___ 19. My value as a person depends greatly on what others think of me
 - ___ 20. If I don't set the highest standards for myself, I am likely to end up a second-rate person
 - ___ 21. If I am to be a worthwhile person, I must be the best in at least one way
 - ___ 22. People who have good ideas are better than those who do not
 - ___ 23. I should be upset if I make a mistake
 - ___ 24. My own opinions of myself are more important than other's opinions of me
 - ___ 25. To be a good, moral, worthwhile person I must help everyone who needs it
 - ___ 26. If I ask a question, it makes me look stupid
 - ___ 27. It is awful to be put down by people important to you
 - ___ 28. If you don't have other people to lean on, you are going to be sad
 - ___ 29. I can reach important goals without pushing myself
 - ___ 30. It is possible for a person to be scolded and not get upset
 - ___ 31. I cannot trust other people because they might be cruel to me
 - ___ 32. If others dislike you, you cannot be happy
 - ___ 33. It is best to give up your own interests in order to please other people
 - ___ 34. My happiness depends more on other people than it does on me
 - ___ 35. I do not need the approval of other people in order to be happy
 - ___ 36. If a person avoids problems, the problems tend to go away
 - ___ 37. I can be happy even when I miss out on many of the good things in life
 - ___ 38. What other people think about me is very important
 - ___ 39. Being alone leads to unhappiness
 - ___ 40. I can find happiness without being loved by another person

APPENDIX J
Anxious Self Statements Questionnaire

Directions. Listed below are a variety of thoughts that pop into people's heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last week. Please read each item carefully and fill in the appropriate circle on the answer sheet.

1 = never *
 5 = always *

	never			always		
1. What am I going to do with my life?	1	2	3	4	5	
2. I'm not going to make it	1	2	3	4	5	
3. What will people think of me?	1	2	3	4	5	
4. What am I going to do?	1	2	3	4	5	
5. Can I make it?	1	2	3	4	5	
6. I can't make it	1	2	3	4	5	
7. Who can I turn to?	1	2	3	4	5	
8. I wish I could die	1	2	3	4	5	
9. I shouldn't feel this way	1	2	3	4	5	
10. I need help	1	2	3	4	5	
11. Can I overcome the uncertainties?	1	2	3	4	5	
12. How will I handle myself?	1	2	3	4	5	
13. I think I want to cry	1	2	3	4	5	
14. I can't get through this	1	2	3	4	5	
15. Will I make it?	1	2	3	4	5	
16. I want to fight back but I'm afraid to do so	1	2	3	4	5	
17. It's my own fault	1	2	3	4	5	
18. Am I going to make it?	1	2	3	4	5	
19. No one likes me or cares about me	1	2	3	4	5	
20. I can't do anything right	1	2	3	4	5	
21. I feel totally confused	1	2	3	4	5	
22. What will happen to me?	1	2	3	4	5	
23. I can't stand it	1	2	3	4	5	
24. I wish I could escape	1	2	3	4	5	
25. I can't escape	1	2	3	4	5	
26. I can't stand it anymore	1	2	3	4	5	
27. Don't let me be crazy	1	2	3	4	5	
28. I wonder if I look as stupid as I feel?	1	2	3	4	5	
29. I don't want to feel this way	1	2	3	4	5	
30. What's going to happen next?	1	2	3	4	5	
31. I can't take it anymore	1	2	3	4	5	
32. I'll never finish	1	2	3	4	5	

* scale stems not provided in primary reference - these are my best guess.

APPENDIX K
Social Anxiety Thoughts Questionnaire

Directions. We are interested in the thoughts people have in social situations. Listed below are a variety of thoughts that pop into people's heads in situations that involve being with other people or talking to them. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last week. Please read each item carefully and, following the scale, circle the number that best applies to you. Please answer every question very carefully. In social or interpersonal situations during the past week, how often did you have the following thoughts?

- 1 = never
 2 = rarely
 3 = sometimes
 4 = often
 5 = always

	never			always	
1. I feel tense and uncertain	1	2	3	4	5
2. I don't know what to say	1	2	3	4	5
3. Maybe I sound stupid	1	2	3	4	5
4. I am perspiring	1	2	3	4	5
5. What will I say first?	1	2	3	4	5
6. Can they tell I am nervous?	1	2	3	4	5
7. I feel afraid	1	2	3	4	5
8. I wish I could just be myself	1	2	3	4	5
9. What are they thinking of me?	1	2	3	4	5
10. I feel shaky	1	2	3	4	5
11. I'm not pronouncing well	1	2	3	4	5
12. Will others notice my anxiety?	1	2	3	4	5
13. I feel defenseless	1	2	3	4	5
14. I will freeze up	1	2	3	4	5
15. Now they know I am nervous	1	2	3	4	5
16. I don't like being in this situation	1	2	3	4	5
17. I am inadequate	1	2	3	4	5
18. Does my anxiety show?	1	2	3	4	5
19. I feel tense in my stomach	1	2	3	4	5
20. Others will not understand me	1	2	3	4	5
21. What do they think of me?	1	2	3	4	5

APPENDIX L
Rational Behavior Inventory

Directions. For each of the following questions, please follow the scale and indicate the numbered response that most clearly reflects your opinion. Work quickly and answer each question.

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree

-
- ___ 1. Helping others is the very basis of life.
 - ___ 2. It is necessary to be especially friendly to new colleagues and neighbors
 - ___ 3. People should observe moral laws more strictly than they do
 - ___ 4. I find it difficult to take criticism without being hurt
 - ___ 5. I often find more time trying to think of ways of getting out of things than it would take me to do them
 - ___ 6. I tend to become terribly upset and miserable when things are not the way I would like them to be
 - ___ 7. It is impossible at any given time to change one's emotions
 - ___ 8. It is sinful to doubt the Bible
 - ___ 9. Sympathy is the most beautiful human emotion
 - ___ 10. I shrink from facing a crisis or difficulty
 - ___ 11. I often get excited or upset when things go wrong
 - ___ 12. One should rebel against doing unpleasant things, however necessary, if doing them is unpleasant
 - ___ 13. I get upset when neighbors are very harsh with their little children
 - ___ 14. It is realistic to expect that there should be no incompatibility in marriage
 - ___ 15. I frequently feel unhappy with my appearance
 - ___ 16. A person should be thoroughly competent, adequate, talented, and intelligent in all possible respects
 - ___ 17. What others think of you is most important
 - ___ 18. Other people should make things easier for us, and help with life's difficulties
 - ___ 19. I tend to look to others for the kind of behavior they approve as right or wrong
 - ___ 20. I find that my occupation and social life tend to make me unhappy
 - ___ 21. I usually try to avoid doing chores which I dislike doing
 - ___ 22. Some of my family and/or friends have habits

- that bother and annoy me very much
- ___ 23. I tend to worry about possible accidents and disasters
 - ___ 24. I like to bear responsibility alone
 - ___ 25. I get terribly upset and miserable when things are not the way I like them to be
 - ___ 26. I worry quite a bit over possible misfortunes
 - ___ 27. Punishing oneself for all errors will prevent future mistakes
 - ___ 28. One can best help others by criticizing them and sharply pointing out the error of their ways
 - ___ 29. Worrying about a possible danger will help ward it off or decrease its effects
 - ___ 30. I worry about little things
 - ___ 31. Certain people are bad, wicked, or villainous and should be severely blamed and punished for their sins
 - ___ 32. A large number of people are guilty of bad sexual misconduct
 - ___ 33. One should blame oneself severely for all mistakes and wrongdoings
 - ___ 34. It makes me very uncomfortable to be different
 - ___ 35. I worry over possible misfortunes
 - ___ 36. I prefer to be independent of others in making decisions
 - ___ 37. Because a certain thing once strongly affected one's life, it should indefinitely affect it

APPENDIX M

Attributional Style Assessment Test - Form I

Directions. This questionnaire presents some common situations with different possible explanations for the outcome (success and failure) of each situation. Imagine yourself in each situation and consider each possible reason for the situation turning out as it did. Then circle the letter that corresponds to the one reason or explanation that would most likely account for the outcome if it happened to you. There is no right or wrong answer, of course, so do not spend a lot of time making your judgements. Simply choose the reason that would best explain the outcome if it actually happened to you.

- 1) You have just attended a party for new students and made some new friends
 - a) I used the right strategy to meet new people
 - b) I am good at meeting people at parties
 - c) I tried very hard to meet new people
 - d) I have the personality traits necessary for meeting new people
 - e) I was in the right mood for meeting new people
 - f) Other circumstances (people, situations, etc) produced this outcome
- 2) You have just succeeded at coordinating an outing for a group of people you like very much
 - a) I used the right strategy in coordinating the outing
 - b) I am good at coordinating outings
 - c) I tried very hard to coordinate the outing
 - d) I have the personality traits necessary for coordinating outings
 - e) I was in the right mood for coordinating the outing
 - f) Other circumstances (people, situations, etc) produced this outcome
- 3) You have just failed the midterm examination in a class
 - a) I did not use the right strategy for the test
 - b) I am not good in that particular subject area
 - c) I did not try very hard to do well on the test
 - d) I do not have the personality traits necessary to do well on tests
 - e) I was not in the right mood to do well on tests
 - f) Other circumstances (people, situations, etc) produced this outcome
- 4) You have just won a competitive match in a sporting event
 - a) I used the right strategy to win the match
 - b) I am good at this sport
 - c) I tried very hard to win the match
 - d) I have the personality traits necessary for

- this sport
- e) I was in the right mood for the match
 - f) Other circumstances (people, situations, etc) produced this outcome
- 5) You find yourself alone on almost every Saturday night and regret that you had not arranged to do something with a friend
- a) I did not use the right strategy in arranging social activities
 - b) I am not good at arranging social activities
 - c) I did not try very hard to arrange social activities
 - d) I do not have the personality traits necessary to arrange social activities
 - e) I was not in the right mood to arrange social activities
 - f) Other circumstances (people, situations, etc) produced this outcome
- 6) While working as a volunteer for the American Red Cross, you failed to persuade very many people to donate blood
- a) I did not use the right strategy to persuade people
 - b) I am not good at persuading people
 - c) I did not try very hard to persuade people
 - d) I do not have the personality traits necessary to persuade people
 - e) I was not in the right mood to persuade people
 - f) Other circumstances (people, situations, etc) produced this outcome
- 7) You have just succeeded at completing the crossword puzzle in the daily paper
- a) I used the right strategy to complete the puzzle
 - b) I am good at crossword puzzles
 - c) I tried very hard to complete the puzzle
 - d) I have the personality traits necessary for completing crossword puzzles
 - e) I was in the right mood for a crossword puzzle
 - f) Other circumstances (people, situations, etc) produced this outcome
- 8) You were recently unsuccessful at trying to cheer up your roommate who was having a personal problem
- a) I did not use the right strategy to cheer him up
 - b) I am not good at cheering up other people
 - c) I did not try very hard to cheer him up
 - d) I do not have the personality traits necessary for cheering people up
 - e) I was not in the right mood to cheer him up
 - f) Other circumstances (people, situations, etc) produced this outcome
- 9) You have succeeded in selling your best photographs to a national magazine
- a) I used the right strategy in taking the photos
 - b) I am good at photography
 - c) I tried very hard to take good photos

- d) I have the personality traits necessary for taking good photographs
 - e) I was in the right mood for taking good photos
 - f) Other circumstances (people, situations, etc) produced this outcome
- 10) You have just lost a game of Scrabble (the word game)
- a) I did not use the right strategy in playing the game
 - b) I am not good at playing games like Scrabble
 - c) I did not try very hard to play the game well
 - d) I do not have the personality traits necessary for playing word games
 - e) I was not in the right mood for playing the game
 - f) Other circumstances (people, situations, etc) produced this outcome
- 11) You discover that in the recent past you have enjoyed some social activity almost every Saturday night
- a) I used the right strategy in arranging social activities
 - b) I am good at arranging social activities
 - c) I tried very hard to arrange social activities
 - d) I have the personality traits necessary for arranging social activities
 - e) I was in the right mood for arranging social activities
 - f) Other circumstances (people, situations, etc) produced this outcome
- 12) You have just attended a party for new students and failed to make any new friends
- a) I did not use the right strategy to meet new people
 - b) I am not good at meeting new people
 - c) I did not try very hard to meet new people
 - d) I do not have the personality traits necessary for meeting new people
 - e) I was not in the right mood for meeting new people
 - f) Other circumstances (people, situations, etc) produced this outcome
- 13) You have lost a competitive match in a sporting event
- a) I did not use the right strategy for winning the match
 - b) I am not good at this sport
 - c) I did not try very hard to win the match
 - d) I do not have the personality traits necessary for this sport
 - e) I was not in the right mood for the match
 - f) Other circumstances (people, situations, etc) produced this outcome
- 14) You have just recieved a high score on the midterm test in a class
- a) I used the right strategy for the test

- b) I am good at that particular subject area
 - c) I tried very hard to do well on the test
 - d) I have the personality traits necessary for doing well on tests
 - e) I was in the right mood for taking the test
 - f) Other circumstances (people, situations, etc) produced this outcome
- 15) You have just failed at coordinating an outing for a group of people you like very much
- a) I did not use the right strategy to coordinate the outing
 - b) I am not good at coordinating outings
 - c) I did not try very hard to coordinate the outing
 - d) I do not have the personality traits necessary for coordinating outings
 - e) I was not in the right mood for coordinating the outing
 - f) Other circumstances (people, situations, etc) produced this outcome
- 16) While working as a volunteer for the American Red Cross you succeeded at persuading a lot of people to donate blood
- a) I used the right strategy to persuade people
 - b) I am good at persuading people
 - c) I tried very hard to persuade people
 - d) I have the personality traits necessary for persuading people
 - e) I was in the right mood for persuading people
 - f) Other circumstances (people, situations, etc) produced this outcome
- 17) You have just won a game of Scrabble
- a) I used the right strategy in playing the game
 - b) I am good at playing games like Scrabble
 - c) I tried very hard to play the game well
 - d) I have the personality traits necessary for playing word games
 - e) I was in the right mood for playing the game
 - f) Other circumstances (people, situations, etc) produced this outcome
- 18) You failed to complete the crossword puzzle in the daily paper
- a) I did not use the right strategy to complete the puzzle
 - b) I am not good at crossword puzzles
 - c) I did not try very hard to complete the puzzle
 - d) I do not have the personality traits necessary for completing crossword puzzles
 - e) I was not in the right mood to complete the puzzle
 - f) Other circumstances (people, situations, etc) produced this outcome
- 19) You were recently successful in cheering up your roommate who was having a personal problem
- a) I used the right strategy to cheer her up
 - b) I am good at cheering people up

- c) I tried very hard to cheer her up
 - d) I have the personality traits necessary for cheering people up
 - e) I was in the right mood for cheering her up
 - f) Other circumstances (people, situations, etc) produced this outcome
- 20) You have failed to sell your best photographs to a national magazine
- a) I did not use the right strategy in taking the photographs
 - b) I am not good at photography
 - c) I did not try very hard to take good photos
 - d) I do not have the personality traits necessary for taking good photographs
 - e) I was not in the right mood for taking good photographs
 - f) Other circumstances (people, situations, etc) produced this outcome

APPENDIX N

Attributional Style Questionnaire - RevisedDirections.

- 1) Read each situation below and vividly imagine it happening to you.
- 2) Decide what you believe would be the cause of the situation if it happened to you.
- 3) Write this cause in the blank provided. 4) Answer three questions about the cause, circling one response per question.
- 5) Go on to the next question.

Situation #1. You meet a friend who compliments you on your appearance.

a) Write down one major cause.

b) Is the cause of your friend's compliment due to something about you or something about other people or circumstances ?

Totally due									Totally due
to other people	1	2	3	4	5	6	7		to me
or circumstances									

c) In the future when you are with your friend, will this cause again be present?

Will never									Will always
again be	1	2	3	4	5	6	7		be present
present									

d) Is the cause something that just affects interacting with friends or does it also influence other areas of your life ?

Influences just									Influences
this particular	1	2	3	4	5	6	7		all situations
situation									in my life

GO ON TO THE NEXT PAGE

Situation #2. You have been looking for a job unsuccessfully for some time.

a) Write down one major cause.

b) Is the cause of your unsuccessful job search due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future when looking for a job, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects looking for a job or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #3 You become very rich.

a) Write down one major cause.

b) Is the cause of your becoming rich due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In your financial future, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects obtaining money or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #4 A friend comes to you with a problem and you don't try to help them.

a) Write down one major cause.

b) Is the cause of your not helping your friend due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future when a friend comes to you with a problem, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects what happens when a friend comes to you with a problem or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #5. You give an important talk in front of a group and the audience reacts negatively.

a) Write down one major cause.

b) Is the cause of the audience reacting negatively due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future when giving talks, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just influences giving talks or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #6. You do a project which is highly praised.

a) Write down one major cause.

b) Is the cause of being praised due to something about you or something about other people or circumstances ?
Totally due to other people 1 2 3 4 5 6 7 Totally due to me or circumstances

c) In the future when doing a project, will this cause again be present?
Will never again be present 1 2 3 4 5 6 7 Will always be present

d) Is the cause something that just affects doing projects or does it also influence other areas of your life ?
Influences just this particular situation 1 2 3 4 5 6 7 Influences all situations in my life

GO ON TO THE NEXT PAGE

Situation #7. You meet a friend who acts hostilely towards you.

a) Write down one major cause.

b) Is the cause of your friend acting hostile due to something about you or something about other people or circumstances ?

Totally due									Totally due
to other people	1	2	3	4	5	6	7		to me
or circumstances									

c) In the future when interacting with friends, will this cause again be present?

Will never									Will always
again be	1	2	3	4	5	6	7		be present
present									

d) Is the cause something that just influences interacting with friends or does it also influence other areas of your life ?

Influences just									Influences
this particular	1	2	3	4	5	6	7		all situations
situation									in my life

GO ON TO THE NEXT PAGE

Situation #8. You can't get all the work done that others expect of you.

a) Write down one major cause.

b) Is the cause of your not getting the work done due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future when doing the work that others expect, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects doing work that others expect or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #9. Your spouse (boyfriend/girlfriend) has been treating you more lovingly.

a) Write down one major cause.

b) Is the cause of your spouse (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future interactions with your spouse (boyfriend/girlfriend), will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects how your spouse (boyfriend/girlfriend) treats you or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

Situation #10. You apply for a position that you want very badly (e.g. an important job, graduate school admission, etc.) and you get it.

a) Write down one major cause.

b) Is the cause of your getting the position due to something about you or something about other people or circumstances ?

Totally due to other people or circumstances	1	2	3	4	5	6	7	Totally due to me
--	---	---	---	---	---	---	---	----------------------

c) In the future when applying for a position, will this cause again be present?

Will never again be present	1	2	3	4	5	6	7	Will always be present
-----------------------------------	---	---	---	---	---	---	---	---------------------------

d) Is the cause something that just affects applying for a position or does it also influence other areas of your life ?

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life
---	---	---	---	---	---	---	---	--

GO ON TO THE NEXT PAGE

Situation #11. You go out on a date and it goes badly.

a) Write down one major cause.

b) Is the cause of the date going badly due to something about you or something about other people or circumstances ?

Totally due								Totally due
to other people	1	2	3	4	5	6	7	to me
or circumstances								

c) In the future when dating, will this cause again be present?

Will never								Will always
again be	1	2	3	4	5	6	7	be present
present								

d) Is the cause something that just affects dating or does it also influence other areas of your life ?

Influences just								Influences
this particular	1	2	3	4	5	6	7	all situations
situation								in my life

GO ON TO THE NEXT PAGE

a) Write down one major cause.

Influences just this particular situation	1	2	3	4	5	6	7	Influences all situations in my life
---	---	---	---	---	---	---	---	--

APPENDIX O
Causal Dimension Scale

* Have the subject imagine a relevant situation vividly, and list causal explanations/perceptions for the situation. Directions. Think about the reason or reasons you have written above. The items below concern your impressions or opinions of this cause or causes of your outcome. Circle one number for each of the following scales.

-
1. Is the cause(s) something that:
reflects an aspect of yourself 9 8 7 6 5 4 3 2 1 reflects an aspect of the situation
 2. Is the cause(s):
controllable by you or other people 9 8 7 6 5 4 3 2 1 uncontrollable by you or other people
 3. Is the cause(s) something that is:
permanent 9 8 7 6 5 4 3 2 1 temporary
 4. Is the cause(s) something that:
intended by you or other people 9 8 7 6 5 4 3 2 1 unintended by you or other people
 5. Is the cause(s) something that is:
outside of you 9 8 7 6 5 4 3 2 1 inside of you
 6. Is the cause(s) something that is:
variable over time 9 8 7 6 5 4 3 2 1 stable over time
 7. Is the cause(s)
something about you 9 8 7 6 5 4 3 2 1 something about others
 8. Is the cause(s) something that is:
changeable 9 8 7 6 5 4 3 2 1 unchanging
 9. Is the cause(s) something for which:
no one is responsible 9 8 7 6 5 4 3 2 1 someone is responsible

APPENDIX P

James Internal-External Scale

Directions. Below are a number of statements about various topics. They have been collected from different groups of people and represent a variety of opinions. There are no right or wrong answers to this questionnaire. For every statement there are large numbers of people who agree and disagree. Please indicate whether you agree or disagree with each statement as follows:

Circle 1 if you strongly agree

Circle 2 if you agree

Circle 3 if you disagree

Circle 4 if you strongly disagree

Please read each item carefully and be sure that you indicate the response which most closely corresponds to the way which you personally feel.

-
- | | | | | |
|--|---|---|---|---|
| 1. I like to read newspaper editorials whether I agree with them or not | 1 | 2 | 3 | 4 |
| 2. Wars between countries seem inevitable despite efforts to prevent them | 1 | 2 | 3 | 4 |
| 3. I believe the government should encourage more young people to make science a career | 1 | 2 | 3 | 4 |
| 4. It usually true of successful people that their good breaks far outweighed their bad breaks | 1 | 2 | 3 | 4 |
| 5. I believe that moderation in all things is the key to happiness | 1 | 2 | 3 | 4 |
| 6. Many times I feel that we might just as well make many of our decisions by flipping a coin | 1 | 2 | 3 | 4 |
| 7. I disapprove of girls who smoke cigarettes in public places | 1 | 2 | 3 | 4 |
| 8. The actions of other people toward me many times have me baffled | 1 | 2 | 3 | 4 |
| 9. I believe it is more important for a person to like his work than to make money at it | 1 | 2 | 3 | 4 |
| 10. Getting a good job seems to be largely a matter of being lucky enough to be in the right place at the right time | 1 | 2 | 3 | 4 |
| 11. It's not what you know but who you know that really counts in getting ahead | 1 | 2 | 3 | 4 |
| 12. A great deal that happens to me is probably just a matter of chance | 1 | 2 | 3 | 4 |
| 13. I think that people spend too much time watching television these days | 1 | 2 | 3 | 4 |
| 14. I feel that I have little influence | 1 | 2 | 3 | 4 |

- | | | | | |
|---|---|---|---|---|
| over the way people behave | | | | |
| 15. It is difficult for me to keep well-informed about foreign affairs | 1 | 2 | 3 | 4 |
| 16. Much of the time the future seems uncertain to me | 1 | 2 | 3 | 4 |
| 17. I think the world is much more unsettled now than it was in our grandfather's time | 1 | 2 | 3 | 4 |
| 18. Some people are born to fail while others seem born for success no matter what they do | 1 | 2 | 3 | 4 |
| 19. I believe there should be less emphasis on spectator sports and more on athletic participation | 1 | 2 | 3 | 4 |
| 20. It is difficult for ordinary people to have much control over what politicians do in office | 1 | 2 | 3 | 4 |
| 21. I tend to daydream more than I should | 1 | 2 | 3 | 4 |
| 22. I feel that many people could be described as victims of circumstances beyond their control | 1 | 2 | 3 | 4 |
| 23. Movies do not seem as good as they used to be | 1 | 2 | 3 | 4 |
| 24. It seems many times that the grades one gets in school are more dependent on the teacher's whims than on what the student can really do | 1 | 2 | 3 | 4 |
| 25. Money shouldn't be a person's main consideration in choosing a job | 1 | 2 | 3 | 4 |
| 26. It isn't wise to plan too far ahead because most things turn out to be a matter of good or bad fortune anyhow | 1 | 2 | 3 | 4 |
| 27. At one time I wanted to be a newspaper reporter | 1 | 2 | 3 | 4 |
| 28. I can't understand how it is possible to predict other people's behavior | 1 | 2 | 3 | 4 |
| 29. I enjoy smoking cigarettes and will continue to be a smoker | 1 | 2 | 3 | 4 |
| 30. When things are going well for me I consider it due to a run of good luck. | 1 | 2 | 3 | 4 |
| 31. I believe the federal government has been taking over too many of the affairs of private management | 1 | 2 | 3 | 4 |
| 32. There's not much use in trying to predict which questions a teacher is going to ask on an exam | 1 | 2 | 3 | 4 |
| 33. I get more ideas from talking about things than reading about them | 1 | 2 | 3 | 4 |
| 34. Most people don't realize the extent to which their lives are | 1 | 2 | 3 | 4 |

- | | | | | |
|---|---|---|---|---|
| 35. At one time I wanted to be an actor (or actress) | 1 | 2 | 3 | 4 |
| 36. I have usually found that what is going to happen will happen regardless of my actions | 1 | 2 | 3 | 4 |
| 37. Life in a small town offers more real satisfactions than life in a large city | 1 | 2 | 3 | 4 |
| 38. Most of the disappointing things in my life have contained a large element of chance | 1 | 2 | 3 | 4 |
| 39. I would rather be a successful teacher than a successful businessman | 1 | 2 | 3 | 4 |
| 40. I don't believe that a person can really be a master of his fate | 1 | 2 | 3 | 4 |
| 41. I find mathematics easier to study than literature | 1 | 2 | 3 | 4 |
| 42. Success is mostly a matter of getting good breaks | 1 | 2 | 3 | 4 |
| 43. I think it is more important to be respected by people than to be liked by them | 1 | 2 | 3 | 4 |
| 44. Events in the world seem to be beyond the control of most people | 1 | 2 | 3 | 4 |
| 45. I think our country should take a more active role in world affairs | 1 | 2 | 3 | 4 |
| 46. I feel that most people can't really be held responsible for themselves since no one has much choice about where he was born or raised | 1 | 2 | 3 | 4 |
| 47. I like to figure out problems and puzzles that other people have trouble with | 1 | 2 | 3 | 4 |
| 48. Many times the reactions of people seem haphazard to me | 1 | 2 | 3 | 4 |
| 49. I rarely lose when playing card games | 1 | 2 | 3 | 4 |
| 50. There's not much use in worrying about things-what will be will be | 1 | 2 | 3 | 4 |
| 51. I think that everyone should belong to some kind of church | 1 | 2 | 3 | 4 |
| 52. Success in dealing with people seems to be more a matter of the other person's moods and feelings at the time rather than one's own actions | 1 | 2 | 3 | 4 |
| 53. One should not place too much faith in newspaper reports | 1 | 2 | 3 | 4 |
| 54. I think that life is mostly a gamble | 1 | 2 | 3 | 4 |
| 55. I am very stubborn when my mind is made up about something | 1 | 2 | 3 | 4 |
| 56. Many times I feel that I have little | 1 | 2 | 3 | 4 |

- influence over the things that
happen to me
- | | | | | |
|--|---|---|---|---|
| 57. I like popular music better than
classical music | 1 | 2 | 3 | 4 |
| 58. Sometimes I feel that I don't have
enough control over the direction
my life is taking | 1 | 2 | 3 | 4 |
| 59. I sometimes work at difficult things
too long even when I know they are
hopeless | 1 | 2 | 3 | 4 |
| 60. Life is too full of uncertainties | 1 | 2 | 3 | 4 |

APPENDIX Q
Internal-External Scale

Directions. This is a questionnaire to find out the way in which certain events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Simply circle a or b on the questionnaire to indicate your choice as the statement more true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also, try to respond to each item independently when making your choice; do not be influenced by your previous choices.

1. a. Children get into trouble because their parents punish them too much
b. The trouble with most children nowadays is that their parents are too easy with them
2. a. Many of the unhappy things in people's lives are partly due to bad luck
b. People's misfortunes result from the mistakes they make
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics
b. There will always be wars, no matter how hard people try to prevent them
4. a. In the long run people get the respect they deserve in this world
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries
5. a. The idea that teachers are unfair to students is nonsense
b. Most students don't recognize the extent to which their grades are influenced by accidental happenings

6. a. Without the right breaks one cannot be an effective leader
b. Capable people who fail to become leaders have not taken advantage of their opportunities
7. a. No matter how hard you try some people just don't like you
b. People who can't get others to like them don't understand how to get along with others
8. a. Heredity plays the major role in determining one's personality
b. It is one's experiences in life which determine one's personality
9. a. I have often found that what is going to happen will happen
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test
b. Many times exam questions tend to be so unrelated to course work that studying is really useless
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it
b. Getting a good job depends mainly on being in the right place at the right time
12. a. The average citizen can have an influence in government decisions
b. This world is run by the few people in power, and there is not much the little guy can do about it
13. a. When I make plans, I am almost certain that I can make them work
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow
14. a. There are certain people who are just no good
b. There is some good in everybody
15. a. In my case getting what I want has little or nothing to do with luck
b. Many times we might just as well decide what to do by flipping a coin
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first
b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control
b. By taking an active part in political and and social affairs the people can control

- world events
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings
b. There really is no such thing as "luck"
 19. a. One should always be willing to admit mistakes
b. It is usually best to cover up one's mistakes
 20. a. It is hard to know whether or not a person really likes you
b. How many friends you have depends upon how nice a person you are
 21. a. In the long run the bad things that happen to us are balanced by the good ones
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three
 22. a. With enough effort we can wipe out political corruption
b. It is difficult for people to have much control over the things politicians do in office
 23. a. Sometimes I can't understand how teachers arrive at the grades they give
b. There is a direct connection between how hard I study and the grades I get
 24. a. A good leader expects people to decide for themselves what they should do
b. A good leader makes it clear to everybody what they should do
 25. a. Many times I feel that I have little influence over the things that happen to me
b. It is impossible for me to believe that chance or luck plays an important role in my life
 26. a. People are lonely because they don't try to be friendly
b. There's not much use in trying too hard to please people, if they like you, they like you
 27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character
 28. a. What happens to me is my own doing
b. Sometimes I feel that I don't have enough control over the direction my life is taking
 29. a. Most of the time I can't understand why politicians behave the way they do
b. In the long run the people are responsible for bad government on a national as well as on a local level

APPENDIX R
Revised Internal-External Scale

Directions. This questionnaire is designed to assess how you feel who or what is responsible for things that happen to you in your life in general. Please circle the reponse that describes the extent to which you feel each statement describes your feelings.

- (-3) - Strongly disagree
- (-2) - Disagree somewhat
- (-1) - Slightly disagree
- (+1) - Slightly agree
- (+2) - Agree somewhat
- (+3) - Strongly agree

-
- | | |
|--|-------------------|
| 1) Whether or not I get to be a leader
depends mostly on my ability | -3 -2 -1 +1 +2 +3 |
| 2) To a great extent my life is
controlled by accidental
happenings | -3 -2 -1 +1 +2 +3 |
| 3) I feel like what happens in my life
is mostly determined by powerful
people | -3 -2 -1 +1 +2 +3 |
| 4) Whether or not I get into a car
accident depends mostly on how
good a driver I am | -3 -2 -1 +1 +2 +3 |
| 5) When I make plans, I am almost
certain to make them work | -3 -2 -1 +1 +2 +3 |
| 6) Often there is no chance of
protecting my personal interest from
bad luck happenings | -3 -2 -1 +1 +2 +3 |
| 7) When I get what I want, it's usually
because I'm lucky | -3 -2 -1 +1 +2 +3 |
| 8) Although I might have good ability,
I will not be given leadership
responsibility without appealing to
those in positions of power | -3 -2 -1 +1 +2 +3 |
| 9) How many friends I have depends on
how nice a person I am | -3 -2 -1 +1 +2 +3 |
| 10) I have often found that what is
going to happen will happen | -3 -2 -1 +1 +2 +3 |
| 11) My life is chiefly controlled by
powerful others | -3 -2 -1 +1 +2 +3 |

- 12) Whether or not I get into a car
accident is mostly a matter of
luck -3 -2 -1 +1 +2 +3
- 13) People like myself have very little
chance of protecting our personal
interests when they conflict with
those of strong pressure groups -3 -2 -1 +1 +2 +3
- 14) It's not always wise for me to
plan too far ahead because many
things turn out to be a matter of
good or bad fortune -3 -2 -1 +1 +2 +3
- 15) Getting what I want requires
pleasing those people above me -3 -2 -1 +1 +2 +3
- 16) Whether or not I get to be a
leader depends on whether I'm lucky
enough to be in the right place at
the right time -3 -2 -1 +1 +2 +3
- 17) If important people were to decide
they didn't like me, I probably
wouldn't make many friends -3 -2 -1 +1 +2 +3
- 18) I can pretty much determine what
will happen in my life -3 -2 -1 +1 +2 +3
- 19) I am usually able to protect my
personal interests -3 -2 -1 +1 +2 +3
- 20) Whether or not I get into a car
accident depends mostly on the
other driver -3 -2 -1 +1 +2 +3
- 21) When I get what I want, it's
usually because I worked hard for
it -3 -2 -1 +1 +2 +3
- 22) In order to have my plans work, I
make sure that they fit in with the
desires of people who have power
over me -3 -2 -1 +1 +2 +3
- 23) My life is determined by my own
actions -3 -2 -1 +1 +2 +3
- 24) It's chiefly a matter of fate
whether or not I have a few friends
or many friends -3 -2 -1 +1 +2 +3

APPENDIX S
Generalized Expectancy For Success Scale

Directions. This is a questionnaire to find out how people believe they will do in certain situations. Each item consists of a 5-point scale and a belief statement regarding one's expectations about events. Please indicate the degree to which you believe the statement would apply to you personally by circling the appropriate number [1=highly improbable, 5=highly probable]. Give the answer that you truly believe best applies to you and not what you would like to be true or think others would like to hear. Answer the items carefully but do not spend too much time on any one item. Be sure to find an answer for every item even if the statement describes a situation you presently do not expect to encounter. Answer as if you were going to be in each situation. Also try to respond to each item independently when making a choice; do not be influenced by your previous choices.

IN THE FUTURE I EXPECT THAT I WILL

- | | | | | | |
|--|---|---|---|---|---|
| 1. find that people don't seem to understand what I am trying to say | 1 | 2 | 3 | 4 | 5 |
| 2. be discouraged about my ability to gain the respect of others | 1 | 2 | 3 | 4 | 5 |
| 3. be a good parent | 1 | 2 | 3 | 4 | 5 |
| 4. be unable to accomplish my goals | 1 | 2 | 3 | 4 | 5 |
| 5. have a successful marital relationship | 1 | 2 | 3 | 4 | 5 |
| 6. deal poorly with emergency situations | 1 | 2 | 3 | 4 | 5 |
| 7. find my efforts to change situations I don't like are ineffective | 1 | 2 | 3 | 4 | 5 |
| 8. not be very good at learning new skills | 1 | 2 | 3 | 4 | 5 |
| 9. carry through my responsibilities successfully | 1 | 2 | 3 | 4 | 5 |
| 10. discover that the good in life outweighs the bad | 1 | 2 | 3 | 4 | 5 |
| 11. handle unexpected problems successfully | 1 | 2 | 3 | 4 | 5 |
| 12. get the promotions I deserve | 1 | 2 | 3 | 4 | 5 |
| 13. succeed in the projects I undertake | 1 | 2 | 3 | 4 | 5 |
| 14. not make any significant contributions to society | 1 | 2 | 3 | 4 | 5 |
| 15. discover that my life is not getting much better | 1 | 2 | 3 | 4 | 5 |
| 16. be listened to when I speak | 1 | 2 | 3 | 4 | 5 |
| 17. discover that my plans don't work | | | | | |

	out too well	1	2	3	4	5
18.	find that no matter how hard I try things just don't turn out the way I would like	1	2	3	4	5
19.	handle myself well in whatever situation I'm in	1	2	3	4	5
20.	be able to solve my own problems	1	2	3	4	5
21.	succeed at most things I try	1	2	3	4	5
22.	be successful in my endeavors in the long run	1	2	3	4	5
23.	be very successful working out my personal life	1	2	3	4	5
24.	experience many failures in my life	1	2	3	4	5
25.	make a good impression on people I meet for the first time	1	2	3	4	5
26.	attain the career goals I have set for myself	1	2	3	4	5
27.	have difficulty dealing with superiors	1	2	3	4	5
28.	have problems working with others	1	2	3	4	5
29.	be a good judge of what it takes to get ahead	1	2	3	4	5
30.	acheive recognition in my profession	1	2	3	4	5

APPENDIX T
Multidimensional Multiattributitional Causality Scale

Directions. This questionnaire is designed to assess how people account for the causes responsible in social and achievement situations. Following the scale below, please read each item carefully and indicate by circling the appropriate number, indicate your opinion on the following statements people make when explaining the cause behind an event. *

0 = completely disagree
 2 = neutral
 4 = completely agree

-
- | | | | | | |
|---|---|---|---|---|---|
| 1. When I receive a poor grade, I usually feel that the main reason is that I haven't studied enough for that course | 0 | 1 | 2 | 3 | 4 |
| 2. My enjoyment of a social occasion is almost entirely dependent on the personalities of the other people who are there | 0 | 1 | 2 | 3 | 4 |
| 3. If I were to receive low marks it would cause me to question my academic ability | 0 | 1 | 2 | 3 | 4 |
| 4. Making friends is a funny business; sometimes I have to chalk up my successes to luck | 0 | 1 | 2 | 3 | 4 |
| 5. If I did not get along well with others, it would tell me that I hadn't put much effort into the pursuit of social goals | 0 | 1 | 2 | 3 | 4 |
| 6. Some of the times that I have gotten a good grade in a course, it was due to the teacher's easy grading scheme | 0 | 1 | 2 | 3 | 4 |
| 7. It seems to me that failure to have people like me would show my ignorance in interpersonal relationships | 0 | 1 | 2 | 3 | 4 |
| 8. Sometimes my success on exams depends on some luck | 0 | 1 | 2 | 3 | 4 |
| 9. In my case, the good grades I receive are always the direct result of my efforts | 0 | 1 | 2 | 3 | 4 |
| 10. No matter what I do, some people just don't like me | 0 | 1 | 2 | 3 | 4 |
| 11. The most important ingredient in getting good grades is my academic ability | 0 | 1 | 2 | 3 | 4 |
| 12. Often chance events can play a large part in causing rifts between | | | | | |

- | | | | | | |
|---|---|---|---|---|---|
| friends | 0 | 1 | 2 | 3 | 4 |
| 13. Maintaining friendships requires real effort to make them work | 0 | 1 | 2 | 3 | 4 |
| 14. In my experience, once a professor gets the idea you're a poor student your work is much more likely to receive poor grades than if someone else handed it in | 0 | 1 | 2 | 3 | 4 |
| 15. It seems to me that getting along with people is a skill | 0 | 1 | 2 | 3 | 4 |
| 16. Some of my lower grades have seemed to be partially due to bad breaks | 0 | 1 | 2 | 3 | 4 |
| 17. When I fail to do as well as expected in school, it is often due to a lack of effort on my part | 0 | 1 | 2 | 3 | 4 |
| 18. Some people can make me have a good time even when I don't feel sociable | 0 | 1 | 2 | 3 | 4 |
| 19. If I were to fail a course it would probably be because I lacked skill in that area | 0 | 1 | 2 | 3 | 4 |
| 20. In my experience, making friends is largely a matter of having the right breaks | 0 | 1 | 2 | 3 | 4 |
| 21. When I hear of a divorce, I suspect that the couple probably did not try enough to make their marriage work | 0 | 1 | 2 | 3 | 4 |
| 22. Some of my good grades may simply reflect that these were easier courses than most | 0 | 1 | 2 | 3 | 4 |
| 23. I feel that people who are often lonely are lacking in social competence | 0 | 1 | 2 | 3 | 4 |
| 24. I feel that some of my good grades depend to a certain extent on chance factors, such as having the right questions show up on an exam | 0 | 1 | 2 | 3 | 4 |
| 25. Whenever I receive good grades, it is because I have studied hard for that course | 0 | 1 | 2 | 3 | 4 |
| 26. Some people seem predisposed to dislike me | 0 | 1 | 2 | 3 | 4 |
| 27. I feel that my good grades reflect directly on my academic ability | 0 | 1 | 2 | 3 | 4 |
| 28. I find that the absence of friendships is often a matter of not being lucky enough to meet the right people | 0 | 1 | 2 | 3 | 4 |
| 29. In my case, success at making friends depends on how hard I work at it | 0 | 1 | 2 | 3 | 4 |
| 30. Often my poorer grades are obtained in courses that the professor has failed to make interesting | 0 | 1 | 2 | 3 | 4 |
| 31. Having good friends is simply a | | | | | |

	matter of one's social skill	0	1	2	3	4
32.	My academic low points sometimes make me think I was just unlucky	0	1	2	3	4
33.	Poor grades inform me that I haven't worked hard enough	0	1	2	3	4
34.	To enjoy myself at a party I have to be surrounded by others who know how to have a good time	0	1	2	3	4
35.	If I were to get poor grades I would assume that I lacked ability to succeed in those courses	0	1	2	3	4
36.	If my marriage were a long, happy one, I'd say that I must have been very lucky	0	1	2	3	4
37.	In my experience, loneliness comes from not trying to be friendly	0	1	2	3	4
38.	Sometimes I get good grades only because the course material was easy to learn	0	1	2	3	4
39.	In my experience, there is a direct connection between the absence of friendship and being socially inept	0	1	2	3	4
40.	Sometimes I feel that I have to consider myself lucky for the good grades I get	0	1	2	3	4
41.	I can overcome all obstacles in the path of academic success if I work hard enough	0	1	2	3	4
42.	It is impossible to figure out how I have displeased some people	0	1	2	3	4
43.	When I get good grades, it is because of my academic competence	0	1	2	3	4
44.	Difficulties with my friends often start with chance remarks	0	1	2	3	4
45.	If my marriage were to succeed, it would have to be because I had worked at it	0	1	2	3	4
46.	Some low grades I've recieved seem to me to reflect the fact that some teachers are just stingy with marks	0	1	2	3	4
47.	It is impossible for me to maintain close relations with people without my tact and patience	0	1	2	3	4
48.	Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time	0	1	2	3	4

* No instructions are given in the primary reference - these are my best guess.

APPENDIX U

Multidimensional Health Locus of Control (Forms A + B)

Directions. This questionnaire is designed to assess how you feel who or what is responsible for illness and health in your life. Please circle the reponse that describes the extent to which you feel each statement describes your feelings.

- (-3) - Strongly disagree
- (-2) - Disagree somewhat
- (-1) - Slightly disagree
- (+1) - Slightly agree
- (+2) - Agree somewhat
- (+3) - Strongly agree

-
- 1) If I get sick, it is my own behavior
which determines how soon I get well
again
-3 -2 -1 +1 +2 +3
 - 2) Following doctor's orders to the letter
is the best way for me to stay healthy
-3 -2 -1 +1 +2 +3
 - 3) No matter what I do, if I am going to
get sick, I will get sick
-3 -2 -1 +1 +2 +3
 - 4) I can pretty much stay healthy by taking
good care of myself
-3 -2 -1 +1 +2 +3
 - 5) Having regular contact with my physician
is the best way for me to avoid illness
-3 -2 -1 +1 +2 +3
 - 6) When I become ill, it's a matter of fate
-3 -2 -1 +1 +2 +3
 - 7) Most things that affect my health
happen to me by accident
-3 -2 -1 +1 +2 +3
 - 8) Even when I take care of myself,
it's easy to get sick
-3 -2 -1 +1 +2 +3
 - 9) Whenever I don't feel well, I should
consult a medically trained professional
-3 -2 -1 +1 +2 +3
 - 10) The type of care I recieve from other
people is what is responsible for how
well I recover from an illness

- | | |
|--|-------------------|
| | -3 -2 -1 +1 +2 +3 |
| 11) I am in control of my health | -3 -2 -1 +1 +2 +3 |
| 12) When I feel ill, I know it is because
I have not been taking care of myself
properly | -3 -2 -1 +1 +2 +3 |
| 13) My family has a lot to do with my
becoming sick or staying healthy | -3 -2 -1 +1 +2 +3 |
| 14) My physical well-being depends on
how well I take care of myself | -3 -2 -1 +1 +2 +3 |
| 15) When I get sick I am to blame | -3 -2 -1 +1 +2 +3 |
| 16) When I stay healthy, I'm just plain
lucky | -3 -2 -1 +1 +2 +3 |
| 17) Luck plays a big part in determining
how soon I will recover from an
illness | -3 -2 -1 +1 +2 +3 |
| 18) Health professionals keep me healthy | -3 -2 -1 +1 +2 +3 |
| 19) Health professionals control my health | -3 -2 -1 +1 +2 +3 |
| 20) When I am sick, I just have to let
nature run its course | -3 -2 -1 +1 +2 +3 |
| 21) My good health is largely a matter of
good fortune | -3 -2 -1 +1 +2 +3 |
| 22) Whatever goes wrong with my health
is my own fault | -3 -2 -1 +1 +2 +3 |
| 23) The main thing which affects my
health is what I myself do | -3 -2 -1 +1 +2 +3 |
| 24) Other people play a big part in
whether I stay healthy or become
sick | -3 -2 -1 +1 +2 +3 |

- 25) If I take care of myself, I can avoid illness
-3 -2 -1 +1 +2 +3
- 26) I am directly responsible for my health
-3 -2 -1 +1 +2 +3
- 27) When I recover from an illness, it's because other people (for example, doctors, nurses, family, friends) have been taking good care of me
-3 -2 -1 +1 +2 +3
- 28) I can only maintain my health by consulting health professionals
-3 -2 -1 +1 +2 +3
- 29) No matter what I do, I'm likely to get sick
-3 -2 -1 +1 +2 +3
- 30) It seems that my health is greatly influenced by accidental happenings
-3 -2 -1 +1 +2 +3
- 31) If it's meant to be, I will stay healthy
-3 -2 -1 +1 +2 +3
- 32) If I see an excellent doctor regularly, I am less likely to have health problems
-3 -2 -1 +1 +2 +3
- 33) If I take the right actions I can stay healthy
-3 -2 -1 +1 +2 +3
- 34) Often I feel that no matter what I do, if I am going to get sick, I will get sick
-3 -2 -1 +1 +2 +3
- 35) Regarding my health, I can only do what my doctor tells me to do
-3 -2 -1 +1 +2 +3
- 36) If I become sick, I have the power to make myself well again
-3 -2 -1 +1 +2 +3

APPENDIX V
Billings and Moos Coping Scale

Directions. Below are a number of ways people deal with stressful events in life and personal crises. Please indicate which strategies in the following list you used in your most recent personal crisis.

1. Tried to see the positive side	T	F
2. Tried to step back from the situation and be more objective	T	F
3. Prayed for guidance and strength	T	F
4. Took things one step at a time	T	F
5. Considered several alternatives for handling the problem	T	F
6. Drew on my past experiences; I was in a similar situation before	T	F
7. Tried to find out more about the situation	T	F
8. Talked with a professional person (e.g., doctor, clergy, lawyer) about the situation	T	F
9. Took some positive action	T	F
10. Talked with my spouse or other relative about the problem	T	F
11. Talked with a friend about the situation	T	F
12. I exercised more	T	F
13. I prepared for the worst	T	F
14. Sometimes I took it out on other people when I felt angry or depressed	T	F
15. Tried to reduce the tension by eating more	T	F
16. Tried to reduce the tension by smoking more	T	F
17. Kept my feelings to myself	T	F
18. Got busy with other things in order to keep my mind off the problem	T	F
19. Didn't worry about it; figured everything would probably work out fine	T	F

* Directions not provided in primary reference - this is an amplification of sketchy description in methods section.

APPENDIX W
Coping Inventory for Stressful Situations

Directions. The following are ways of reacting to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 on this sheet for each of the following items. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

	not at all			very much	
	1	2	3	4	5
1. Schedule my time better	1	2	3	4	5
2. Focus on the problem and see how I can solve it	1	2	3	4	5
3. Think about the good-times I've had	1	2	3	4	5
4. Try to be with other people	1	2	3	4	5
5. Blame myself for procrastinating	1	2	3	4	5
6. Do what I think is best	1	2	3	4	5
7. Preoccupied with aches and pains	1	2	3	4	5
8. Blame myself for having gotten into this situation	1	2	3	4	5
9. Window shop	1	2	3	4	5
10. Outline my priorities	1	2	3	4	5
11. Try to go to sleep	1	2	3	4	5
12. Treat myself to a favorite food or snack	1	2	3	4	5
13. Feel anxious about not being able to cope	1	2	3	4	5
14. Become very tense	1	2	3	4	5
15. Think about how I have solved other problems	1	2	3	4	5
16. Tell myself that it is really not happening to me	1	2	3	4	5
17. Blame myself for being too emotional about the situatio	1	2	3	4	5
18. Go out for a snack or meal	1	2	3	4	5
19. Become very upset	1	2	3	4	5
20. Buy myself something	1	2	3	4	5
21. Determine a course of action and follow it	1	2	3	4	5
22. Blame myself for not knowing what to do	1	2	3	4	5
23. Go to a party	1	2	3	4	5
24. Work to understand the situation	1	2	3	4	5
25. "Freeze" and don't know what to do	1	2	3	4	5
26. Take corrective action immediately	1	2	3	4	5
27. Think about the event and learn from my mistakes	1	2	3	4	5
28. Wish that I could change what had happened or how I felt	1	2	3	4	5
29. Visit a friend	1	2	3	4	5
30. Worry about what I am going to do	1	2	3	4	5
31. Spend time with a special person	1	2	3	4	5

32. Go for a walk	1	2	3	4	5
33. Tell myself that it will never happen again	1	2	3	4	5
34. Focus on my general inadequacies	1	2	3	4	5
35. Talk to someone whose advice I value	1	2	3	4	5
36. Analyze the problem before reacting	1	2	3	4	5
37. Phone a friend	1	2	3	4	5
38. Get angry	1	2	3	4	5
39. Adjust my priorities	1	2	3	4	5
40. See a movie	1	2	3	4	5
41. Get control of the situation	1	2	3	4	5
42. Make an extra effort to get things done	1	2	3	4	5
43. Come up with several different solutions to the problem	1	2	3	4	5
44. Take time off and get away from the situation	1	2	3	4	5
45. Take it out on other people	1	2	3	4	5
46. Use the situation to prove that I can do it	1	2	3	4	5
47. Try and be organized so I can be on top of the situation	1	2	3	4	5
48. Watch T.V.	1	2	3	4	5

APPENDIX X
Coping Humour Scale

Directions. This questionnaire is concerned with the way you express and experience humour. Obviously, there is wide variation among individuals and therefore no right or wrong answers to these questions. Below, you will find a list of seven statements. Please indicate the degree to which you agree or disagree with each statement by circling a 1 (strongly disagree), 2 (mildly disagree), 3 (mildly agree), or 4 (strongly agree).

-
- | | | | | |
|--|---|---|---|---|
| 1. I often lose my sense of humour when I'm having problems | 1 | 2 | 3 | 4 |
| 2. I have found that my problems have been greatly reduced when I tried to find something funny in them | 1 | 2 | 3 | 4 |
| 3. I usually look for something comical to say when I am in tense situations | 1 | 2 | 3 | 4 |
| 4. I must admit my life would probably be easier if I had more of a sense of humour | 1 | 2 | 3 | 4 |
| 5. I have often felt that if I am in a situation where I have to either cry or laugh, it's better to laugh | 1 | 2 | 3 | 4 |
| 6. I can usually find something to laugh or joke about even in trying situations | 1 | 2 | 3 | 4 |
| 7. It has been my experience that humour is often a very effective way of coping with problems | 1 | 2 | 3 | 4 |

APPENDIX Y
Jalowiec Coping Scale

Directions. People cope with stress in many different ways. We are interested in learning how much people use the coping methods listed below when faced with stress. You may find that you do not use some of the coping methods listed below at all. Please rate how much you use the following coping methods to deal with stress by circling the appropriate numbers according to the scale below.

1 = never
 5 = almost always

	never			almost always	
1. Hope that things will get better	1	2	3	4	5
2. Try to maintain some control over the situation	1	2	3	4	5
3. Find out more about the situation so you can handle it better	1	2	3	4	5
4. Think through different ways to handle the problem	1	2	3	4	5
5. Look at the problem objectively	1	2	3	4	5
6. Eat, smoke, chew gum	1	2	3	4	5
7. Try out different ways of solving the problem to see which works out the best	1	2	3	4	5
8. Draw on past experience to help you handle the situation	1	2	3	4	5
9. Try to find meaning in the situation	1	2	3	4	5
10. Pray, trust in God	1	2	3	4	5
11. Get nervous	1	2	3	4	5
12. Worry	1	2	3	4	5
13. Break the problem down into "smaller pieces"	1	2	3	4	5
14. Seek comfort or help from family or friends	1	2	3	4	5
15. Set specific goals to help solve the problem	1	2	3	4	5
16. Accept the situation as it is	1	2	3	4	5
17. Want to be alone	1	2	3	4	5
18. Laugh it off, figuring that things could be worse	1	2	3	4	5
19. Try to put the problem out of your mind	1	2	3	4	5
20. Daydream, fantasize	1	2	3	4	5
21. Get prepared to expect the worst	1	2	3	4	5
22. Talk the problem over with someone who has been in the same type of situation	1	2	3	4	5
23. Actively try to change the situation	1	2	3	4	5
24. Get mad, curse, swear	1	2	3	4	5

25. Cry, get depressed	1	2	3	4	5
26. Go to sleep, figuring things will look better in the morning	1	2	3	4	5
27. Don't worry about it, everything will probably work out fine	1	2	3	4	5
28. Withdraw from the situation	1	2	3	4	5
29. Work off tension with physical activity	1	2	3	4	5
30. Settle for the next best thing	1	2	3	4	5
31. Take out your tensions on someone or something else	1	2	3	4	5
32. Drink alcoholic beverages	1	2	3	4	5
33. Resign yourself to the situation because things look hopeless	1	2	3	4	5
34. Do nothing in the hope that the problem will take care of itself	1	2	3	4	5
35. Resign yourself to the situation because it's your fate	1	2	3	4	5
36. Do anything just to do something	1	2	3	4	5
37. Blame someone else for your problems	1	2	3	4	5
38. Meditation, yoga, biofeedback	1	2	3	4	5
39. Let someone else solve the problem	1	2	3	4	5
40. Take drugs	1	2	3	4	5

APPENDIX Z
Miller Behavioral Style Scale

Directions. Please read each of the 4 items and follow the directions contained in the question.

1) Vividly imagine that you are afraid of the dentist and have to get some dental work done. Which of the following would you do? Check all of the statements that might apply to you.

- ☐ I would ask the dentist exactly what he was going to do
- ☐ I would take a tranquilizer or have a dring before going
- ☐ I would try to think about pleasant memories
- ☐ I would want the dentist to tell me when I would feel pain
- ☐ I would try to sleep
- ☐ I would watch all the dentist's movements and listen for the sound of his drill
- ☐ I would watch the flow of water from my mouth to see if it contained blood
- ☐ I would do mental puzzles in my mind

GO ON TO THE NEXT PAGE

2) Vividly imagine that you are being held hostage by a group of armed terrorists in a public building. Which of the following would you do? Check all of the statements that might apply to you.

- ☐ I would sit by myself and have as many daydreams and fantasies as I could
- ☐ I would stay alert and try to keep myself from falling asleep
- ☐ I would exchange life stories with the other hostages
- ☐ If there was a radio present, I would stay near it and listen to the bulletins about what the police were doing
- ☐ I would watch every movement of my captors and keep an eye on their weapons
- ☐ I would try to sleep as much as possible
- ☐ I would think about how nice it's going to be when I get home
- ☐ I would make sure I knew where every possible exit was

GO ON TO THE NEXT PAGE

3) Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department at work will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about lay-offs has been made and will be announced in several days. Check all of the statements that might apply to you.

- _____ I would talk to my fellow workers to see if they knew anything about what the supervisor's evaluation of me said
- _____ I would review the list of duties for my present job and try to figure out if I had fulfilled them all
- _____ I would go to the movies to take my mind off things
- _____ I would try to remember any arguments or disagreements I might have had with the supervisor that would have lowered his opinion of me
- _____ I would push all thoughts of being laid off out of my mind
- _____ I would tell my spouse that I'd rather not discuss my chances of being laid off
- _____ I would try to think which employees in my department the supervisor might have thought had done the worst job
- _____ I would continue my work as if nothing special was happening

GO ON TO THE LAST PAGE

4) Vividly imaging that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced all is well. Check all of the statements that might apply to you.

- _____ I would carefully read the information provided about safety features in the plane and make sure I knew where the emergency exits were
- _____ I would make small talk with the passenger beside me
- _____ I would watch the end of the movie, even if I had seen it before
- _____ I would call for the stewardess and ask her exactly what the problem was
- _____ I would order a drink or tranquilizer from the stewardess
- _____ I would listen carefully to the engines for unusual noises and would watch the crew to see if their behavior was out of the ordinary
- _____ I would talk to the passenger beside me about what might be wrong
- _____ I would settle down and read a book or magazine or write a letter

APPENDIX AA
Self Control Schedule

Directions. Indicate how characteristic each of the following statements is of you by using the code below.

- +3 = very much characteristic of me,
extremely descriptive
- +2 = rather characteristic of me,
quite descriptive
- +1 = somewhat characteristic of me,
slightly descriptive
- 1 = somewhat uncharacteristic of me,
slightly undescriptive
- 2 = rather uncharacteristic of me,
quite undescriptive
- 3 = very uncharacteristic of me,
extremely undescriptive

-
1. When I do a boring job, I think about the less boring parts of the job and the reward that I will receive when I am finished +3 +2 +1 -1 -2 -3
 2. When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it +3 +2 +1 -1 -2 -3
 3. Often by changing my way of thinking I am able to change my feelings about almost everything +3 +2 +1 -1 -2 -3
 4. I often find it difficult to overcome my feelings of nervousness and tension without any outside help +3 +2 +1 -1 -2 -3
 5. When I am feeling depressed I try to think about pleasant events +3 +2 +1 -1 -2 -3
 6. I cannot avoid thinking about mistakes I have made in the past +3 +2 +1 -1 -2 -3
 7. When I am faced with a difficult problem, I try to approach its solution in a systematic way +3 +2 +1 -1 -2 -3
 8. I usually do my duties quicker when someone is pressuring me +3 +2 +1 -1 -2 -3
 9. When I am faced with a difficult decision, I prefer to postpone making a decision even if all the facts are at my disposal +3 +2 +1 -1 -2 -3
 10. When I find that I have difficulties in concentrating on my reading, I look for ways to increase my concentration +3 +2 +1 -1 -2 -3
 11. When I plan to work, I remove all the things that are not relevant to my work +3 +2 +1 -1 -2 -3
 12. When I try to get rid of a bad habit, I first try to find out all

- the factors that maintain this habit +3 +2 +1 -1 -2 -3
13. When an unpleasant thought is bothering me, I try to think about something pleasant +3 +2 +1 -1 -2 -3
14. If I would smoke two packages of cigarettes a day +3 +2 +1 -1 -2 -3
15. When I am in a low mood, I try to act cheerful so my mood will change +3 +2 +1 -1 -2 -3
16. If I had the pills with me, I would take a tranquilizer whenever I felt tense and nervous +3 +2 +1 -1 -2 -3
17. When I am depressed, I try to keep myself busy with things that I like +3 +2 +1 -1 -2 -3
18. I tend to postpone unpleasant duties even if I could perform them immediately +3 +2 +1 -1 -2 -3
19. I need outside help to get rid of some of my bad habits +3 +2 +1 -1 -2 -3
20. When I find it difficult to settle down and do a certain job, I look for ways to help me settle down +3 +2 +1 -1 -2 -3
21. Although it makes me feel bad, I cannot avoid thinking about all kinds of possible catastrophes in the future +3 +2 +1 -1 -2 -3
22. First of all I prefer to finish a job that I have to do and then start doing the things I really like +3 +2 +1 -1 -2 -3
23. When I feel pain in a certain part of my body, I try not to think about it +3 +2 +1 -1 -2 -3
24. My self-esteem increases once I am able to overcome a bad habit +3 +2 +1 -1 -2 -3
25. In order to overcome bad feelings that accompany failure, I often tell myself that it is not so catastrophic and that I can do something about it +3 +2 +1 -1 -2 -3
26. When I feel that I am too impulsive, I tell myself "stop and think before you do anything" +3 +2 +1 -1 -2 -3
27. Even when I am terribly angry at somebody, I consider my actions very carefully +3 +2 +1 -1 -2 -3
28. Facing the need to make a decision, I usually find out all the possible alternatives +3 +2 +1 -1 -2 -3
29. Usually I do first the things I really like to do even if there are more urgent things to do +3 +2 +1 -1 -2 -3
30. When I realize that I cannot help

- but be late for an important meeting, I tell myself to keep calm +3 +2 +1 -1 -2 -3
31. When I feel pain in my body, I try to divert my thoughts from it +3 +2 +1 -1 -2 -3
32. I usually plan my work when faced with a number of things to do +3 +2 +1 -1 -2 -3
33. When I am short of money, I decide to record all my expense in order to plan more carefully for the future +3 +2 +1 -1 -2 -3
34. If I find it difficult to concentrate on a certain job, I divide the job into smaller segments +3 +2 +1 -1 -2 -3
35. Quite often I cannot overcome unpleasant thoughts that bother me +3 +2 +1 -1 -2 -3
36. When I am hungry and unable to eat, I try to divert my thoughts away from my stomach or try to imagine that I am satisfied +3 +2 +1 -1 -2 -3

APPENDIX BB

Self-Control Questionnaire

Directions. Please read each of the following statements and indicate just how characteristic or descriptive of you the statement is by filling in one of the numbers from the code below. 1 = Very characteristic of me, extremely descriptive
 2 = Rather characteristic of me, quite descriptive
 3 = Somewhat characteristic, slightly undescriptive
 4 = Rather uncharacteristic of me, quite undescriptive
 5 = Very uncharacteristic of me, extremely undescriptive

-
- | | | | | | |
|--|---|---|---|---|---|
| 1. Rewarding myself for progress towards a goal is unnecessary and may actually spoil me | 1 | 2 | 3 | 4 | 5 |
| 2. Concentrating on the final goals as well as the immediate results of my efforts can help me feel better about my work | 1 | 2 | 3 | 4 | 5 |
| 3. When things are going well, I often feel that something bad is just around the corner and there's nothing I can do about it | 1 | 2 | 3 | 4 | 5 |
| 4. I am aware of my accomplishments each day | 1 | 2 | 3 | 4 | 5 |
| 5. Thinking about how well I'm doing so far is what keeps me trying | 1 | 2 | 3 | 4 | 5 |
| 6. When I do something right, I take time to enjoy the feeling | 1 | 2 | 3 | 4 | 5 |
| 7. It usually works best for me to save my special treats until after I carry out what I intended to accomplish | 1 | 2 | 3 | 4 | 5 |
| 8. What is important is how I feel about my actions, not what others think | 1 | 2 | 3 | 4 | 5 |
| 9. There is nothing I can do to change things that are upsetting me | 1 | 2 | 3 | 4 | 5 |
| 10. The way to achieve my goals is to reward myself along the way, in order to keep up my own efforts | 1 | 2 | 3 | 4 | 5 |
| 11. Punishing myself for only making partial gains towards a goal is the smart way to keep pressure on and get the job done | 1 | 2 | 3 | 4 | 5 |
| 12. I get myself through hard things largely by planning on enjoying myself afterwards | 1 | 2 | 3 | 4 | 5 |
| 13. I depend heavily on other people's opinions to evaluate objectively what I do | 1 | 2 | 3 | 4 | 5 |
| 14. When I don't feel like doing | 1 | 2 | 3 | 4 | 5 |

- anything, sometimes it helps if I
take time out to do something I
really enjoy
15. I always seem to remember the little things that encourages me to go on trying 1 2 3 4 5
 16. It's success at the little things encourages me to go on trying 1 2 3 4 5
 17. To get good results, I have to observe what I'm actually doing in order to decide what I need to do next 1 2 3 4 5
 18. The things in life that are most important depend on chance more than anything I can do 1 2 3 4 5
 19. Planning each step of what I have to do helps me to get things done well 1 2 3 4 5
 20. It's no use trying to change most of the things that make me miserable 1 2 3 4 5
 21. My mood is unrelated to my behavior 1 2 3 4 5
 22. There isn't anything to do when I want something important other than be patient and hope for good luck 1 2 3 4 5
 23. Activities which fail to lead to something immediately should be dropped in favor of those that do so 1 2 3 4 5
 24. My goals seem distant and unreachable 1 2 3 4 5
 25. I think talking about what you've done right or well is just boastful and tooting your own horn 1 2 3 4 5
 26. Unless I set and reach very high goals, my efforts are likely to be wasted 1 2 3 4 5
 27. When I feel blue, the best thing to do is focus on all the negative things happening to me 1 2 3 4 5
 28. Judging what I've done realistically is necessary for me to feel good about myself 1 2 3 4 5
 29. How I feel about myself has a lot to do with what I'm accomplishing 1 2 3 4 5
 30. I shouldn't dwell on things I've done in hopes of feeling good about myself 1 2 3 4 5
 31. When there is some goal I'd like to reach, I find it best to list specifically what I have to do to get there 1 2 3 4 5
 32. My mood changes in relation to what I'm doing 1 2 3 4 5
 33. It's just as important to think about what will happen later as a result of my actions, as it is to watch for immediate effects 1 2 3 4 5

- | | | | | | |
|---|---|---|---|---|---|
| 34. I'd just be fooling myself if I
tried to judge my reactions myself | 1 | 2 | 3 | 4 | 5 |
| 35. Keeping watch on what I do wrong is
more helpful than watching what I
do correctly | 1 | 2 | 3 | 4 | 5 |
| 36. Criticizing myself is often the best
way to help me get through a
difficult task | 1 | 2 | 3 | 4 | 5 |
| 37. Not only what goes on around us, but
also the things we say and do to
ourselves determine how we feel from
day to day | 1 | 2 | 3 | 4 | 5 |
| 38. I encourage myself to improve by
treating myself to something special
whenever I make progress | 1 | 2 | 3 | 4 | 5 |
| 39. It's more helpful to receive
criticism than praise for my actions | 1 | 2 | 3 | 4 | 5 |
| 40. I'd be unlikely to change for the
better if I didn't silently praise
myself or feel good for every step
in the right direction | 1 | 2 | 3 | 4 | 5 |

APPENDIX CC

Ways of Coping Questionnaire - Revised

Directions. Please read each item below and indicate, by circling the appropriate number, to what extent you used it in coping with the aftermath of your difficulties.

- 0 - not used
- 1 - used somewhat
- 2 - used quite a bit
- 3 - used a great deal

1. Just concentrated on what I had to do next - the next step.	0	1	2	3
2. I tried to analyze the problem in order to understand it better.	0	1	2	3
3. Turned to work or substitute activity to take my mind off things.	0	1	2	3
4. I felt that time would make a difference - the only thing to do was to wait.	0	1	2	3
5. Bargained or compromised to get something positive from the situation.	0	1	2	3
6. I did something which I didn't think would work, but at least I was doing something.	0	1	2	3
7. Tried to get the person responsible to change his or her mind.	0	1	2	3
8. Talked to someone to find out more about the situation.	0	1	2	3
9. Criticized or lectured myself.	0	1	2	3
10. Tried not to burn my bridges, but leave things open somewhat.	0	1	2	3
11. Hoped a miracle would happen.	0	1	2	3
12. Went along with fate; sometimes I just have bad luck.	0	1	2	3
13. Went on as if nothing had happened.	0	1	2	3
14. I tried to keep my feelings to myself.	0	1	2	3
15. Looked for the silver lining, so to speak; tried to look on the bright side of things.	0	1	2	3
16. Slept more than usual.	0	1	2	3
17. I expressed anger to the person(s) who caused the problem.	0	1	2	3
18. Accepted sympathy and understanding from someone.	0	1	2	3
19. I told myself things that helped me to feel better.	0	1	2	3
20. I was inspired to do something creative.	0	1	2	3
21. Tried to forget the whole thing.	0	1	2	3
22. I got professional help.	0	1	2	3
23. Changed or grew as a person in a				

good way.	0	1	2	3
24. I waited to see what would happen before doing anything.	0	1	2	3
25. I apologized or did something to make up.	0	1	2	3
26. I made a plan of action and followed it.	0	1	2	3
27. I accepted the next best thing to what I wanted.	0	1	2	3
28. I let my feelings out somehow.	0	1	2	3
29. Realized I brought the problem on myself.	0	1	2	3
30. I came out of the experience better than when I went in.	0	1	2	3
31. Talked to someone who could do something concrete about the problem.	0	1	2	3
32. Got away from it for a while; tried to rest or take a vacation.	0	1	2	3
33. Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.	0	1	2	3
34. Took a big chance or did something very risky.	0	1	2	3
35. I tried not to act too hastily or follow my first hunch.	0	1	2	3
36. Found new faith.	0	1	2	3
37. Maintained my pride and kept a stiff upper lip.	0	1	2	3
38. Rediscovered what is important in life.	0	1	2	3
39. Changed something so things would turn out all right.	0	1	2	3
40. Avoided being with people in general.	0	1	2	3
41. Didn't let it get to me; refused to think too much about it.	0	1	2	3
42. I asked a relative or friend I respected for advice.	0	1	2	3
43. Kept others from knowing how bad things were.	0	1	2	3
44. Made light of the situation; refused to get too serious about it.	0	1	2	3
45. Talked to someone about how I was feeling.	0	1	2	3
46. Stood my ground and fought for what I wanted.	0	1	2	3
47. Took it out on other people.	0	1	2	3
48. Drew on my past experiences; I was in a similar situation before.				
49. I knew what had to be done so I doubled my efforts to make things work.	0	1	2	3
50. Refused to believe that it had happened.	0	1	2	3
51. I made a promise to myself that things would be different next time.	0	1	2	3
52. Came up with a couple of different solutions to the problem.	0	1	2	3

53. Accepted it, since nothing could be done.	0	1	2	3
54. I tried to keep my feelings from interfering with others things too much.	0	1	2	3
55. Wished that I could change what had happened or how I felt.	0	1	2	3
56. I changed something about myself.	0	1	2	3
57. I daydreamed or imagined a better time or place that the one I was in.	0	1	2	3
58. Wished that the situation would go away or somehow be over with.	0	1	2	3
59. Had fantasies or wishes about how things might turn out.	0	1	2	3
60. I prayed.	0	1	2	3
61. I prepared myself for the worst.	0	1	2	3
62. I went over in my mind what I would say or do.	0	1	2	3
63. I thought about how a person I admire would handle this situation and used that as a model.	0	1	2	3
64. I tried to see things from the other person's point of view.	0	1	2	3
65. I reminded myself how much worse things could be.	0	1	2	3
66. I jogged or exercised.	0	1	2	3

APPENDIX DD
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

APPENDIX EE

Recruting Letter, Consent Form, Reminder Letters and
Feedback Letter



THE UNIVERSITY OF MANITOBA

NEUROPSYCHOLOGY RESEARCH UNIT
Health Sciences Clinical Research Centre



Health
Sciences
Centre

MS 779 - 820 Sherbrook Street
Winnipeg, Manitoba
Canada R3A 1R9

(204) 787-3121

Dear Sir or Madam:

The Health Sciences Centre/University of Manitoba are conducting a joint follow-up study to investigate the effects of head injury. The goal of this research is to determine what strategies you are using to get over this stressful time - specifically, how your thoughts and feelings are related to your recovery. It is our hope that research such as this will allow us to program more effective rehabilitation and counseling services for people who in the future sustain head injuries.

If you agree to participate in this research project, we will be asking you to complete two identical questionnaire batteries. When you return the enclosed consent form to us, indicating your willingness to participate in the study, we will send a questionnaire package to you to complete at home and return to us by mail. The second package will be sent to you six months from now. Again, you will complete the questionnaires at home, and mail them back to us. We will include instructions and a stamped, self-addressed return envelope. These questionnaires should not take more than 1 and 1/2 hours to complete.

You are assured that this research and all research materials will be 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 important study, please indicate "yes" on the attached consent form and return it to us. If you do not wish to participate, please answer "no" and return it to us. You are completely free to decline participation without any fear of penalty or without effecting future medical care. Participation is entirely voluntary, and you are free to withdraw at any time, as well as to refuse any of the questions posed to you. However, because you are one of a relatively small number of individuals who have sustained a head injury, your participation in this research is very important and would be greatly appreciated. It is only through the continued interest and participation of people like you that we can continue to expand and increase our knowledge of the effects of head injury. This information is vital if we are to continue to improve treatment planning and delivery. If you have any questions about the study, please feel free to call 787-3121 during business hours and ask for either Andy Lubusko or Allan Moore.

Yours sincerely,

**Allan Moore, MA
CPsych(Cand.)
Research Investigator**

**Michael Stambrook, PhD
CPsych
Assistant Professor**

**Daryl Gill, PhD, CPsych
Associate Professor**

CONSENT FORM

NAME: _____

I consent to participate in a follow-up research project conducted jointly by the Health Sciences Centre and the University of Manitoba investigating the effects of head injury. I understand that my participation will involve completion of two questionnaire packages that I will fill out at home and return by mail. I understand that the research materials and responses I provide will be kept strictly confidential and will not be released under any circumstances. My participation is entirely voluntary. I understand I am completely free to decline participation without fear of penalty or without effective future medical care. I am also free to withdraw from the study at any time, and can refuse to answer any of the questions posed to me.

_____ YES, I agree to participate

_____ NO, I decline participation
(If you answered no, please provide a short description
of why you have decided not to participate)

SIGNATURE: _____

ADDRESS: _____

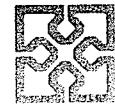
PHONE NUMBER: () _____

DATE: _____



THE UNIVERSITY OF MANITOBA

NEUROPSYCHOLOGY RESEARCH UNIT
Health Sciences Clinical Research Centre



Health
Sciences
Centre

MS 779 - 820 Sherbrook Street
Winnipeg, Manitoba
Canada R3A 1R9

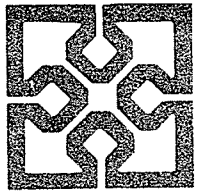
(204) ~~787-3121~~ 787-1121

Dear Sir or Madam:

Recently, I mailed you information on a study being carried out by the University of Manitoba and the Health Sciences Centre. From time to time, letters get lost in the mail, and because you are one of a small number of people who meets the requirements for participation in this study, I wanted to make sure you had received my recent letter. If you haven't yet received this important information, please call me at 787 1121 and I will mail you a package right away. If you have received this information, I would appreciate it greatly if you would take a few moments to complete and return the consent form portion of my letter. Our procedure for conducting this study requires me to get in contact with each potential participant by mail or by phone. Your response by mail will save you the inconvenience of a phone call during the next week. Finally, if you have already returned your consent form, please accept my appreciation, and disregard this letter. Thank you in advance for your help and interest in this study.

Yours sincerely,

**Allan Moore, MA, C.Psych.(Cand.)
Research Investigator**



Health Sciences Centre

REHABILITATION/RESPIRATORY HOSPITAL

800 Sherbrook Street
Winnipeg, Manitoba R3A 1M4
Dial Direct (204) -

Dear Manitoba Head Injury Study Participant:

Please find enclosed the questionnaire booklet you agreed to complete for us. As well, we have included a self-addressed and stamped envelope for you to use when mailing the booklet to us. This letter includes instructions for filling out the questionnaires and information on how to contact us should you need help. In total, the questionnaires should take about an hour to an hour and a half to complete. We will be calling you in two weeks should we not receive your booklet in the mail to see if you have questions, and to prompt you to complete the booklet and return it to us.

As you know, this project involves examining how thoughts and feelings are involved in adjustment to head injury. As such, the first 6 questionnaires in the booklet refer to thoughts you may or may not have had, the explanations you have come up with to account for why positive and negative things happen to you, beliefs you have about what is responsible for your health, and things you do to help you deal with your head injury. The final three questionnaires deal with finding out how things are going for you now. These questionnaires ask questions about your physical health, your mood, and others in your life. Each questionnaire has detailed instructions printed at the beginning to help you complete the questions that follow. Please read the directions carefully. Although we have made every effort to include the information you will need to complete the questionnaires, please do feel free to call us at 787-3121 should you run into any difficulties. We would be more than happy to help.

Thank you again for your interest and participation in this study. Your assistance will make a large contribution to our understanding of how people deal with the aftermath of head injury, and will help people in the future who sustain head injury.

Yours sincerely,

Allan Moore, MA, CPsych (Cand)
Principal Investigator

Michael Stambrook, PhD, CPsych
Assistant Professor

Daryl Gill, PhD, CPsych
Associate Professor



Thank you for participating in this important study. Before you take the time to answer the following questionnaires, please tell us something about yourself. The following information will not be linked to any individual as we will examine patterns among the entire group of participants.

	Before Your Injury	Right Now
1. What is your marital status ?	<input type="checkbox"/> married	<input type="checkbox"/> married
	<input type="checkbox"/> common-law	<input type="checkbox"/> common-law
	<input type="checkbox"/> single	<input type="checkbox"/> single
	<input type="checkbox"/> divorced	<input type="checkbox"/> divorced
	<input type="checkbox"/> widowed	<input type="checkbox"/> widowed

	Before Your Injury	Right Now
2. How many years of education do you have ?	I completed grade ____	I completed grade ____
	I have ____ years of education after high school	I have ____ years of education after high school

	At the time of your injury	Right Now
3. I am employed	<input type="checkbox"/> full-time	<input type="checkbox"/> full-time
	<input type="checkbox"/> part-time	<input type="checkbox"/> part-time
	<input type="checkbox"/> not working	<input type="checkbox"/> not working
	<input type="checkbox"/> homemaker	<input type="checkbox"/> homemaker
	<input type="checkbox"/> retired	<input type="checkbox"/> retired
	<input type="checkbox"/> student	<input type="checkbox"/> student

4. I work as a	At the time of your injury	Right now
	_____	_____

	At the time of your injury	Right now
5. My annual family income level is	<input type="checkbox"/> \$0 - 5000	<input type="checkbox"/> \$0 - \$5000
	<input type="checkbox"/> \$5000 - \$10000	<input type="checkbox"/> \$5000 - \$10000
	<input type="checkbox"/> \$10000 - \$15000	<input type="checkbox"/> \$10000 - \$15000
	<input type="checkbox"/> \$15000 - \$20000	<input type="checkbox"/> \$15000 - \$20000
	<input type="checkbox"/> \$20000 - \$25000	<input type="checkbox"/> \$20000 - \$25000
	<input type="checkbox"/> \$25000 - \$30000	<input type="checkbox"/> \$25000 - \$30000
	<input type="checkbox"/> \$30000 - \$35000	<input type="checkbox"/> \$30000 - \$35000
	<input type="checkbox"/> \$35000 - \$40000	<input type="checkbox"/> \$35000 - \$40000
	<input type="checkbox"/> \$40000 - \$45000	<input type="checkbox"/> \$40000 - \$45000
	<input type="checkbox"/> \$45000 - \$50000	<input type="checkbox"/> \$45000 - \$50000
	<input type="checkbox"/> over \$50000 / year	<input type="checkbox"/> over \$50000 / year

6. Your comments _____

PLEASE GO ON TO THE NEXT PAGE

Questionnaire 1

Directions: Read each item below and indicate to what extent each thought, or a similar thought, occurred to you during the past week in the following manner:

1 = never
3 = sometimes
5 = all the time

	Never	All the time
1. I am respected by my peers	1 2 3 4 5	
2. I have a good sense of humour	1 2 3 4 5	
3. My future looks bright	1 2 3 4 5	
4. I will be successful	1 2 3 4 5	
5. I'm fun to be with	1 2 3 4 5	
6. I am in a great mood	1 2 3 4 5	
7. There are many people who care about me	1 2 3 4 5	
8. I'm proud of my achievements	1 2 3 4 5	
9. I will finish what I start	1 2 3 4 5	
10. I have many good qualities	1 2 3 4 5	
11. I am comfortable with life	1 2 3 4 5	
12. I have a good way with others	1 2 3 4 5	
13. I am a lucky person	1 2 3 4 5	
14. I have friends who support me	1 2 3 4 5	
15. Life is exciting	1 2 3 4 5	
16. I enjoy a challenge	1 2 3 4 5	
17. My social life is terrific	1 2 3 4 5	
18. There's nothing to worry about	1 2 3 4 5	
19. I'm so relaxed	1 2 3 4 5	
20. My life is running smoothly	1 2 3 4 5	
21. I'm happy with the way I look	1 2 3 4 5	
22. I take good care of myself	1 2 3 4 5	
23. I deserve the best in life	1 2 3 4 5	
24. Bad days are rare	1 2 3 4 5	
25. I have many useful qualities	1 2 3 4 5	
26. There is no problem that is hopeless	1 2 3 4 5	
27. I won't give up	1 2 3 4 5	
28. I state my opinions with confidence	1 2 3 4 5	
29. My life keeps getting better	1 2 3 4 5	
30. Today I've accomplished a lot	1 2 3 4 5	

Questionnaire 2

Directions: Listed below are a variety of thoughts that pop into people's heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last week. Please read each item carefully and circle the appropriate number on the questionnaire in the following fashion (1 = "not at all", 2 = "sometimes", 3 = "moderately often" 4 = "often" and 5 = "all the time").

	Never	All the time
1. I feel like I'm up against the world	1 2 3 4 5	
2. I'm no good	1 2 3 4 5	
3. Why can't I ever succeed	1 2 3 4 5	
4. No one understands me	1 2 3 4 5	
5. I've let people down	1 2 3 4 5	
6. I don't think I can go on	1 2 3 4 5	
7. I wish I were a better person	1 2 3 4 5	
8. I'm so weak	1 2 3 4 5	
9. My life's not going the way I want it to	1 2 3 4 5	
10. I'm so dissatisfied in myself	1 2 3 4 5	
11. Nothing feels good anymore	1 2 3 4 5	
12. I can't stand this anymore	1 2 3 4 5	
13. I can't get started	1 2 3 4 5	
14. What's wrong with me?	1 2 3 4 5	
15. I wish I were somewhere else	1 2 3 4 5	
16. I can't get things together	1 2 3 4 5	
17. I hate myself	1 2 3 4 5	
18. I'm worthless	1 2 3 4 5	
19. Wish I could just disappear	1 2 3 4 5	
20. What's the matter with me?	1 2 3 4 5	
21. I'm a loser	1 2 3 4 5	
22. My life is a mess	1 2 3 4 5	
23. I'm a failure	1 2 3 4 5	
24. I'll never make it	1 2 3 4 5	
25. I feel so helpless	1 2 3 4 5	
26. Something has to change	1 2 3 4 5	
27. There must be something wrong with me	1 2 3 4 5	
28. My future is bleak	1 2 3 4 5	
29. It's just not worth it	1 2 3 4 5	
30. I can't finish anything	1 2 3 4 5	

Questionnaire 3 - Part A

Directions. Think for a moment about the causes involved in the distressing or negative things that have happened to you since your head injury. Write down the cause(s) you think explain why distressing or negative things have happened to you since your head injury.

Think about the reason or reasons you have written above. The items below concern your impressions or opinions of this cause or causes of your outcome. Circle one number for each of the following scales.

1. Is the cause(s) something that:
reflects an aspect of 9 8 7 6 5 4 3 2 1 yourself reflects an aspect of the situation
2. Is the cause(s):
specific to this aspect 9 8 7 6 5 4 3 2 1 of your life applicable to many aspects of your life
3. Is the cause(s) something that is:
permanent 9 8 7 6 5 4 3 2 1 temporary
4. Is the cause(s) something that:
describes a lot about 9 8 7 6 5 4 3 2 1 you describes very little about you
5. Is the cause(s) something that is:
outside of 9 8 7 6 5 4 3 2 1 you inside of you
6. Is the cause(s) something that is:
variable over time 9 8 7 6 5 4 3 2 1 stable over time
7. Is the cause(s)
something about you 9 8 7 6 5 4 3 2 1 something about others
8. Is the cause(s) something that is:
changeable 9 8 7 6 5 4 3 2 1 unchanging
9. Is the cause(s) something that:
explains a lot about what 9 8 7 6 5 4 3 2 1 is happening explains very little about what is happening

Questionnaire 3 - Part B

Directions. Think for a moment about the causes involved in the pleasant or positive things that have happened to you since your head injury. Write down the cause(s) you think explain why pleasant or positive things have happened to you since your head injury.

Think about the reason or reasons you have written above. The items below concern your impressions or opinions of this cause or causes of your outcome. Circle one number for each of the following scales.

1. Is the cause(s) something that:
reflects an aspect of 9 8 7 6 5 4 3 2 1 yourself reflects an aspect of the situation
2. Is the cause(s):
specific to this aspect 9 8 7 6 5 4 3 2 1 of your life applicable to many aspects of your life
3. Is the cause(s) something that is:
permanent 9 8 7 6 5 4 3 2 1 temporary
4. Is the cause(s) something that:
describes a lot about 9 8 7 6 5 4 3 2 1 you describes very little about you
5. Is the cause(s) something that is:
outside of 9 8 7 6 5 4 3 2 1 you inside of you
6. Is the cause(s) something that is:
variable over time 9 8 7 6 5 4 3 2 1 stable over time
7. Is the cause(s)
something about you 9 8 7 6 5 4 3 2 1 something about others
8. Is the cause(s) something that is:
changeable 9 8 7 6 5 4 3 2 1 unchanging
9. Is the cause(s) something that:
explains a lot about what 9 8 7 6 5 4 3 2 1 is happening explains very little about what is happening

Questionnaire 4

Directions. This questionnaire is designed to assess how you feel who or what is responsible for illness and health in your life. Please circle the response that describes the extent to which you feel each statement describes your feelings.

- (-3) - Strongly disagree
- (-2) - Disagree somewhat
- (-1) - Slightly disagree
- (+1) - Slightly agree
- (+2) - Agree somewhat
- (+3) - Strongly agree

- 1) If I get sick, it is my own behavior which determines how soon I get well again
-3 -2 -1 +1 +2 +3
- 2) Following doctor's orders to the letter is the best way for me to stay healthy
-3 -2 -1 +1 +2 +3
- 3) No matter what I do, if I am going to get sick, I will get sick
-3 -2 -1 +1 +2 +3
- 4) I can pretty much stay healthy by taking good care of myself
-3 -2 -1 +1 +2 +3
- 5) Having regular contact with my physician is the best way for me to avoid illness
-3 -2 -1 +1 +2 +3
- 6) When I become ill, it's a matter of fate
-3 -2 -1 +1 +2 +3
- 7) Most things that affect my health happen to me by accident
-3 -2 -1 +1 +2 +3
- 8) Even when I take care of myself, it's easy to get sick
-3 -2 -1 +1 +2 +3
- 9) Whenever I don't feel well, I should consult a medically trained professional
-3 -2 -1 +1 +2 +3
- 10) The type of care I receive from other people is what is responsible for how well I recover from an illness
-3 -2 -1 +1 +2 +3
- 11) I am in control of my health
-3 -2 -1 +1 +2 +3
- 12) When I feel ill, I know it is because I have not been taking care of myself properly
-3 -2 -1 +1 +2 +3

- 13) My family has a lot to do with my becoming sick or staying healthy
-3 -2 -1 +1 +2 +3
- 14) My physical well-being depends on how well I take care of myself
-3 -2 -1 +1 +2 +3
- 15) When I get sick I am to blame
-3 -2 -1 +1 +2 +3
- 16) When I stay healthy, I'm just plain lucky
-3 -2 -1 +1 +2 +3
- 17) Luck plays a big part in determining how soon I will recover from an illness
-3 -2 -1 +1 +2 +3
- 18) Health professionals keep me healthy
-3 -2 -1 +1 +2 +3
- 19) Health professionals control my health
-3 -2 -1 +1 +2 +3
- 20) When I am sick, I just have to let nature run its course
-3 -2 -1 +1 +2 +3
- 21) My good health is largely a matter of good fortune
-3 -2 -1 +1 +2 +3
- 22) Whatever goes wrong with my health is my own fault
-3 -2 -1 +1 +2 +3
- 23) The main thing which affects my health is what I myself do
-3 -2 -1 +1 +2 +3
- 24) Other people play a big part in whether I stay healthy or become sick
-3 -2 -1 +1 +2 +3
- 25) If I take care of myself, I can avoid illness
-3 -2 -1 +1 +2 +3
- 26) I am directly responsible for my health
-3 -2 -1 +1 +2 +3
- 27) When I recover from an illness, it's because other people (for example, doctors, nurses, family, friends) have been taking good care of me
-3 -2 -1 +1 +2 +3
- 28) I can only maintain my health by consulting health professionals
-3 -2 -1 +1 +2 +3
- 29) No matter what I do, I'm likely to get sick
-3 -2 -1 +1 +2 +3

- 30) It seems that my health is greatly
influenced by accidental happenings -3 -2 -1 +1 +2 +3
- 31) If it's meant to be, I will stay
healthy -3 -2 -1 +1 +2 +3
- 32) If I see an excellent doctor regularly,
I am less likely to have health problems -3 -2 -1 +1 +2 +3
- 33) If I take the right actions I can
stay healthy -3 -2 -1 +1 +2 +3
- 34) Often I feel that no matter what I
do, if I am going to get sick, I
will get sick -3 -2 -1 +1 +2 +3
- 35) Regarding my health, I can only do
what my doctor tells me to do -3 -2 -1 +1 +2 +3
- 36) If I become sick, I have the power
to make myself well again -3 -2 -1 +1 +2 +3

Questionnaire 5

Directions. Please read each item below and indicate, by circling the appropriate number, to what extent you used it in coping with the aftermath of your difficulties.

- 0 - not used
1 - used somewhat
2 - used quite a bit
3 - used a great deal

- | | | | | |
|--|---|---|---|---|
| 1. Just concentrated on what I had to do next - the next step. | 0 | 1 | 2 | 3 |
| 2. I tried to analyze the problem in order to understand it better. | 0 | 1 | 2 | 3 |
| 3. Turned to work or substitute activity to take my mind off things. | 0 | 1 | 2 | 3 |
| 4. I felt that time would make a difference - the only thing to do was to wait. | 0 | 1 | 2 | 3 |
| 5. Bargained or compromised to get something positive from the situation. | 0 | 1 | 2 | 3 |
| 6. I did something which I didn't think would work, but at least I was doing something. | 0 | 1 | 2 | 3 |
| 7. Tried to get the person responsible to change his or her mind. | 0 | 1 | 2 | 3 |
| 8. Talked to someone to find out more about the situation. | 0 | 1 | 2 | 3 |
| 9. Criticized or lectured myself. | 0 | 1 | 2 | 3 |
| 10. Tried not to burn my bridges, but leave things open somewhat. | 0 | 1 | 2 | 3 |
| 11. Hoped a miracle would happen. | 0 | 1 | 2 | 3 |
| 12. Went along with fate; sometimes I just have bad luck. | 0 | 1 | 2 | 3 |
| 13. Went on as if nothing had happened. | 0 | 1 | 2 | 3 |
| 14. I tried to keep my feelings to myself. | 0 | 1 | 2 | 3 |
| 15. Looked for the silver lining, so to speak; tried to look on the bright side of things. | 0 | 1 | 2 | 3 |
| 16. Slept more than usual. | 0 | 1 | 2 | 3 |
| 17. I expressed anger to the person(s) who caused the problem. | 0 | 1 | 2 | 3 |
| 18. Accepted sympathy and understanding from someone. | 0 | 1 | 2 | 3 |
| 19. I told myself things that helped me to feel better. | 0 | 1 | 2 | 3 |
| 20. I was inspired to do something creative. | 0 | 1 | 2 | 3 |
| 21. Tried to forget the whole thing. | 0 | 1 | 2 | 3 |
| 22. I got professional help. | 0 | 1 | 2 | 3 |

23. Changed or grew as a person in a good way.	0	1	2	3
24. I waited to see what would happen before doing anything.	0	1	2	3
25. I apologized or did something to make up.	0	1	2	3
26. I made a plan of action and followed it.	0	1	2	3
27. I accepted the next best thing to what I wanted.	0	1	2	3
28. I let my feelings out somehow.	0	1	2	3
29. Realized I brought the problem on myself.	0	1	2	3
30. I came out of the experience better than when I went in.	0	1	2	3
31. Talked to someone who could do something concrete about the problem.	0	1	2	3
32. Got away from it for a while; tried to rest or take a vacation.	0	1	2	3
33. Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.	0	1	2	3
34. Took a big chance or did something very risky.	0	1	2	3
35. I tried not to act too hastily or follow my first hunch.	0	1	2	3
36. Found new faith.	0	1	2	3
37. Maintained my pride and kept a stiff upper lip.	0	1	2	3
38. Rediscovered what is important in life.	0	1	2	3
39. Changed something so things would turn out all right.	0	1	2	3
40. Avoided being with people in general.	0	1	2	3
41. Didn't let it get to me; refused to think too much about it.	0	1	2	3
42. I asked a relative or friend I respected for advice.	0	1	2	3
43. Kept others from knowing how bad things were.	0	1	2	3
44. Made light of the situation; refused to get too serious about it.	0	1	2	3
45. Talked to someone about how I was feeling.	0	1	2	3
46. Stood my ground and fought for what I wanted.	0	1	2	3
47. Took it out on other people.	0	1	2	3
48. Drew on my past experiences; I was in a similar situation before.	0	1	2	3
49. I knew what had to be done so I doubled my efforts to make things work.	0	1	2	3
50. Refused to believe that it had happened.	0	1	2	3
51. I made a promise to myself that things would be different next time.	0	1	2	3

52. Came up with a couple of different solutions to the problem.	0	1	2	3
53. Accepted it, since nothing could be done.	0	1	2	3
54. I tried to keep my feelings from interfering with others things too much.	0	1	2	3
55. Wished that I could change what had happened or how I felt.	0	1	2	3
56. I changed something about myself.	0	1	2	3
57. I daydreamed or imagined a better time or place that the one I was in.	0	1	2	3
58. Wished that the situation would go away or somehow be over with.	0	1	2	3
59. Had fantasies or wishes about how things might turn out.	0	1	2	3
60. I prayed.	0	1	2	3
61. I prepared myself for the worst.	0	1	2	3
62. I went over in my mind what I would say or do.	0	1	2	3
63. I thought about how a person I admire would handle this situation and used that as a model.	0	1	2	3
64. I tried to see things from the other person's point of view.	0	1	2	3
65. I reminded myself how much worse things could be.	0	1	2	3
66. I jogged or exercised.	0	1	2	3

Questionnaire 6

Directions. The following are ways of reacting to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 on this sheet for each of the following items. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

	not at all	1	2	3	4	5 very much
1. Schedule my time better	1	2	3	4	5	
2. Focus on the problem and see how I can solve it	1	2	3	4	5	
3. Think about the good-times I've had	1	2	3	4	5	
4. Try to be with other people	1	2	3	4	5	
5. Blame myself for procrastinating	1	2	3	4	5	
6. Do what I think is best	1	2	3	4	5	
7. Preoccupied with aches and pains	1	2	3	4	5	
8. Blame myself for having gotten into this situation	1	2	3	4	5	
9. Window shop	1	2	3	4	5	
10. Outline my priorities	1	2	3	4	5	
11. Try to go to sleep	1	2	3	4	5	
12. Treat myself to a favorite food or snack	1	2	3	4	5	
13. Feel anxious about not being able to cope	1	2	3	4	5	
14. Become very tense	1	2	3	4	5	
15. Think about how I have solved other problems	1	2	3	4	5	
16. Tell myself that it is really not happening to me	1	2	3	4	5	
17. Blame myself for being too emotional about the situatio	1	2	3	4	5	
18. Go out for a snack or meal	1	2	3	4	5	
19. Become very upset	1	2	3	4	5	
20. Buy myself something	1	2	3	4	5	
21. Determine a course of action and follow it	1	2	3	4	5	
22. Blame myself for not knowing what to do	1	2	3	4	5	
23. Go to a party	1	2	3	4	5	
24. Work to understand the situation	1	2	3	4	5	
25. "Freeze" and don't know what to do	1	2	3	4	5	
26. Take corrective action immediately	1	2	3	4	5	
27. Think about the event and learn from my mistakes	1	2	3	4	5	
28. Wish that I could change what had happened or how I felt	1	2	3	4	5	
29. Visit a friend	1	2	3	4	5	
30. Worry about what I am going to do	1	2	3	4	5	
31. Spend time with a special person	1	2	3	4	5	

32. Go for a walk	1	2	3	4	5
33. Tell myself that it will never happen again	1	2	3	4	5
34. Focus on my general inadequacies	1	2	3	4	5
35. Talk to someone whose advice I value	1	2	3	4	5
36. Analyze the problem before reacting	1	2	3	4	5
37. Phone a friend	1	2	3	4	5
38. Get angry	1	2	3	4	5
39. Adjust my priorities	1	2	3	4	5
40. See a movie	1	2	3	4	5
41. Get control of the situation	1	2	3	4	5
42. Make an extra effort to get things done	1	2	3	4	5
43. Come up with several different solutions to the problem	1	2	3	4	5
44. Take time off and get away from the situation	1	2	3	4	5
45. Take it out on other people	1	2	3	4	5
46. Use the situation to prove that I can do it	1	2	3	4	5
47. Try and be organized so I can be on top of the situation	1	2	3	4	5
48. Watch T.V.	1	2	3	4	5

PROFILE OF MOOD STATES

Clinical Study of IPPB

Section A should be completed by a staff member.

Form

Date administered

A. PATIENT IDENTIFICATION

1. Treatment center number

11

2. Patient number

12-15

3. Date of birth

16-21

4. Month number (0-36)

b

22-23

B. BELOW IS A LIST OF WORDS THAT DESCRIBE FEELINGS PEOPLE HAVE. PLEASE READ EACH ONE CAREFULLY. THEN CHECK ONE BOX TO THE RIGHT OF THE WORD, UNDER THE ANSWER WHICH BEST DESCRIBES HOW YOU HAVE BEEN FEELING DURING THE PAST WEEK, INCLUDING TODAY.

	NOT AT ALL	A LITTLE	MODER- ATELY	QUITE A BIT	EXTREMELY	
1. Friendly	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	10
2. Tense	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	11
3. Angry	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	12
4. Worn out	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	13
5. Unhappy	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	14
6. Clear-headed	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	15
7. Lively	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	16
8. Confused	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	17
9. Sorry for things done	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	18
10. Shaky	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	19
11. Listless	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	20
12. Peeved	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	21
13. Considerate	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	22
14. Sad	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	23

	NOT AT ALL	A LITTLE	MODER- ATELY	QUITE A BIT	EXTREMELY	
15. Active	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
16. On edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
17. Grouchy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
18. Blue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
19. Energetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
20. Panicky	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
21. Hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
22. Relaxed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
23. Unworthy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
24. Spiteful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
25. Sympathetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
26. Uneasy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
27. Restless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
28. Unable to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
29. Fatigued	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
30. Helpful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
31. Annoyed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
32. Discouraged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
33. Resentful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
34. Nervous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
35. Lonely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
36. Miserable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
37. Muddled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
38. Cheerful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
39. Bitter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
40. Exhausted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

	NOT AT ALL	A LITTLE	MODER- ATELY	QUITE A BIT	EXTREMELY	
41. Anxious	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	70
42. Ready to fight	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	71
43. Good natured	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	72
44. Gloomy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	73
45. Desperate	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	74
46. Sluggish	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	75
47. Rebellious	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	76
48. Helpless	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	77
49. Weary	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	78
50. Bewildered	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	79
51. Alert	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	80
52. Deceived	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	81
53. Furious	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	82
54. Efficient	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	83
55. Trusting	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	84
56. Full of pep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	85
57. Bad-tempered	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	86
58. Worthless	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	87
59. Forgetful	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	88
60. Carefree	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	89
61. Terrified	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	90
62. Guilty	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	91
63. Vigorous	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	92
64. Uncertain	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	93
65. Bushed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	94

SICKNESS IMPACT PROFILE*

Clinical Study of IPPB

Form

7 3 0 0

1-4

Date administered

Mo Day Yr

5-10

A. PATIENT IDENTIFICATION

1. Treatment center number

11

2. Patient number

12-15

3. Date of birth

Mo Day Yr

16-21

4. Month number (0-36)

22-23

B. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I spend much of the day lying down in order to rest.

NO YES UNK

30

2. I sit during much of the day.

31

3. I am sleeping or dozing most of the time - day and night.

32

4. I lie down more often during the day in order to rest.

33

5. I sit around half-asleep.

34

6. I sleep less at night, for example, wake up too early, don't fall asleep for a long time, awoken frequently.

35

7. I sleep or nap more during the day.

36

C. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I say how bad or useless I am, for example, that I am a burden on others.

NO YES UNK

37

2. I laugh or cry suddenly.

38

3. I often moan and groan in pain or discomfort.

39

4. I have attempted suicide.

40

5. I act nervous or restless.

41

6. I keep rubbing or holding areas of my body that hurt or are uncomfortable.

42

7. I act irritable and impatient with myself, for example, talk badly about myself, swear at myself, blame myself for things that happen.

43

8. I talk about the future in a hopeless way.

44

9. I get sudden frights.

45

*Read the 'Instructions to the Respondent' to the subject before starting the questionnaire. Check YES if the subject is sure that the item describes him, NO if he is not, and UNK if the subject cannot under-

Patient # _____

D. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I make difficult moves with help, for example, getting into or out of cars, bathtubs.
2. I do not move into or out of bed or chair by myself but am moved by a person or mechanical aid.
3. I stand only for short periods of time.
4. I do not maintain balance.
5. I move my hands or fingers with some limitation or difficulty.
6. I stand up only with someone's help.
7. I kneel, stoop, or bend down only by holding on to something.
8. I am in a restricted position all the time.
9. I am very clumsy in body movements.
10. I get in and out of bed or chairs by grasping something for support or using a cane or walker.
11. I stay lying down most of the time.
12. I change position frequently.
13. I hold on to something to move myself around in bed.
14. I do not bathe myself completely, for example, require assistance with bathing.
15. I do not bathe myself at all, but am bathed by someone else.
16. I use bedpan with assistance.
17. I have trouble getting shoes, socks, or stockings on.
18. I do not have control of my bladder.
19. I do not fasten my clothing, for example, require assistance with buttons, zippers, shoelaces.
20. I spend most of the time partly undressed or in pajamas.
21. I do not have control of my bowels.
22. I dress myself, but do so very slowly.
23. I get dressed only with someone's help.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	46
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	47
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	48
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	49
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	50
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	51
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	52
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	53
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	54
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	56
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	57
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	58
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	59
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	60
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	61
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	62
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	63
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	64
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	65
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	66
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	67
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	68

E. THIS GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO IN CARING FOR YOUR HOME OR YARD. CONSIDERING JUST THOSE THINGS THAT YOU DO, PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I do work around the house only for short periods of time or rest often.
2. I am doing less of the regular daily work around the house than I would usually do.
3. I am not doing any of the regular daily work around the house that I would usually do.
4. I am not doing any of the maintenance or repair work that I would usually do in my home or yard.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	69
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	70
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	71
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	72

Event # _____

5. I am not doing any of the shopping that I would usually do.
6. I am not doing any of the house cleaning that I would usually do.
7. I have difficulty doing handwork, for example, turning faucets, using kitchen gadgets, sewing, carpentry.
8. I am not doing any of the clothes washing that I would usually do.
9. I am not doing heavy work around the house.
10. I have given up taking care of personal or household business affairs, for example, paying bills, banking, working on budget.

NO	YES	UNK	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	73
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	74
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	75
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	76
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	77
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	78

F. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I am going around only within one building.
2. I stay within one room.
3. I am staying in bed more.
4. I am staying in bed most of the time.
5. I am not now using public transportation.
6. I stay home most of the time.
7. I am only going to places with restrooms nearby.
8. I am not going into town.
9. I stay away from home only for brief periods of time.
10. I do not get around in the dark or in unlit places without someone's help.

NO	YES	UNK	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	79
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	80
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	81
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	82
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	83
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	84
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	85
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	86
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	87
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	88

G. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I am going out less to visit people.
2. I am not going out to visit people at all.
3. I show less interest in other people's problems, for example, don't listen when they tell me about their problems, don't offer to help.
4. I often act irritable toward those around me, for example, snap at people, give sharp answers, criticize easily.
5. I show less affection.
6. I am doing fewer social activities with groups of people.
7. I am cutting down the length of visits with friends.
8. I am avoiding social visits from others.
9. My sexual activity is decreased.
10. I often express concern over what might be happening to my health.
11. I talk less with those around me.

NO	YES	UNK	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	89
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	90
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	91
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	92
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	93
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	94
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	95
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	96
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	97
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	98
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	99

✓

Patient # _____

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	100
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	101
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	102
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	103
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	104
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	106
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	107
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	108

12. I make many demands, for example, insist that people do things for me, tell them how to do things.

13. I stay alone much of the time.

14. I act disagreeable to family members, for example, I act spiteful, I am stubborn.

15. I have frequent outbursts of anger at family members, for example, strike at them, scream, throw things at them.

16. I isolate myself as much as I can from the rest of the family.

17. I am paying less attention to the children.

18. I refuse contact with family members, for example, turn away from them.

19. I am not doing the things I usually do to take care of my children or family.

20. I am not joking with family members as I usually do.

H. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	109
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	110
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	111
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	112
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	113
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	114
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	115
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	116
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	117
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	118
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	119
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	120

1. I walk shorter distances or stop to rest often.

2. I do not walk up or down hills.

3. I use stairs only with mechanical support, for example, handrail, cane, crutches.

4. I walk up or down stairs only with assistance from someone else.

5. I get around in a wheelchair.

6. I do not walk at all.

7. I walk by myself but with some difficulty, for example, limp, wobble, stumble, have stiff leg.

8. I walk only with help from someone.

9. I go up or down stairs more slowly, for example, one step at a time, stop often.

10. I do not use stairs at all.

11. I get around only by using a walker, crutches, cane, walls, or furniture.

12. I walk more slowly.

I. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	121
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	122
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	123
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	124
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	125

1. I am confused and start several actions at a time.

2. I have more minor accidents, for example, drop things, trip and fall, bump into things.

3. I react slowly to things that are said or done.

4. I do not finish things I start.

5. I have difficulty reasoning and solving problems, for example, making plans, making decisions, learning new things.

6. I sometimes behave as if I were confused or disoriented in place or time, for example, where I am, who is around, directions, what day it is.
7. I forget a lot, for example, things that happened recently, where I put things, appointments.

8. I do not keep my attention on any activity for long.

9. I make more mistakes than usual.

10. I have difficulty doing activities involving concentration and thinking.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	126
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	127
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	128
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	129
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	130

J. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I am having trouble writing or typing.

2. I communicate mostly by gestures, for example, moving head, pointing, sign language.

3. My speech is understood only by a few people who know me well.

4. I often lose control of my voice when I talk, for example, my voice gets louder or softer, trembles, changes unexpectedly.

5. I don't write except to sign my name.

6. I carry on a conversation only when very close to the other person or looking at him.

7. I have difficulty speaking, for example, get stuck, stutter, stammer, slur my words.

8. I am understood with difficulty.

9. I do not speak clearly when I am under stress.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	131
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	132
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	133
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	134
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	135
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	136
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	137
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	138
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	139

K. THE NEXT GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO OTHER THAN MANAGING YOUR HOME. BY THIS WE MEAN ANYTHING THAT YOU REGARD AS WORK THAT YOU DO ON A REGULAR BASIS.

1. Do you usually do work other than managing your home?

If YES, SKIP to Section L.

If NO:

2. Are you retired?

3. If you are retired, was your retirement related to your health?

4. If you are not retired, but are not working is this related to your health?

SKIP to Section M.

NO	YES	
<input type="checkbox"/>	<input type="checkbox"/>	140
<input type="checkbox"/>	<input type="checkbox"/>	141
<input type="checkbox"/>	<input type="checkbox"/>	142
<input type="checkbox"/>	<input type="checkbox"/>	143

L. NOW CONSIDER THE WORK YOU DO AND RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH. (IF TODAY IS A SATURDAY OR SUNDAY OR SOME OTHER DAY THAT YOU WOULD USUALLY HAVE OFF, PLEASE RESPOND AS IF TODAY WERE A WORKING DAY.)

1. I am not working at all

(If you checked YES to this statement, SKIP to the next Section.)

2. I am doing part of my job at home.

3. I am not accomplishing as much as usual at work.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	144
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	145
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	146

Patient # _____

4. I often act irritable toward my work associates, for example, snap at them, give sharp answers, criticize easily.
5. I am working shorter hours.
6. I am doing only light work.
7. I work only for short periods of time or take frequent rests.
8. I am working at my usual job but with some changes for example, using different tools or special aids, trading some tasks with other workers.
9. I do not do my job as carefully and accurately as usual.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	147
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	148
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	149
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	150
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	151
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	152

M. THIS GROUP OF STATEMENTS HAS TO DO WITH ACTIVITIES YOU USUALLY DO IN YOUR FREE TIME. THESE ACTIVITIES ARE THINGS THAT YOU MIGHT DO FOR RELAXATION, TO PASS THE TIME, OR FOR ENTERTAINMENT. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I do my hobbies and recreation for shorter periods of time.
2. I am going out for entertainment less often.
3. I am cutting down on some of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading.
4. I am not doing any of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading.
5. I am doing more inactive pastimes in place of my other usual activities.
6. I am doing fewer community activities.
7. I am cutting down on some of my usual physical recreation or activities.
8. I am not doing any of my usual physical recreation or activities.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	153
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	154
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	155
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	156
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	157
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	158
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	159
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	160

N. PLEASE RESPOND TO ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

1. I am eating much less than usual.
2. I feed myself but only by using specially prepared food or utensils.
3. I am eating special or different food, for example, soft food, bland diet, low-salt, low-fat, low-sugar.
4. I eat no food at all but am taking fluids.
5. I just pick or nibble at my food.
6. I am drinking less fluids.
7. I feed myself with help from someone else.
8. I do not feed myself at all, but must be fed.
9. I am eating no food at all, nutrition is taken through tubes or intravenous fluids.

NO	YES	UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	161
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	162
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	163
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	164
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	165
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	166
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	167
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	168
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	169

O. Person responsible for the information recorded on this form:

Date _____

Questionnaire 9

Directions. Using the scale below, write in the number which best describes how often you felt or behaved this way - DURING THE PAST WEEK.

- 1 - Rarely or none of the time (less than 1 day)
- 2 - Some or a little of the time (1-2 days)
- 3 - Occasionally or a moderate amount of time (3-4 days)
- 4 - Most or all of the time (5-7 days)

DURING THE PAST WEEK:

- ___ 1. I was bothered by things that usually don't bother me
- ___ 2. I did not feel like eating; my appetite was poor
- ___ 3. I felt that I could not shake off the blues even with help from my family or friends
- ___ 4. I felt that I was just as good as other people
- ___ 5. I had trouble keeping my mind on what I was doing
- ___ 6. I felt depressed
- ___ 7. I felt that everything I did was an effort
- ___ 8. I felt hopeful about the future
- ___ 9. I thought my life had been a failure
- ___ 10. I felt fearful
- ___ 11. My sleep was restless
- ___ 12. I was happy
- ___ 13. I talked less than usual
- ___ 14. I felt lonely
- ___ 15. People were unfriendly
- ___ 16. I enjoyed life
- ___ 17. I had crying spells
- ___ 18. I felt sad
- ___ 19. I felt that people disliked me
- ___ 20. I could not get "going"

How much help did you receive while filling out this questionnaire?

- ___ None, I filled it out myself.
- ___ A little, the questions were read to me.
- ___ A little, someone else filled out the sheets according to my directions.

THANK YOU FOR YOUR ASSISTANCE IN THIS PROJECT



THE UNIVERSITY OF MANITOBA

NEUROPSYCHOLOGY RESEARCH UNIT
Health Sciences Clinical Research Centre



Health
Sciences
Centre

MS 779 - 820 Sherbrook Street
Winnipeg, Manitoba
Canada R3A 1R9

(204) 787-3121

Dear Manitoba Head Injury Study Participant:

Thank you again for agreeing to participate in the important research study now underway. The purpose of this letter is to ensure that you have received a questionnaire package, and to remind you to complete and return it to us if you have. Occasionally, questionnaire packages do get lost in the mail. If you have not received a booklet, please contact the office at 787 3121 and we will send one out to you right away. I appreciate the time and effort it takes to fill out the questionnaires we have sent out - your prompt response is truly appreciated. If you are having difficulties understanding or completing the questionnaires, please give the office a call, and I will get in touch with you.

If I don't hear from you within a week, I will be making telephone follow-up calls to get in touch with you personally. Thank you again for helping us find out more about the recovery process from head injury. Your participation is critical if we are to continue to learn more about this devastating condition.

Yours sincerely,

Allan Moore, M.A., C.Psych.(Cand).
Principal Investigator



THE UNIVERSITY OF MANITOBA

NEUROPSYCHOLOGY RESEARCH UNIT
Health Sciences Clinical Research Centre



Health
Sciences
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MS 779 - 820 Sherbrook Street
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Canada R3A 1R9

(204) 787-3121

30 November 1993

Dear Manitoba Head Injury Study Participant:

After nearly two years, our research study is coming to a close. The purpose of this letter is to provide you with information regarding the results of the study, how the information you provided us will be used, and to thank you again for your participation.

As you recall, the purpose of the project was to examine how thoughts and feelings are involved in adjustment to head injury. Specifically, we were interested in finding out how people recovering from head injury felt about how much they were in control or responsible for things that happened to them, how they coped, and what kinds of thoughts they had when they had trouble or good times. This study was the first, we believe, that looked at how thoughts and feelings are related to later outcome. This is why we asked you to fill out two sets of questionnaires six months apart. What we found is that, **as a group**, there were several ways of thinking and coping that were associated with better quality of life later in recovery. These strategies included:

- believing that one can control things that happen
- coping with problems by attempting to change the situation that is causing stress
- thinking about the positive aspects of situations (looking on the bright side, reframing)
- using one or two ways of dealing with problems rather than trying many coping strategies all at once

It is important for you to know that as an individual, all, some, or none of these findings may apply to you. We all have individual ways of dealing with stress. The findings above represent strategies that appear to be associated with the outcomes of a group of people. Individually, there can be a wide range of potentially helpful ways of thinking, feeling, and coping with stresses. It is important for you to find the strategies that work for you. Practically, these findings provide treatment suggestions that health care providers can give to people recovering from head injury. Examples of these suggestions include ensuring success during therapies, and understanding difficulties as challenges and a sign that further work is needed rather than a "failure" or a sign that one is "stupid."

We will be sharing these findings with other health care providers both in Canada and internationally through professional journal articles and conference presentations. Your assistance is a crucial part of helping improve services to people who are

recovering from head injuries. Please accept our sincere thanks for your participation in this lengthy project, and we hope this feedback conveys how important your participation is in our efforts to understand the aftermath of head injury.

Yours sincerely,

Allan Moore, M.A., C.Psych.(Cand.)
Principal Investigator

Michael Stambrook, Ph.D., C.Psych.
Associate Professor

Daryl Gill, Ph.D., C.Psych.
Assistant Professor