THE PATIENT COMPETENCY RATING SCALE AS A MEASURE OF EVERYDAY FUNCTIONING BEFORE AND AFTER TRAUMATIC BRAIN INJURY

A thesis presented in partial fulfilment
of the requirements for the degree of
Master of Arts in Psychology
at Massey University

Latesha J. Murphy

1996

ABSTRACT

Impaired self awareness is a common outcome of traumatic brain injury (TBI) and is usually measured by comparing self and informant ratings of everyday functioning. The Patient Competency Rating Scale (PCRS; Prigatano et al. 1990), has often been used for this purpose. The present study compared the before and after PCRS ratings of 53 sets of TBI patients and their informants. These groups were also compared to 130 sets of self and informant ratings for a non-head injured control group. Comparison of self and informant ratings for before and after revealed that TBI subjects were very aware of their post injury difficulties. A comparison of the self ratings of TBI (before injury) and control subjects suggested that the TBI group performed better than the control group, which acknowledged some difficulty with controlling emotion. Informants generally rated TBI subjects (before injury) and control subjects as more competent than the subjects rated themselves. A comparison of informant and self ratings (after injury) demonstrated that subjects with severe head injuries underestimated their difficulties, whilst subjects in the mild and moderate groups tended to be aware of their difficulties or overestimated them. This finding suggests that degree of awareness is dependent on the severity of injury.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Dr. Janet Leathem, for her guidance and support in the preparation of this thesis. You were a wonderful mentor and a truely inspiring role model.

I would also like to thank Dr. Ross Flett for his assistance with the data analysis stage of this thesis. Your expertise and patience were greatly appreciated.

Thanks also to Carmen, Kirsten, and Vicky. I remain especially grateful for your friendship and support.

Finally, thank you to Mum and Dad, Anita, Sarah, and Jordan. Your constant love and encouragement are beyond compare.

TABLE OF CONTENTS

LIST OF TABLES

Tables

CHAPTER ONE

INTRODUCTION

Self report measures are an important adjunct to formal neuropsychological assessment measures of outcome after traumatic brain injury (TBI). The Patient Competency Rating Scale (PCRS; Prigatano, Altman, & O'Brien, 1990) is a self report measure which has often been used for this purpose, with both patients and informants (usually relatives) providing ratings for current condition. It is assumed that those with TBI will have more difficulty in some areas of functioning than others on the PCRS and that informants ratings will be a better reflection of these difficulties than patients self reports. This is based on the finding that there is more agreement between informant ratings, clinician ratings and neuropsychological test findings, than between the self ratings of TBI subjects themselves and the other variables (Prigatano, et al., 1986).

Although the PCRS was not designed to assess levels of competency before TBI, it has been increasingly the case in clinical practice that ratings for "before" are obtained in order to provide an important comparison point for current ratings (Gianutsos, 1992). But the nature and extent of PCRS functioning pre- and post-TBI has not been previously reported, nor on closer scrutiny of the relevant literature, has normative data for the measure.

The purposes of the current study then was both to examine PCRS performance before and after TBI from self and informant perspectives and to provide self and informant normative data from a non-head injured population. The study would also provide information on "awareness" and compare PCRS results of a head injured sample in New Zealand with the US group with which the PCRS was first used.

In order to provide a context for the study, an overview of TBI is provided in Chapter two, with an emphasis on outcomes. Self-report measures are discussed and then compared to traditional neuropsychological tests in Chapter three. The PCRS is mentioned briefly in the context of other self report measures in Chapter three, then discussed in more detail in Chapter four.

A summary of the rationale and objectives of the present study is provided in Chapter five and leads into the specific hypotheses examined. Methodology is presented in Chapter six and the results of each hypothesis presented in Chapter seven. These are discussed in Chapter eight in terms of their theoretical and practical implications in the area of assessment. Limitations of the present study and suggestions for further research are then discussed.

CHAPTER TWO

TRAUMATIC BRAIN INJURY (TBI)

This chapter begins with the epidemiology of TBI and then follows with a discussion of various definitions and classifications. In order to provide a context within which the present research can be viewed, this chapter then emphasises the cognitive and psychosocial outcomes of TBI commonly reported by patients and their relatives as described in the research literature.

2.1. EPIDEMIOLOGY

Traumatic brain injury is a leading cause of neuropathology. In New Zealand in 1991, 10,442 people were treated for TBI, with 8411 of those persons being hospitalised due to the injury (Department of Health, 1992). This figure is probably a gross underestimate of the extent of TBI as many people who sustain a minor head injury do not seek medical assistance. No universal definition has been proposed to cover the many minor injuries that are never reported. Therefore, it is not possible to state the exact frequency of head injury.

Estimates of the number of those hospitalised with TBI whilst tending to be low and vague appear consistent across Western countries. Research on injuries that lead to death, hospital admission and/or attendance at accident

and emergency departments has found an estimated incidence and prevalence of head injury in western countries of between 250-300 per 100,000 (New Zealand Head Injury Society, 1993).

An estimated 200 per 100,000 people are admitted to hospital as the result of TBI each year in the United States (Duckett & Duckett, 1993) Presently, no formal epidemiological studies on the incidence and prevalence of head injury have been completed in New Zealand. Based on hospital records however, (9000 people are admitted with head injuries each year) and generalising from overseas studies, the expected head injury incidence in New Zealand would be 250-370 per 100,000 (Accident Compensation Corporation, 1992).

Approximately 50% of head injuries are the result of motor vehicle accidents with alcohol being a contributing factor in around half of these. A review of the literature shows this to be consistent across a number of countries (Gronwall, Wrightson, & Waddell, 1990). Assaults, falls, sporting injuries and occupational accidents account for most of the remaining fifty-percent (Duckett & Duckett, 1993).

The majority of those receiving head injuries each year are aged between 15 and 24 with a second peak of TBI incidence at over age 70 (Bond, 1984). Lower socio-economic and educational groups are over-represented in the TBI population, and males are two or three times more likely to sustain a TBI than females (Gronwall et al., 1990).

2.2. DEFINITIONS AND CLASSIFICATIONS

2.2.1. Closed, Open and Compressive TBI

A high percentage of reported head injuries are those which are classified as Closed Head Injuries (CHI). A CHI is caused by a blow to the head which does not result in the brain being exposed but may result in a loss of consciousness (LOC). CHI occurs after sudden deceleration (where a moving person hits a stationary object) or acceleration (where movement is imparted to the skull, such as when a stationary person is hit by a moving car) (Grimmer, 1994).

Open TBI is caused by an object fracturing the skull and exposing the brain to the outside environment. Open head injuries may be penetrating, such as those caused by sharp missiles. Typically, fragments of bone, scalp tissue and hair penetrate the brain tissue. Often a penetrating head injury will not cause a loss of consciousness and will result in highly specific neurological symptoms due to the focal nature of the injury (Kampen & Grafman, 1989).

The type of penetrating object, the location of entry into the brain and the velocity of the object are important determinants of the amount and type of tissue damage resulting from a penetrating head injury. Because the dura is penetrated, infection by bacteria accompanying the weapon, broken skin and bone fragments into the brain may result causing further tissue damage (Parker, 1990).

Only 2-6 percent of all head injuries bought to medical attention are penetrating head wounds (Kampen & Grafman,

1989). Compressive injuries account for an even smaller percentage of head injuries and occur when the skull is compressed between two objects, for an example, when a car slips from a jack (Grimmer, 1994).

2.2.2. Primary and Secondary Injury

The sudden change of movement as a result of rapid acceleration or deceleration, subjects the brain to a variety of mechanical forces causing both primary and secondary damage.

Primary brain injury occurs at the time of impact. A blow to the head may cause the brain to be compacted leading to damage at the site of the blow known as a *coup*. The brain may then be forced against the opposite side of the skull resulting in an additional contusion known as *countercoup* (Kolb & Whishaw, 1990).

Primary injuries often result in a cascade of damaging events that lead to secondary brain damage and produce permanent and severe injury or fatal outcome. TBI may cause bleeding within the skull (haemorrhage) for example, resulting in a haematoma which places pressure on nearby parts of the brain or restricts blood flow to other brain structures (Parker, 1990).

TBI can also result in swelling (edema) which produces another source of pressure on the brain tissue. Traumatic cerebral edema is increased greatly by electrolyte imbalance from blood loss and the obstruction of the flow or absorption of cerebrospinal fluid. Haematoma or cerebral edema can result in an increase in intracranial pressure and cause herniation and ischemia, resulting in

further brain infarction and necrosis. Secondary injuries however, may be avoided if the haematoma or edema are immediately treated (Pang, 1989).

2.2.3. Mild, Moderate and Severe TBI

There is no single way to classify adequately the severity of TBI. Loss of consciousness (LOC) has been found to correlate directly with mortality, intellectual and social impairment and has often been used as a measure of the severity of damage (Kolb & Whishaw, 1990). However, while LOC serves as an efficient estimate of outcome in severe TBI it also means that more than fifty percent of all TBI cases are classified as "mild" (see Table 2.1.). Within this "mild" range some clients may recover within a few days and others may take weeks, months or even years to return to a near-normal level of functioning (Gronwall, 1989).

TABLE 2.1.

Classifications of Traumatic Brain Injury

Classification	Mild	Moderate	Severe
GCS	13-15	9-12	<8
LOC	<30mins	<60mins	>60mins
PTA	<1hr	1-24hrs	>24hrs

Level of consciousness is also often used to assess the severity of a head injury. The Glascow Coma Scale (GCS) (see Table 2.1) is a well designed and validated measure available for an objective and quantitative assessment of depth of coma (Gronwall, 1989). The GCS emphasizes three

important aspects of the neurologic examination. These are best motor response, eye opening and verbal response, the three neurological signs which have proved to be the most sensitive to severity of injury (Little, 1993). The majority of TBI patients have GCS scores of 13 or 14 on admission to hospital (Gronwall, 1989), classifying their injury as mild (see Table 2.1). However, many of these "mild" TBI patients have persistent and often quite severe neuropsychological deficits. This probably means that their injuries were more severe than indicated by the duration of unconsciousness. And as Lezak (1989) suggests, other measures of severity of TBI are needed for this group.

Finally, length of post-traumatic amnesia (PTA) is an alternative measure of severity of injury (see Table 2.1) and is calculated from the time of the injury to the return of ongoing memory, sometimes including the duration of any coma (Parker, 1990).

2.3. OUTCOMES OF TRAUMATIC BRAIN INJURY

The term "outcome" is often used to signify the status of the brain injured person after a plateau in recovery has been reached. The locus of the injury, the volume of tissue loss, laterality and the anatomical extent of the damage are all important variables affecting outcome. The more severe the injury, the more likely the person will suffer permanent disabilities and marked personality change. Although, even mild brain injuries can result in the disruption of cognitive functioning (Parker, 1993).

Age may also be a contributing factor in recovery. Adamovich et al. (1985, cited in Parker, 1993) believe that higher age may be a poor prognostic indicator. Research indicates that older persons have more difficulty adjusting after a TBI and the cognitive declines associated with the aging process may complicate the cognitive deficits resulting from an injury (Kay & Silver 1989).

Premorbid level of functioning also affects outcome after TBI. For example, individuals with higher overall cognitive skills prior to trauma tend to experience better outcome. A knowledge of premorbid level of functioning is important when dealing with a TBI as it will help in establishing a reference point with which current performance can be compared and the amount of impairment estimated. Prior medical history is also influential, as pre-existing neurological disorders for example, can interact with head injury and augment the behavioral effects (Long & Schmitter, 1992).

Reduced adaptive ability (ie inability to perform one's usual tasks) is the most significant consequence of TBI. Deficits can be extremely persistent. Karol (1989) showed that severe TBI clients continued to seek help for an average of 7.3 years after an accident and some for decades later.

2.3.1. Attention and Concentration.

Disruptions in the speed of information processing and the complex processes of attention are the core deficits following TBI and are a product of both diffuse and frontal lobe damage (Kolb & Whishaw, 1990). Complex attention refers to the processes by which a person focuses

attention, maintains it in the face of distraction, sustains it during the course of mental activity (concentration) and is able to shift attention fluidly without becoming rigidly fixed on one task (Kay & Silver, 1989).

The impact of impaired attention and concentration can be devastating. Patients who are highly distractible are unable to sustain attention to a task long enough to complete it. When attention must be split among two or more tasks the patient may become confused and task performance dramatically declines. In addition, TBI patients often process information much more slowly and in smaller quantities than prior to their injury (Kay & Silver, 1989). Problems with limited concentration and difficulties in the rapid understanding and organising of information can lead to serious learning and memory difficulties.

2.3.2. Memory and Learning

Of the four most common outcomes of TBI (irritability, memory problems, slowness and attention deficits), complaints about memory score highest in several studies on the effects of head injury (Berg Koning-Haanstra, & Deelman, 1991). Once post-traumatic amnesia has past, the probability that the individual will be left with anterograde amnesia is high. For example, problems associated with new learning/memory are reported by approximately one-half to two-thirds of brain injured clients. Approximately two-thirds of family members also reported that the brain injured client now had memory problems (Brooks, 1984).

Memory impairments and the underlying causes vary from patient to patient, and there is no one mechanism of memory disturbance (Brooks, 1984). Memory disturbances typically involve inability to recall new information, while long-term recall of prior knowledge remains essentially intact (Mandel, Sataloff, & Shapiro, 1993). An inability to recall new information means that many brain injured persons are unable to return to their former employment even at a lower level of skill and responsibility, despite evidence that they still retain many of their former well-established work-related skills (Squire, 1989).

There is mounting evidence that specific forms of memory impairment are related to lesions in different sites in the brain. Kolb and Whishaw (1990) refer to five regions that when damaged, are consistently said to correlate with some form of memory impairment. These include: the anterior temporal cortex, the medial temporal region, medial thalamus, mamilliary bodies, and basal forebrain. It has been shown, that diffuse brain tissue damage resulting from a closed head injury causes more severe deficits of memory than focal brain damage and generally, the greater the damage the more profound the memory disorder (Bond, cited in Grant & Adams, 1986).

2.3.3. Language and Communication

Often a TBI patient will perform well on standardised speech and language measures and yet a casual conversation will soon reveal communication difficulties. Cognitive deficits resulting from TBI affect the way a patient uses language in social situations. A TBI patient may use socially inappropriate verbal and nonverbal behaviours, delay in responding or respond too abruptly, fail to

initiate a conversation or continually jump from one topic to another. Problems such as these can impair an individual's ability to function effectively on emotional, social, and vocational levels (Marshall, 1989).

Disturbances of speech are believed to be uncommon after closed head injuries. However when aphasia does occur, it does not tend to occur alone but rather in the presence of other cognitive deficits in memory, perception, orientation and judgement. It is therefore, more accurate to discuss problems of communication - a more complex process involving both cognition and speech (Bond, 1986).

2.3.4. General Intelligence

Levels of intelligence vary considerably on recovery from TBI. Intelligence is a multifaceted, interactive process, involving different types of information processing and styles of problem solving (Parker, 1990). What first may appear to be a reduced level of intelligence after TBI may actually be due to a memory deficit, an inability to concentrate, or to communicate (Parker, 1990).

Often a TBI patient will score well above average on a test of intelligence but will not perform nearly as well outside the clinical environment. Further exploration often shows defects in perceptual skills, attentional control and fatigue are the reasons for this (Mandleberg & Brooks, 1975). Because the major problems associated with TBI are not due to decreased intelligence but rather to deficits in attention, memory and a broad range of information-processing skills, it is crucial that a neuropsychological examination is not based solely on I.Q. measures (Bond, 1986).

Mandleberg and Brooks (1975) examined the effects of head injury on general intelligence using the Wechsler Adult Intelligence Scale (WAIS). After serial testing they found that the cognitive abilities (as measured by standardised IQ tests) of a group of 40 TBI patients eventually returned to normal levels despite the fact that all had initially received a classification of severe TBI as defined by the GCS. The final scores achieved were unusually high and probably attributable in some way to a "learning effect". This study raises the importance of gauging the level of a subject's pre-traumatic cognitive abilities before interpreting the significance of post-traumatic test results (Bond, 1986).

2.3.5. Personality and Emotion

Closed head injuries causing lesions in the frontal and temporal lobes tend to have significant affect on personality and social adjustment (Kolb & Whishaw, 1990). Lezak (1989) believes that social and emotional behaviour are the most subtle and yet most handicapping of the outcomes after TBI. Patients with adequate or unimpaired scores on the usual mental ability tests maybe unable to direct their activities independently, support themselves or make and sustain mutually satisfying emotional relationships - indicating the importance of these capacities to overall adjustment.

Personality change is also commonly observed following minor head injury. Stern, Melamed, and Silber (1985) suggested a distinction between the psychological manifestations following mild and severe head injuries. They reported that two to three years following the head injury, patients with mild brain injuries exhibited

more "extroverted" characteristics (i.e., they were over-demanding and narcissistic). In contrast, patients in the severely head injured group were characterised as high on the "introversion" dimension (i.e., they were passive, dependent, apathetic, and had low self-esteem).

Changes in the injured persons overall personality is a common complaint of relatives of TBI patients. Several studies have found high frequencies of maladaptive behaviours, family stress and social isolation in patients who have suffered a severe head injury (Van Horn, Levine & Curtis, 1992).

Irritability is one of the most common complaints involving personality change in patients following TBI. Often a brain injured person has little patience, becomes easily frustrated and has difficulty adjusting to change. Family members often describe them as argumentative, moody, and uptight (Mandel et al., 1993), or socially inappropriate and childish. Inappropriate responses and behaviour is often the result of an inability to recognise emotional feelings in others, an inability to comprehend and express emotional feelings in others, and decreased sensitivity to others' responses (Parker,1990).

Cerebral damage is sometimes accompanied by sexual difficulties ranging from greatly reduced libido to an inability to control sexual impulses. Lesions occurring in the temporal lobes and structures in the cortex, hypothalamus, and midbrain are especially believed to produce changes in sexual behaviour. Kreutzer and Zasler (1989, cited in Parker, 1990) in a study of male TBI patients reported that 57 percent experienced a decrease

and 14 percent an increase in sexual drive. At the time of the study, none of the single subjects had a steady relationship and of the remaining subjects, none described their current relationship as excellent. The authors concluded that head injury changes sexual functioning and desire mostly for the worse.

Depression may arise as a direct response to lesions resulting form a head injury. Endogenous depression is a direct consequence of head injury believed to be associated with left cerebral damage or reduced arousal due to depletion of neurotransmitters. Dull affect may result from damage to the dorsolateral area of the frontal lobes or in some cases, to right cerebral hemisphere damage (Parker, 1990). An awareness of loss of pre-trauma functioning levels may also induce depression in TBI victims. Levels of depression may depend on the degree to which the head injured person is aware of his or her difficulties and attributes them to the injury rather than to other causes (Mandel et al., 1993). The most severely injured patients tend to experience relatively few secondary reactions to their injury because severe damage almost always involves the frontal lobes or associated structures which are necessary for the self-awareness and self-reflection that are at the core of secondary emotional reactions. On the other hand, mild TBI victims experience significant emotional disturbances reactive to their deficits and the effects that these deficits have on their lives. Many TBI patients feel misunderstood by others and as a result, suffer from periods of depression which can greatly effect their relationships and their psychological well-being (Lezak, 1989).

Premorbid personality factors such as deeply ingrained attitudes and habits will usually continue to affect an individuals emotional responses after TBI. While premorbid psychological adjustment is often difficult to assess, clinical experience demonstrates that it plays a significant role in prediction of recovery. Studies have shown that although brain injury may cause greater impulsivity and poor judgement, such tendencies are likely to have been present prior to the head injury occurring. The higher incidence of TBI in young males with low IQ, of low occupational and social status, and with inadequate levels of social responsibility can be viewed as evidence for this (Long & Schmitter, 1992).

2.3.6. Malingering

Neuropsychologists are increasingly being asked by neurologists, neurosurgeons, psychiatrists and lawyers to differentiate between the existence of cerebral dysfunction after TBI and compensation neurosis or malingering. Neuropsychologists seem hesitant though to explicitly label a client as a 'malingerer' with incidence estimates varying depending upon the setting, the perceptiveness and the scepticism of the clinician (Trueblood & Schmidt, 1993). On the whole though malingers are generally described as a "significant minority" (Rogers et al. 1993, p. 141).

The reluctance to "diagnose" malingering is partly due a fear of disadvantaging the client through misdiagnosis and the belief that psychological overlay is not usually consciously controlled by the client. This is not helped by the fact that even though there are well-defined syndromes following TBI, there is also a multitude of unanticipated symptoms which may be found (Pankratz, 1988,

cited in Rogers, 1988). Thus even the most experienced neuropsychologist may find it difficult to distinguish between the real manifestations of TBI and those that are contrived.

At the same time there are very few methodologically sound ways to measure malingering. Because there has not yet been a population of subjects prepared to acknowledge their deceitfulness, several investigators have employed normal subjects instructed to simulate deficits resulting form TBI (Wiggins & Brandt, 1988). These first studies evaluating the efforts of neuropsychologists at detecting persons feigning neuropsychological deficits reported very low hit rates. Rawling and Brooks (1991) for example, found that two experienced clinicians could do no better than chance in the detection of malingerers when provided with standard data from the Wechsler Adult Intelligence Scale - Revised (WAIS-R) and the Wechsler Memory Scale (WMS).

Other studies however (Mittenberg et al., 1993; Wiggins & Brandt, 1988) have suggested that simulated memory performance is characterised by a pattern that is inconsistent with the neurobehavioral profile known to result from TBI. The malingered pattern does not make "neuropsychological sense" (Mittenberg et al., 1993, p.37).

Studies such as these suggest that lay-people have inaccurate beliefs about the cognitive aspects of memory disorders resulting from head injury and are unable to distinguish among etiologically distinct amnesic disorders. Further, Hayes et al., 1994 report that even prior knowledge of and personal experience with TBI does not appear to significantly improve an individuals ability to

fabricate neuropsychological impairment. It is for this reason, neuropsychological tests that exploit inaccurate beliefs about cognitive deficits resulting form head injury appear promising for the detection of malingering (Wiggins & Brandt, 1988).

2.4. SUMMARY

In summary, traumatic brain injury is a leading cause of neuropathology in New Zealand. As already outlined, TBI may significantly affect brain function in a number of ways (Kolb & Whishaw, 1990) and thorough assessment of neuropsychological function is useful in determining the nature and extent of these. Self report measures are an important part of the neuropsychological assessment process for they often detect subtle deficits not revealed by more formal neuropsychological measures (ie. lack of awareness) and are helpful when the possibility of malingering arises. A more detailed discussion of self report measures follows in Chapter Three.

CHAPTER THREE

SELF-REPORT MEASURES

3.1. INTRODUCTION

Acimovic and Ruff (1992) propose that, mild brain injury may not result in a positive MRI, CT scan or EEG. Similarly, many of the neuropsychological tests developed to detect the localized brain damage of moderate to severe TBI are not sensitive to the reduction of cognitive abilities that accompany the diffuse damage of mild TBI (Gronwall, 1989) It is also widely acknowledged clinically that TBI individuals may perform "within normal limits" on traditional objective neuropsychological tests yet still be experiencing cognitive difficulty. These debilitating albeit subtle deficits may significantly impair an individuals ability to resume or sustain premorbid functioning.

Accordingly, many articles stress the need for clinicians to include both objective measures and subjective self-reports when assessing level of cognitive functioning after TBI (Acimovic, Lemmon, & Keatley, 1993). Self report can cue a clinician into investigating possible domains of cognitive dysfunction, whilst, objective measures provide a means to assess the accuracy of subjective reports and are a way of investigating the factors that impinge on accuracy/score (Seidenberg, Taylor, & Haltiner, 1994).

In a study conducted by Allen & Ruff (1990) to assess the value of self-ratings by both mild-moderate head injury (MHI) subjects and subjects with severe head injury (SHI) it was hypothesised that SHI subjects would report cognitive deficits similar to those reported by MHI subjects even though their scores on neuropsychological tests would be significantly lower. As predicted the self ratings of head injured subjects on cognitive function did not correspond with their test performance. Although MHI subjects tended to score differently than SHI subjects on a number of neuropsychological indices, self-ratings did not differentiate SHI from MHI subjects, ie. those with severe TBI are generally less accurate regarding cognitive deficits than those who have sustained mild or moderate TBI's. It was suggested that this inaccuracy was due to deficits in attention, logical thinking and memory combining to decrease the ability of those with TBI for accurate self-awareness.

Allen and Ruff (1990) also found that the chronicity of a head injury affected self-ratings of cognitive functioning, with accuracy increasing with the time since injury. Subjects assessed more than one year after their injury rated attention, memory and arithmetic difficulties more accurately than subjects tested less than 1 year following trauma.

Stuss (1987) suggests that the capacity for self-awareness may be dependent upon cognitive integrity. In particular, the the capacity for self-awareness may be diminished after damage to the frontal lobes. At the same time, Allen and Ruff (1990) found that, normal controls were not consistently more realistic than the clinical samples and

concluded, that the "accuracy of self-report is not uniform across groups and functional areas" (Allen & Ruff, 1990, p.15).

Table 3.1. is a summary of five self-report measures that are often employed by clinicans when assessing TBI individuals.

3.2. SELF REPORTING AND MEMORY DEFICITS

Difficulty with memory is one of the most common cognitive problems reported by individuals with TBI. The usefulness of traditional memory tests in predicting or evaluating difficulties in the everyday life of memory impaired brain injured clients has been questioned because they give little information about daily activities, such as remembering appointments and other memory requirements of daily life (Schwartz & McMillan, 1989). But such specific assessment is difficult for the office bound psychologist to undertake, and therefore features rarely in the overall assessment strategies of most clinicians.

Questionnaires that are designed to measure an individual's assessment of his or her own memory functioning in everyday situations is a way of overcoming this obstacle (Gilewski & Zelinski, 1986). These have both advantages and disadvantages. On the positive side they are not only a inexpensive and simple way of assessing a broad range of memory phenomena, but they also allow an assessment of covert memory lapses which may never be reflected in overt behaviour and which would otherwise go undetected (Sunderland et al., 1983). Further, tests that are more

TABLE 3.1.

SUMMARY OF FIVE SELF-REPORT QUESTIONNAIRES USED TO ASSESS TBI INDIVIDUALS.

AUTHOR/S	QUESTIONNAIRE	NO.OF ITEMS	SCALING	AREAS THE TEST PURPORTS TO MEASURE
Seidenberg & Haltiner (1991)	The 'Multi Ability Self Report Questionnaire' (MASQ)	48	5pts	Language, Verbal Memory Visual Memory Visuoperception Attention
Ruff & Wylie (1987)	The 'San Diego Questionnaire'	29	7pts	Attention Language Sensorimotor Arithmetic Learning & Memory Logical Thinking
Heaton & Pendleton (1981)	The 'Patient Assessment of Own Functioning Inventory' (PAF) *	30	6pts	Memory Communication Language Use of hands Sensoripercept. Higher Intellect Cognition
Bennett-Levy & Powel (1980)	The 'Subjective Memory Questionnaire' (SMQ) *	45	5pts	Everyday Memory
Prigatano Altman & O'Brien (1990)	The 'Patient Competency Rating Scale' (PCRS) *	30	5pts	Activities of Daily Living Emotional Control Interpersonal Skill Cognitive Ability

* Informants version also available.

relevant to real-life memory difficulties will aid in more readily defining the goals of therapy and more appropriate monitoring of the effectiveness of the treatment (Schwartz & McMillan, 1989). Furthermore, they have face validity for subjects being assessed.

3.3. DIFFICULTIES ASSOCIATED WITH SELF-REPORTS

The most significant difficulty associated with self report is that an individual may not be aware of his or her own memory performance, both currently and in the past (prior to injury). Inaccurate recall of past levels is especially likely after severe TBI (Sunderland et al, 1983) and can lead to unrealistic goals and expectations on the part of the patient in rehabilitation.

Allen & Ruff (1990) proposed three levels of processing which influence the accuracy of self-reports. The first, "awareness," refers to the ability to attend, encode and retrieve information concerning the self. Cognitive deficits resulting from a head injury may interfere with a realistic recognition of limitations so it is important to place self-ratings in the context of a clients ability to be self-aware. The second factor influencing accuracy of self-report is "appraisal," ie. the ability to compare current information about oneself to a premorbid self-evaluation, as noted at the beginning of this section. The third factor according to Allen and Ruff (1990) is "disclosure." In order for a self-report measure to be a valid means of assessment the client must be willing to report self-perceptions in a reliable and honest manner.

3.4. TBI'S SELF-RATINGS VERSUS INFORMANTS' RATINGS

It is generally accepted by clinicians that head injured individuals' ratings of their functional status tend to be less accurate than ratings by informed observers (Heaton & Pendleton, 1981). One possible reason for this is that TBI subjects often do not accept their injury or any difficulties that have occurred as a result of the injury (Goldstein & McCue, 1995).

Ranseen, Bohaska, & Schmitt (1990) conducted an investigation of anosognosia following traumatic head injury. Anosognosia was objectively defined as a discrepancy between subject and staff ratings on the Patient Competency Rating Scale (PCRS). TBI subjects consistently rated themselves as having fewer deficits and greater competencies than viewed by the staff member who was closely working with this subject.

Goldstein and McCue (1995) conducted an investigation to determine whether 48 subjects with histories of severe closed head injuries agreed with the ratings of their functional status provided by their informants. Each subject had an informant who was either a relative, an employer or counsellor. All informants had daily contact with the subject and were knowledgeable about areas of function assessed by the Functional Assessment Inventory (FAI). Subjects were given a battery of neuropsychological tests and the Patient Assessment of Own Functioning Scale (PAF). The extent of agreement between subject self-ratings and informant ratings, between subject self-ratings and neuropsychological tests, and between informant ratings and neuropsychological tests was assessed. The results

confirm that in general, informants are more accurate predictors of TBI subject's functioning than are TBI subjects asked to rate their own functioning. Moreover, the subjects and informants did not agree with each other concerning functional status, with the exception of the motor function domain.

These results demonstrate that severely brain injured subjects tend to underestimate their deficits - an outcome that is consistent with the literature involving denial (Goldstein & McCue, 1995). Goldstein and McCue conclude that it is worthwhile to gather neuropsychological test data, ratings by the TBI client, and ratings made by an informant and then inter-relate the three, using the neuropsychological test scores as objective criteria.

3.5. PERSONALITY AND SELF-REPORT

At present, there is little research on the influence of personality characteristics on cognitive self-reports. However, Zelinski, Gilewski, and Anthony-Berstone (1990) suggest that certain dispositional characteristics may significantly effect self-report ratings of memory functioning. Bolla, Lindgren, and Bonaccrosy (1991) propose that for example, sad mood and depression can influence self-reports of memory functioning, and also suggest that self-report of poor memory essentially reflects affective state, and bears little relationship to actual memory performance. However, the relationship between self ratings, affective state and objective test performance appears to be very complex (Seidenberg et al., 1994).

Negative and positive affectivity (NA and PA) are two fundamental dimensions that consistently emerge in investigations of personality. Trait NA is viewed as a disposition to experience stress and negative emotions that further influences self-perception and one's view of the world. Trait PA is a viewed as a disposition towards experiencing positive emotions, and reflects a general sense of well-being (Seidenberg et al., 1994).

Seidenberg et al. (1994) examined the relationship of trait personality dimensions (negative affectivity and positive affectivity) on self-report of cognitive functioning, by assessing normal subjects using the Multi Ability Self Report Questionnaire (MASQ; Seidenberg & Haltiner, 1991). The results of this study support the importance of trait personality characteristics on self-report. Trait NA was found to correlate more significantly with self appraisal than was Trait PA. The significant association between cognitive self-report and NA endured after the authors accounted for the effects of current mood state. The study by Seidenberg et al. (1994) emphasises the long term predictive value for trait NA in relation to self-report of cognitive functioning. The role of NA for accuracy of cognitive self-report is an important issue that remains to be specifically examined using a head injured sample.

CHAPTER FOUR

THE PATIENT COMPETENCY RATING SCALE (PCRS)

Past research has indicated that disturbances in the capacity to objectively perceive changes in thinking, memory, judgement, motor skills, and personality are common after TBI and need to be studied systematically for both clinical and theoretical reasons. However, defining and measuring alterations of awareness of behavioral limitations after TBI is difficult (Prigatano and Altman, 1991).

The PCRS (Prigatano et al., 1990) was developed as an approach to reducing this problem. The authors propose that asking TBI patients to rate their degree of competency on a variety of behavioral tasks and comparing their ratings to relatives' ratings about them, will provide important information about a patients' level of awareness. Whilst at the same time providing important informal "qualitative" information about levels of functioning.

The PCRS is composed of 30 items designed to measure an individuals appraisal of competency to perform various behavioral, cognitive and emotional tasks (Heilbronner, Millsaps, Azrin, & Mittenberg, 1993). Individuals are asked to judge how easy or difficult a behavioural activity is on a five-point Likert scale: "1" = "can't do;" "2" = "very difficult to do;" "3" = "can do with some difficulty" "4" = "fairly easy to do;" and "5" = "can do with ease."

An individuals ratings correspond to perceived competence, not necessarily actual competence (Prigatano & Altman, 1991). For example, a TBI individual's PCRS ratings may not be in accordance with their scores on traditional neuropsychological tests or reports from the people most close to them.

Prigatano et al. (1990) reported acceptable reliability for PCRS total scores (i.e., for Patients, r = .97 and for Relatives, r = .92). When test-retest correlations were studied for each item, 27 out of the 30 items had statistically significant correlations (i.e., $p<.05$) for the patient sample and 28 out of 30 were statistically significant for the relatives sample.

Heilbronner et al (1993) conducted an investigation of the reliability and factor structure of the PCRS using a sample of normal college students. Adequate reliability was reported and factor analysis revealed six relatively discrete factors which support the content validity of the items. It was suggested that future research on the PCRS needs to incorporate other self-report measures to verify construct validity (Heilbronner et al, 1993). Prigatano et al. in their 1990 study had cautioned that ratings provided by patients and their informants are only perceptions of competency and suggested that further studies were warranted to determine to what degree their "perceptions" correlate with actual behaviours (a problem of validity).

In their original study, Prigatano et al. (1990) compared the self ratings of 64 TBI patients to their informants ratings in order to identify areas of agreement and

disagreement on the PCRS. Certain items were reliably rated by TBI patients in a manner suggestive of their under estimating behavioral limitations (see Table 4.1). The items related to perceived abilities in handling emotional and social interactions.

Patients' self ratings concerning activities of daily living (ADL) tended to be in agreement with relatives' judgments. An interesting finding was that when patients and relatives disagree, they often strongly disagree. This was particularly true over judgements concerning a patients ability to care for personal finances and driving a car. Driving and managing one's finances may represent important areas of independence for patients while these same two areas may potentially carry significant legal consequences for their relatives (Prigatano et al, 1990).

TABLE 4.1.

AREAS OF AGREEMENT AND DISAGREEMENT BETWEEN PATIENT AND INFORMANT RATINGS ON THE PCRS.

AGREEMENT (PATIENT = INFORMANT)		DISAGREEMENT (PATIENT > INFORMANT)	
Item#	Content	Item#	Content
1	Preparing meals	6	Finances
2	Dressing	9	Staying involved
3	Personal hygiene	17	Handling arguments
4	Washing dishes	23	Upsetting others
5	Doing laundry	27	Controlling temper
19	Controlling crying	28	Depression
30	Controlling laughter		

(Prigatano et al., 1990).

Prigatano et al's (1990) study demonstrates that TBI patients may have good awareness of some behavioural limitations, while relatively impaired awareness of others. A finding such as this, emphasises the importance of assessing a variety of behavioural skills when assessing impaired awareness of behavioural limitations after TBI.

In the Prigatano et al. (1990) study neuropsychological test scores had the greatest predictive power for relative's judgment of the patients ability to dress and prepare meals. Judgments of more complex social behaviours of TBI patients were generally not related to the neuropsychological test scores obtained in the study. Hence, ratings on the PCRS were able to provide insight into behavioural limitations resulting from TBI, that other neuropsychological tests failed to do.

Lack of awareness of behavioral limitations commonly occurs during the acute stages of TBI but can exist for years after the injury (Prigatano & O'Brien, 1991). Also known as anosognosia, lack of awareness of difficulties is a major drawback in rehabilitation after head injury and improving insight is a high priority requiring not only assessing the patient within the context of the hospital or rehabilitation setting, but also having objective observations of behavior, which are usually best provided by a family member (Prigatano & O'Brien, 1991).

Although relatives can deny or underestimate behavioural limitations of a brain-injured family member, their opinions of a patient's competency are important for three reasons. First, when TBI clients are initially seen by a clinician for diagnostic evaluation, the family member's

report is frequently the only information available for comparison. Second, family members typically spend more time with TBI patients each day and see the patient in more settings than does the clinician. Third, understanding how a family member perceives a patient's behavioural competency in various areas is fundamental for planning rehabilitation activities (Prigatano & Altman, 1991).

Patients can overestimate, underestimate or estimate their behavioral competencies the same, compared to their relatives' judgements. Those who overestimate or refuse to admit to their difficulties are lacking awareness of their behavioral limitations. Patients who rate their behavioral competencies similar to their relatives' ratings could be said to have better insight into their behavioral deficits. Finally, patients who underestimate their behavioral skills may do so as a result of emotional stress or in the hope of receiving financial compensation (malingering), (Prigatano & Altman, 1991).

The PCRS has been used in neuropsychological assessment at the Massey University Psychology clinic for four years. The only measure available at the time, it was found to be easily administered, uncomplicated, and inexpensive, and fulfilled the need for a self report measure that assisted in assessing the outcomes of TBI on everyday functioning whilst also providing insight into TBI clients level of awareness.

To summarise, it has been acknowledged that the PCRS is a useful tool for providing insight into TBI individuals level of awareness. Discrepancies between TBI self ratings and relatives' ratings on the PCRS may indicate

that an individual lacks awareness of the difficulties that have arisen since his or her head injury (Prigatano & Altman, 1991). On the other hand, such discrepancies may indicate that he or she is malingering.

CHAPTER FIVE

OBJECTIVES

5.1. OBJECTIVES OF THE PRESENT STUDY

The focus of the present study was on the examination of the effect of TBI on everyday functioning, with an emphasis on awareness of competency as measured on the Patient Competency Rating Scale (PCRS; Prigatano et al., 1990). This measure targets the areas of "activities of daily living" (ADL), "emotional control", "interpersonal skills", and "cognitive abilities". As a self-report measure it was more appropriate for the examination of "awareness" of injury than traditional neuropsychological assessments.

There were several specific purposes of the present study, (a) to examine the PCRS as a measure of everyday functioning both before and after TBI from self and informants perspectives; (b) examine awareness of functional ability since injury and (c) gather normative data for a non-brain injured population.

Comparisons were made between subjects with TBI and control subjects across a range of variables. General variables for which individual data was gathered included subjects' age, ethnicity, and years of post-primary education. In cases of TBI, information about the severity of injury and the number of months since injury were also noted.

5.2. HYPOTHESES

Since TBI subjects should have had no more difficulty before their injury than a non-head injured control group, it was hypothesised that there would be no significant difference between either:

1. *Self ratings - TBI group (before) and control group*

or

2. *Self ratings - mild, moderate or severe TBI (before)*

or

3. *Informant ratings - TBI group (before) and control group*

It was also assumed that before injury, there would be no difference between self and informant ratings either in the TBI group:

4. *Self ratings of TBI (before) and informant*

or control group:

5. *Self ratings of control group and informant*

Since TBI subjects are known to underestimate their difficulties after injury, it was expected there would be no difference between the before and current self ratings of the TBI group:

6. *Self ratings of TBI (before) and (now)*

or between the self ratings of the control group and the TBI group now:

7. *Self ratings of TBI (now) and control group*

At the same time, and for the same reasons there should be a significant difference between current self ratings of TBI subjects and those of their informants, with informants reporting more difficulty:

8. *Self ratings of TBI (now) and informant (now)*

Whilst no significant differences were expected between ratings of self and informant for the control group (see hypothesis 5), it was assumed that the greater awareness of the TBI informant group will be reflected in significantly higher scores for before than for now:

9. *TBI informant ratings (before) and (now)*

and significantly lowered scores reported by TBI informants (now) than by control informants:

10. *TBI informant ratings (now) and control informants*

Still on the awareness issue, it was assumed that informants ratings would reflect the fact that the severe group have more difficulty after TBI than either the moderate or mild group:

11. *Informants ratings, mild, moderate and severe (now)*

While the TBI group would not, resulting in no difference between self and informant ratings:

12. *Self and informant ratings, mild, moderate and severe (now)*

and

13. *self ratings, mild, moderate and severe (now)*

Finally, it was expected that the TBI group would underestimate (rate themselves higher) on certain PCRS items (as identified by Prigatano et al., 1990).

14. *Self ratings, TBI now, items 6,9,16,17,20,23,24, 27,28, and 29 and informant ratings.*

and rate themselves at similar levels to their informants on other PCRS items.

15. *Self ratings, TBI now, items 1,5,11,19, and 30 and informant ratings.*

CHAPTER SIX

METHOD

6.1. CHARACTERISTICS OF PARTICIPANTS

Fifty-three TBI and 131 control subjects took part in the present study. The 53 subjects with TBI, had been referred to the Psychology Clinic at Massey University for neuropsychological assessment and were selected from a larger pool of TBI clients on the basis that both self and informants versions of the PCRS were available.

Control subjects were comprised of three groups. Seventy-six were volunteer internal students enroled at Massey University, 33 were volunteer extra-mural students, and 22 were randomly drawn from the population at large. All of the control subjects were asked to indicate whether they had any prior head injuries and the nature of these injuries. This screening process resulted in 5 participants being eliminated from the study.

Demographic characteristics of the participants in the present study are summarised in Table 6.1.

TABLE 6.1.

CHARACTERISTICS OF GROUP PARTICIPANTS

	TBI		CONTROL	
GENDER	(N)	(%)	(N)	(%)
Male	40	75.5	75	57.3
Female	13	24.5	56	42.7
TOTAL	53		131	
ETHNICITY	(N)	(%)	(N)	(%)
Nonmaori	38	75.5	100	76.3
Maori	14	26.4	30	22.9
Other	1	1.9	1	0.8
AGE		Years		Years
Mean		32.23		34.05
Median		29.00		34.00
SD		13.15		11.87
Range		16-76		16-70
EDUCATION		Years		Years
Mean (post-primary)		3.89		5.04
Median		3.00		5.00
SD		2.13		1.85
Range		2-12		2-12
INFORMANT	(N)	(%)	(N)	(%)
Partner	20	37.8	90	68.7
Parent	16	30.2	6	4.6
Sibling	2	3.8	5	3.8
Child	1	1.9	1	0.8
Friend/Flatmate	4	7.5	9	6.9
Caregiver	2	3.8	-	-
Missing Data	8	15.0	20	15.2
FAMILIARITY	(N)	(%)	(N)	(%)
Two	1	1.9	-	-
Three	6	11.3	-	-
Four	8	15.1	29	22.1
Five	35	66.0	80	61.1
Missing Data	3	5.7	22	16.8

In the TBI group, 75.5% were male and 24.5% were female. Ages ranged from 16 to 76 (Mean 32.23; Median 29.0; SD 13.15). Such gender and age ratios (young adult males) are consistent with earlier findings in TBI subjects (Gronwall et al, 1990; Bond, 1984). In contrast, the control group was more homogenous, 57.3% male and 42.7% female, with ages ranging from 16 to 70 (Mean 34.05; Median 34.00; SD 11.87).

The groups were predominantly Non-Maori (TBI, 75.5%; controls, 76.3%) followed by Maori (TBI, 26.4%; controls, 22.9%). The mean number of years of post-primary education was 3.89 (SD 2.13) for the TBI group and 5.04 (SD 1.85) for the controls.

Traumatic brain injury subjects were categorised according to the severity of their head injury (Table 6.2.). Severity was measured by the duration of post-traumatic amnesia (PTA). Periods of PTA greater than 24 hours are associated with severe TBI, those lasting between one and twenty four hours represent moderate TBI, whilst PTA of less than one hour is considered to be a mild head injury (Morse & Montgomery, 1992). Of the 53 TBI subjects, 47.2% were classified as having a severe head injury, 26.4% a moderate injury, and 26.4% a mild head injury.

The mean period since injury was 39.10 months (SD 47.45). However, due to the presence of outliers in the sample (Range 2-264 months), the median score (26.00 months) is likely to be a more accurate representation of time since injury.

TABLE 6.2.

CHARACTERISTICS OF TRAUMATIC BRAIN INJURY

SEVERITY OF TBI	(N)	(%)
Mild	14	26.4
Moderate	14	26.4
Severe	25	47.2
TOTAL	53	

PERIOD SINCE TBI	Months
Mean	39.10
Median	26.00
SD	47.75
Range	2-264

6.2. INFORMANTS

All 53 TBI subjects (100%) had an informant rate their competency for "now" and 28 (52.8%) also had an informant provide ratings for "before" their injury. All PCRS questionnaires were completed at the clinic with client and informant independently.

Of the 131 control subjects, 88 (67.2%) had an informant provide ratings of their competency. Informants were categorised as being a partner (TBI 37.8%; controls 68.7%), a parent (TBI 30.2%; controls 4.6%), a sibling (TBI 3.8%; controls 3.8%), a child (TBI 1.9%; controls 0.8%), a friend or flatmate (TBI 7.5%; controls 6.9%), or a caregiver (TBI 3.8%; controls 0.0%). Informants were asked to rate how well they knew the person they rated on a five-point 'familiarity' scale. A score of "1" indicated that they did not know the person at all (TBI 0%; controls 0%), "2"

indicated they did not know the person 'very well' (TBI 1.9%,; controls 0.0%), "3" indicated they knew the person 'fairly well' (TBI 11.3%; controls 0.0%), "4" indicated they knew the person 'pretty well' (TBI 15.1%; controls 22.1%), and a "5" indicated they knew the person they were rating 'very well' (TBI 66.0%; controls 61.1%).

6.3. RESEARCHERS

The present study constitutes a Masters thesis and was jointly conducted by Latesha Murphy - M.A. student and Dr. Janet Leathem, Director of the Massey University Psychology Clinic, who acted as supervisor. Dr Leathem and various clinicians working in the Psychology clinic were involved (prior to the present study) in administering the PCRS to TBI clients.

6.4. ETHICAL ISSUES

Prior to this study, permission had been given by the TBI clients attending the Massey University Psychology Clinic for their neuropsychological results to be used for research purposes. Only those TBI clients who had given informed consent to have their PCRS scores employed as research data were included in the present study. Student controls were recruited on campus after the researchers outlined the purpose of the present study during class. The other control participants were recruited after being approached individually by the researchers. The nature of

the research was explained to all control subjects prior to their inclusion in the study and only those giving their informed consent were included.

Control subjects were given a written information sheet and invited to telephone the researchers should they have any questions about the study, either before or after their participation. Control subjects were advised that they could refuse to answer any particular question or to withdrawal from the study at any time, without prejudice. All subjects' rights to confidentiality and anonymity were explained and meticulously respected. Records were number coded and seen only by the researchers. All TBI client files were stored in a locked filing cabinet at the Clinic. It is not possible to identify any individual in any reports that are prepared from the present study.

6.5. THE MEASURES

6.5.1. The Patient Competency Rating Scale (PCRS)

The PCRS is a 30 item self-report inventory designed to assess perception of competency in the areas of Activities of Daily Living (ADL), Emotional Control, Interpersonal Skill, and Cognitive Abilities (see Table 6.3).

Individuals were asked to rate how easy or difficult they found each activity on a five-point Likert scale. A score of 1 = "can't do"; 2 = "very difficult to do"; 3 = "can do with some difficulty"; 4 = "fairly easy to do"; and 5 = "can do with ease" (see Appendix A).

TABLE 6.3.

THE FOUR AREAS OF COMPETENCY ASSESSED BY THE PCRS.

AREA OF COMPETENCY	NO/ITEM	AGREEMENT/ DISAGREEMENT
ADL		
preparing meals	1	*
dressing	2	*
personal hygiene	3	*
washing the dishes	4	*
doing the laundry	5	*
finances	6	-
driving	14	
meeting responsibilities	26	
EMOTIONAL		
adjusting to change	16	-
accepting criticism	18	
controlling crying	19	*
controlling temper	27	-
keeping from being depressed	28	-
emotions	29	-
controlling laughter	30	*
INTERPERSONAL		
starting conversation	8	
getting help when confused	15	
handling arguments	17	-
acting appropriately	20	-
showing affection	21	
group activities	22	
upsetting others	23	-
COGNITIVE		
keeping appointments	7	
staying involved	9	-
remembering dinner	10	
remembering names	11	*
remembering schedule	12	
remembering things	13	
daily activities	24	-
understanding new instructions	25	

* Items predicted to display subject and informant agreement
- Items predicted to display subject underestimation (Prigatano et al., 1990).

The PCRS (Informants version) is also employed in the present study as a means of quantifying discrepancies between TBI subjects and their informants (see Appendix B). Informants were asked to rate the TBI subjects' level of competency on each activity using the same five-point Likert scale.

6.5.2. The Competency on Everyday Activities Scale

The 'Competency On Everyday Activities Scale' is exactly the same scale as the PCRS (see Appendix C). It is only the title of the scale that has been changed. As this is the scale given to the control subjects, the word "patient" did not seem appropriate. An informants version of the Competency on Everyday Activities Scale was also used (see Appendix D).

6.5.3. PCRS Administration

This procedure consists of giving a PCRS questionnaire to a subject and asking him or her to read each question and then rate themselves on a five-point scale. When administering the PCRS to TBI individuals it may be necessary, due to the nature of their injury, for the clinician/interviewer to read each of the questions aloud and then record an individuals responses on to the PCRS form.

6.6. PROCEDURE

A detailed explanation about the nature of the research (see Appendix E) was first provided and control subjects were invited to sign a consent form (see Appendix F). They were then asked to take a Competency on Everyday Activities

scale and to complete it. Subjects were also given an informants version of the scale and asked to give this to someone that they felt knew them well enough to be able to rate their level of competency in the areas assessed by the scale. A freepost envelope was provided so that subjects and informants could complete the scale in their own time and then return it to the researchers. It was stressed that the questionnaire should be completed independently.

Overall analysis of the data obtained for all participants is presented in the following chapter.

CHAPTER SEVEN

RESULTS

The PCRS (Prigatano et al., 1990) assesses perception of competency in areas of "activities of daily living" (ADL), "emotional control", "interpersonal skill" and "cognitive ability". Each of these areas are assessed by seven or eight items (refer to Table 6.3 for list of areas and individual items).

Mean ratings for each area are shown in Table 7.1. T-tests for independent samples were used to compare mean scores in these four areas for the self and informant ratings of TBI and control groups. The significance of difference between means are presented with the hypothesis question they relate to, together with any individual items on which particular difficulty was reported.

Hypothesis 1

> *That there will be no significant differences between self ratings of TBI (before) and control groups.*

The ratings of the two groups differed significantly in the areas of emotional control ($t=4.06$ [$df=41$], $p<.001$) and cognitive ability ($t=1.76$ [$df=47$], $p<.001$) with TBI subjects rating themselves as significantly more competent than control subjects.

TABLE 7.1

MEAN BEFORE (a) AND NOW (b) RATINGS FOR GROUPS IN THE AREAS OF ADL, EMOTION, INTERPERSONAL SKILL AND COGNITION.

	GROUP	ADL	EMOT	INTER	COGN
a	Control	4.72	3.80	4.13	4.36
	TBI	4.72	4.24	4.21	4.74
	Informants:				
B					
	Control	4.73	4.08	4.20	4.48
E					
	TBI	4.69	4.45	4.58	4.66
F					
	TBI:				
O					
	Mild	4.65	4.43	4.37	4.48
R					
	Moderate	4.77	4.02	4.07	4.46
E					
	Severe	4.76	4.13	4.24	4.48
b	TBI	4.03	3.31	3.43	3.27
	Informant	3.99	3.33	3.45	3.39
	TBI:				
N					
	Mild	3.83	2.81	3.42	2.82
O					
	Moderate	4.05	3.40	3.41	3.21
W					
	Severe	4.13	3.56	3.60	3.55
	Informants:				
	Mild	3.79	3.17	3.96	4.12
	Moderate	4.33	3.45	3.88	3.61
	Severe	3.92	3.34	3.47	4.12

Hypothesis 2

That there will be no significant differences between mild, moderate or severe TBI subjects mean ratings for before their injury.

Comparisons made using ANOVA revealed a significant difference in the area of interpersonal skill only ($F=1.33$ [$df=2$], $p<.001$), with the moderate group reporting significantly more pre-accident difficulty than either of the other two groups.

Hypothesis 3

That there will be no significant differences between TBI informants before ratings and control informants.

Again, this hypothesis was not supported with the ratings of these two groups differing significantly in three areas. Informants rated TBI subjects as more competent in all areas other than ADL, before their injury than informants rated control subjects.

Hypothesis 4

That there will be no significant differences between TBI self and informant ratings before TBI.

This hypothesis was supported only in the area of ADL. Otherwise, TBI self ratings were significantly higher than informants in the area of cognitive ability and

significantly lower than informants in the areas of emotional control and interpersonal skill.

Hypothesis 5

> *That there will be no significant differences between control subjects self ratings and their informants.*

This hypothesis was also not supported with significant differences again found in the areas of emotional control ($t=3.81$ [$df=83$], $p<.001$), interpersonal skill ($t=1.29$ [$df=82$], $p<.001$), and cognitive ability ($t=1.45$ [$df=83$], $p<.001$).

Compared to their informants, control subjects reported significantly less competence in these three areas. Most notably, subjects in the control group reported having "some difficulty" with emotional control. In particular, item 18 "accepting criticism from other people" ($M=3.345$; SD .843) and item 27 "controlling my temper" ($M=3.771$; SD .855).

Hypothesis 6

> *That TBI subjects' current self ratings will be similar to their ratings for before.*

Contrary to the assumption that TBI subjects would underestimate their current difficulties resulting in no difference in their before and after ratings of competency, results showed a significant decline in ratings in all areas since injury. The most marked change was in the area

of cognitive ability (t=10.83 [df=28], $p<.001$), followed by emotional control (t=7.34 [df=26], $p<.001$), interpersonal skill (t=6.32 [df=24], $p<.001$), and ADL (t=6.26 [df=27], $p<.001$). In particular, subjects now reported difficulty with cognitive items 9 and 13, "staying involved in work activities even when bored or tired" (M=3.113; SD 1.129) and "remembering important things I must do" (M=3.103; SD 1.013).

A review of item results also reveals that before their injury, TBI subjects reported having "some difficulty" in the area of interpersonal skills, particularly with "handling arguments with people I know well" (item 17; M=3.870; SD .886) and "showing affection to people" (item 21; M=3.903; SD 1.048).

Hypothesis 7

> *That there will be no significant differences between self ratings of TBI (now) and control subjects*

The ratings of these two groups differed significantly in all four areas assessed. TBI subjects rated themselves as less competent "now" than control subjects with the greatest difference being in the area of cognitive ability (t=9.57 [df=56], $p<.001$), followed by ADL (t=7.30 [df=57], $p<.001$), interpersonal skill (t=5.51 [df=60], $p<.001$), and emotional control (t=4.14 [df=66], $p<.001$).

Hypothesis 8

That there will be significant differences between TBI subjects self and informants ratings for now.

The only significant difference was found in ratings of cognitive ability, where informants ratings were higher than TBI subjects themselves ($t=1.49$ [$df=46$], $p<.001$).

Hypothesis 9

That TBI informants ratings for before will be significantly higher than for now.

This hypothesis was supported in all areas. Decline was greatest in the cognitive area ($t=12.62$ [$df=24$], $p<.001$), followed by interpersonal skill ($t=10.65$ [$df=23$], $p<.001$), emotional control ($t=10.28$ [$df=24$], $p<.001$), and ADL ($t=6.29$ [$df=24$], $p<.001$).

Hypothesis 10

That TBI informants current ratings will be significantly lower than control informants.

This hypothesis was also supported in all areas. The most marked difference was in the area of cognitive ability ($t=12.84$ [$df=175$], $p<.001$), followed by ADL ($t=9.98$ [$df=177$], $p<.001$), interpersonal skill ($t=6.74$ [$df=171$], $p<.001$), and emotional control ($t=4.83$ [$df=173$], $p<.001$).

Hypothesis 11

That there will be significant differences between mean current informant ratings for mild, moderate and severe TBI groups.

Analysis of variances (ANOVAs) indicated that informants ratings of moderate TBI subjects were significantly higher in all areas, than the group with severe TBI followed by mild TBI. Informants of the moderate TBI group, reported the highest level of competence of the three groups across all four areas. Group differences were significant in the areas of ADL, interpersonal skill, and cognitive ability.

Hypothesis 12

That there will be no significant differences in the current ratings of mild, moderate and severe TBI subjects and their informants.

A significant difference in the mild group ratings was in the area of interpersonal skill ($t=1.02$ [$df=11$], $p<.001$), with informants rating subjects as significantly more competent than TBI subjects rated themselves. For the moderate group, subjects reported significantly less competency in the areas of interpersonal skill ($t=2.68$ [$df=12$], $p<.001$) and cognitive ability ($t=2.18$ [$df=11$], $p<.001$) than did their informants.

Ratings of the severe TBI group differed significantly from their informants in the areas of ADL ($t=2.81$ [$df=21$], $p<.001$), and cognitive ability ($t=1.89$ [$df=21$], $p<.001$) with informants reporting more difficulty.

Hypothesis 13

> *That there will be significant differences in the mean current self ratings between mild, moderate and severe TBI subjects.*

Analysis of variances (ANOVAs) indicated that the self ratings of those with severe TBI were significantly higher in all areas, than the group with moderate TBI, which in turn were higher than the ratings by the mild TBI group. Mild TBI was associated with most difficulty in the area of emotional control (M=2.813; SD 0.61) while moderate and severe TBI groups reported most difficulty with cognitive activities (Moderate (M=3.208; SD 0.64) Severe (M=3.552; SD 0.83)).

Hypothesis 14

> *That TBI self ratings on items 6,9,16,17,20,23, 24,27,28, and 29 will be significantly higher than their informant ratings (now).*

This hypothesis was only partially supported. As predicted, TBI self ratings were higher than their informants ratings on items 6,17,23, and 27. However, TBI self ratings were lower than their informants' ratings on items 24,28, and 29 and in agreement with informants' ratings on items 9,16, and 20.

Table 7.2 lists the items of the PCRS that were expected to demonstrate TBI subjects' underestimation of areas of difficulty and the results of the present study.

TABLE 7.2

PCRS ITEMS PREDICTED TO DISPLAY TBI SUBJECTS' UNDERESTIMATION OF DIFFICULTIES COMPARED TO INFORMANTS' RATINGS.

ITEM #	CONTENT	SUBJECT/INFORMANT
6	Taking care of finances	S>I
9	Staying involved in activities	*
16	Adjusting to change	*
17	Handling arguments	S>I
20	Acting appropriately	*
23	Recognising when I upset...	S>I
24	Scheduling daily activities	S<I
27	Controlling my temper	S>I
28	Keeping from being depressed	S<I
29	Keeping emotions from affect..	S<I

* Agreement between subject and informant ratings in the present study

Hypothesis 15

That TBI self ratings on items 1,2,3,4,5,11,19, and 30 will be in agreement with their informant ratings (now).

Again, this hypothesis was only partially supported. TBI self ratings were in agreement with informants ratings on only one item (item 1). Compared to their informants, TBI subjects reported less competency on items 3,16,19, and 30 and greater competency on items 2,4, and 5. A list of the eight PCRS items predicted to demonstrate agreement between

TBI self and informant ratings and the results of the present study are shown in Table 7.3.

TABLE 7.3

PCRS ITEMS PREDICTED TO DISPLAY TBI SELF AND INFORMANT AGREEMENT

ITEM #	CONTENT	SUBJECT/INFORMANT
1	Preparing meals	*
2	Dressing self	S>I
3	Care of personal hygiene	S<I
4	Washing dishes	S>I
5	Doing laundry	S>I
11	Remembering names	S<I
19	Controlling crying	S<I
30	Controlling laughter	S<I

* Agreement between subject and informant ratings in the present study

A summary of the findings for group comparisons is shown in Table 7.4.

TABLE 7.4

SUMMARY

A COMPARISON OF GROUP RATINGS

HYPO.	COMPARISON	GROUP REPORTING SIGNIFICANTLY GREATER COMPETENCY			
		ADL	EMOT	COGN	INTER
1	TBI(BEF)/CONT	*	TBI	*	TBI
2	MILD/MOD/SEV(BEF)	MOD	MILD	*	SEV
3	TBI(BEF)/CONT (INFORMANTS)	CONT	TBI	TBI	TBI
4	TBI(BEF)/INF(BEF)	*	INF	INF	INF
5	CONT/INF	*	INF	INF	INF
6	TBI(BEF)/TBI(NOW)	BEF	BEF	BEF	BEF
7	TBI(NOW)/CONT	CONT	CONT	CONT	CONT
8	TBI(NOW)/INF(NOW)	TBI	INF	INF	*
9	INF(BEF)/INF(NOW)	BEF	BEF	BEF	BEF
10	TBI(NOW)/CONT (INFORMANTS)	CONT	CONT	CONT	CONT
11	MILD/MOD/SEV(NOW) (INFORMANTS)	MOD	MOD	MOD	MOD
12	MILD(NOW)/INF	*	*	*	INF
	MOD(NOW)/INF	*	*	INF	INF
	SEV(NOW)/INF	SEV	*	SEV	*
13	MILD/MOD/SEV(NOW)	SEV	SEV	SEV	SEV

* No significant difference

CHAPTER EIGHT

DISCUSSION

Overall, the TBI group in the present study was representative of the moderate to severely injured TBI population and those with mild TBI who have problems sufficiently severe to warrant neuropsychological intervention. However, the sample may have been under-representative of those with mild head injuries as many of these individuals do not seek treatment.

The demographic characteristics of TBI subjects were similar to those in previous TBI research. Gender ratios obtained (75.5% male; 24.5% female) were consistent with figures indicating that males account for two-thirds or more of all TBI cases (Gronwall et al, 1990). In contrast, the control group contained a more even ratio of males (57.3%) to females (42.7%).

For the present study it was important to match TBI and control groups for age, especially given the high incidence of head injuries occurring in the fifteen to fifty age range. The mean and median age similarities between groups suggests this was largely achieved. The mean age of 32.23 for TBI subjects is a little higher than anticipated and somewhat deceptive since this reflects subjects' ages at the time of testing rather than at the time of their accident. The average period between TBI event and when the PCRS was administered was 39.10 months (3.3 years)

although due to the presence of outlier's in the sample, the median period of 26.00 months (2.2 years) is probably more representative of the true mean period since injury.

The mean years of post-primary education amongst TBI individuals was 3.89 years compared to 5.04 years in the control group. While it would have been preferable to have obtained a matched control group, it might be argued that if anything, with higher education, the control group could be expected to perform equal to or higher than TBI subjects.

8.1. CONTROL GROUP COMPETENCY

Self and informant levels of current competency have not been previously reported for the PCRS by non head injured subjects. In the present study, it appeared that the control group acknowledged some difficulty in all areas, with most difficulty in the emotional area, followed by interpersonal, cognitive and ADL.

Informants ratings were higher (indicating less difficulty) than subjects themselves in all four areas. Since the control informants knew those they were rating equally as well as the TBI informants knew the TBI subjects, it became clear that the same trend might occur when TBI results were compared.

When this comparison was made, this was indeed the case with TBI informants ratings of TBI subjects significantly higher in the areas of emotional control, interpersonal skill, and cognitive ability prior to their injury than

the TBI subjects rated themselves. In fact, contrary to expectations, significant differences between informant and TBI subject reports were more common in ratings for "before" head injury than for after.

8.2. TBI AND CONTROL COMPARISONS OF COMPETENCY RATINGS.

No significant differences in TBI "before" and control group ratings of competency were expected, as prior to their injury, TBI subjects should have been equally as competent as control subjects in all four areas assessed by the PCRS. However, the finding that control subjects reported less competence in the areas of emotional control and cognitive ability was surprising, especially since control subjects reported a higher mean number of years of education.

A possible explanation for this finding is that TBI subjects may have overestimated their premorbid level of functioning in these two areas, perhaps due to the effect of forgetting over time. However, informants of TBI subjects also reported higher levels of premorbid emotional control and cognitive ability than informants rated for control subjects. Perhaps the explanation is that TBI subjects and their informants both forget overtime, ie. the outcomes of TBI somehow alter the perception of pre-morbid ability. The effect of this over-estimation is to increase the significance of difference between before and after ratings of TBI subjects and their informants. If it is accepted that ratings about the competency of TBI subjects before injury are inflated, then a more valid method for

determining the extent of change as a result of TBI may be to compare TBI now with control now. This would eliminate the possibility of distortion as well as the experience of TBI.

It has always been the intention to make this comparison. It had been hypothesised that there would be no significant difference between TBI subjects "now" ratings and control subjects ratings, as earlier studies have demonstrated that individuals with TBI lack an awareness of their limitations after injury. However as this hypothesis was rejected for all four areas of the PCRS it is appropriate to use control subjects' ratings as the comparison point for determining the degree of change since TBI. This comparison suggested that TBI subjects report deterioration in all areas since injury, especially with cognitive ability, followed by ADL, interpersonal skill and emotional control. Both groups reported being most competent in the area of ADL and least competent with emotional control.

8.3. TBI AND INFORMANT COMPARISONS OF COMPETENCY RATINGS.

It is generally accepted that informants ratings of functional status tend to be more accurate than ratings by head injured individuals (Heaton & Pendleton, 1981). A head injury often diminishes the capacity for awareness, affecting the accuracy of self-reports. Studies have shown that TBI subjects often do not accept their injury or any difficulties that have arisen as a result of the injury (Goldstein and McCue, 1995). Therefore, TBI individuals ratings on the PCRS correspond to perceived competence, not necessarily actual competence (Prigatano & Altman, 1991).

Earlier studies have reported that TBI individuals may have good awareness of some behavioural limitations, whilst relatively impaired awareness of others (Prigatano et al., 1990). This finding emphasises the importance of assessing a variety of behavioural skills when estimating impaired awareness of behavioural limitations after TBI (Prigatano & Altman, 1991).

A recent study of the PCRS by Prigatano et al. (1990) identified areas of potential agreement and disagreement between TBI individuals and their informants perceptions of behavioural competencies. Based on the findings of this study, it was expected that head injured subjects in the present study would reliably rate items assessing emotional control, interpersonal skills and cognitive ability in a manner suggestive of their underestimating behavioural limitations whilst, their judgements concerning activities of daily living (ADL) would be in agreement with informants ratings. Contrary to expectation, the only area in which there was a significant difference between TBI self and informant ratings was in the area of cognitive ability. Totally contrary to the prediction, informant ratings were higher than TBI self ratings in this area. In particular, informants rated TBI subjects to be more competent with "remembering the names of people they see often" (item 11), "remembering important things they must do" (item 13), and "scheduling daily activities" (item 24). It would appear therefore, that the TBI subjects in the present study demonstrated a high level of awareness of their behavioural limitations in the areas of ADL, social interactions, and emotional control.

8.4. COMPARISON OF "NOW" AND "BEFORE" RATINGS.

Given the findings above indicating high levels of self awareness, it was not surprising that the prediction of no difference in before and after TBI self ratings would not hold. TBI subjects reported being significantly less competent in all four areas assessed by the PCRS since their head injury. Whereas earlier research has indicated that individuals with TBI often report no differences in competency as a result of their injury, TBI subjects in the present study demonstrated an awareness of behavioural limitations arising since their injury. The accuracy of their perceptions is difficult to gauge without comparing TBI self ratings with the more objective reports of their informants. Informant ratings of head injured individuals are important because they often provide the best source of information regarding an individual's premorbid level of functioning.

As expected, the results of the present study demonstrate that according to their informants, TBI subjects are significantly less competent now, compared to before their head injury in all four areas of competency assessed by the PCRS. Most notably, informants report head injury to have the greatest effect on cognitive ability. In particular, tasks that involve memory skills such as "remembering their daily schedule" (item 12) and "remembering important things they must do" (item 13).

Difficulty with memory is one of the most common cognitive problems reported by both individuals with TBI and their informants (Schwartz & McMillan, 1989). Unfortunately, traditional memory tests are of limited use when evaluating

difficulties that TBI individuals have with everyday memory. In comparison, self-report measures such as the PCRS often allow for greater insight into real-life memory difficulties because they give information regarding everyday memory activities, such as remembering his/her daily schedule, remembering the names of familiar people and other memory requirements of everyday life (Schwartz & McMillan, 1989).

8.5. COMPARISON OF MILD, MODERATE AND SEVERE TBI SUBJECTS COMPETENCY RATINGS.

It was expected that there would be no significant differences in the reports of competency before their injury based on the notion that there would be no variable distinguishing mild, moderate or severe TBI individuals prior to their injury. The finding that individuals in the moderate TBI group reported significantly less competency in the area of interpersonal skills was unexpected. One possible explanation for this result is that moderate TBI individuals in the present study underestimated their level of interpersonal skills prior to their injury due to a poor awareness of the effects of their head injury on current functioning. However, this explanation is unlikely for three reasons. First, moderate TBI individuals reported significantly less competence in this area now, compared to before their injury, indicating that they have an awareness of the effects of their injury on interpersonal functioning. The second reason that this is an unlikely explanation is that moderate TBI participants would have reported significantly less competency on all four areas assessed by the PCRS. Finally, if this was the most

probable explanation, it would stand to reason that individuals in the severe TBI group would report a level of competence prior to injury significantly different to the reports of the mild and moderate groups as it has already been demonstrated that severe TBI participants have less awareness of the effects of their injury on their level of competency. A more likely explanation for this finding is that subjects in the moderate TBI group may have actually had less interpersonal skills than subjects in the mild and severe TBI groups prior to their injury.

It has been suggested that self-ratings of functioning may vary according to the severity of trauma (Allen & Ruff, 1990). As expected, the present study demonstrated significant differences in the ratings of all three of the severity groups. Mild TBI subjects reported significantly less competency in all four areas assessed by the PCRS. This finding may indicate that subjects in this group are underestimating their level of competency. A more likely explanation is that individuals with a mild head injury have a greater awareness of their limitations and therefore rate the items on the PCRS more accurately.

Subjects in the severe group reported significantly greater competence in all four areas compared to the mild and moderate groups. Due to the nature of their injuries, it is unlikely that they are more competent than individuals with mild or moderate injuries. A more likely explanation for the findings is that the self-reports of severely injured subjects are less accurate than those of the mild and moderate groups due to deficits in self-awareness related to decrements in attention, memory, and logical thinking (Allen & Ruff, 1990).

Hence,it was expected that informants of the severe TBI group would report less competence than informants of the moderate and mild groups. Findings of the present study however, did not support this hypothesis. Rather, just as the mild TBI subjects reported being less competent than subjects in both the moderate or severe TBI groups, so did their informants. A possible explanation for this unexpected finding is that individuals in the present study who are defined as mildly head injured (those that had experienced PTA of less than one hour) may have suffered quite severe outcomes due to secondary injuries. Hence, distinctions between mild, moderate and severe, may not always be definitive (Grimmer, 1994).

Chronicity of TBI has also been found to influence level of functioning. Time since injury needs to be taken into account when analyzing head injury data as time often reflects recovery (Long & Ross, 1992). A second possible explanation for this finding is that informants rated subjects with mild TBI much more recently after the head injury than the informants of the moderate or severe head injured subjects.

CONCLUSIONS

Many of the findings of the present study are in contrast to earlier research findings on the PCRS and with what might be expected according to clinical lore. In fact, the finding that informants rated head injured subjects as less competent "now" compared to "before" was the only finding of the present study consistent with earlier research.

TBI subjects rated themselves as significantly less competent "now" compared to "before", indicating an awareness of the difficulties they now experience, although the degree of awareness was dependent on the severity of injury. Individuals with severe TBI tended to be unaware and overestimated their competency, whilst those with moderate and mild injuries were either aware of their deficits or overestimated/exaggerated them.

Most difficulty after TBI was reported in the self and informant ratings of the mild group, which is contrary to the expectation of a positive correlation between difficulty and severity. This could mean that some individuals are malingering. It may also mean that some subjects in the mild TBI group are experiencing difficulty that is disproportional to their head injury and lends support to earlier research suggesting that PTA is not a satisfactory measure of severity. This finding suggests a need for further research on the effects of "mild" TBI on everyday functioning.

The foregoing conclusions are based on the premise that ratings of informants are the most reliable. However, the finding that control subject ratings differed significantly

from their informants' ratings questions the validity of this assumption. Were control subjects underestimating their level of competency or was it that informants were overestimating subjects' ability? Further research on the validity of control informant ratings is needed.

TBI subject ratings and those of their informants are only perceptions of competency and further studies are needed to determine to what degree their "perceptions" correlate with actual behaviours. A comparison of the PCRS ratings of TBI informants to traditional neuropsychological test scores would assist in gauging the validity of TBI informant ratings.

Finally, although subjects in the control group reported having "some difficulty" with emotional control, it can be concluded that items that stand out on the PCRS were those that were not typically rated as being difficult by control subjects. This finding supports the continued use of the PCRS as a measure of everyday functioning after TBI. Even in the area of ADL where there was less change, there were items that TBI subjects rated as more difficult since their injury. This supports the inclusion of items pertaining to this area of competency.

Finally when "before" and "after" ratings are gathered from head injured individuals and their informants, the PCRS is a useful tool for defining and measuring alterations of awareness and assessing the actual effects of head injury on everyday functioning.

REFERENCES

Acimovic, C.C., Lemmon, J., & Keatley, M. (1993). The importance of qualitative indicators in the assessment of mild brain injury. *Journal of Cognitive Rehabilitation, Nov,* 8-14.

Allen, C.C. & Ruff, R.M. (1990). Self-rating versus neuropsychological performance of moderate versus severe head-injured patients. *Brain Injury, 4,* 7-17.

Accident Compensation Corporation (1992). *ACC Injury Statistics, Vehicle. Vol 4.* Wellington: Accident Compensation Corporation.

Bennett-Levy, J. & Powell, G.E. (1980). The Subjective Memory Questionnaire (SMQ). An investigation into the self-reporting of "real life" memory skills. *British Journal of Social Clinical Psychology, 19,* 177-188.

Berg, I.J., Koning-Haanstra, M., & Deelman, B.G. (1991). Long-term effects of memory rehabilitation: A controlled study. *Neuropsychological Rehabilitation,* 2, 97-111.

Binder, L.M. (1990). Malingering following minor head trauma. *The Clinical Neuropsychologist,* 4, 25-36.

Bishara, S.N., Partridge, F.M., Godfrey, P.D.,& Knight, R.G. (1992). Post-traumatic amnesia and Glascow Coma Scale related to outcome in survivors in a consecutive series of patients with severe closed head injuries. *Brain Injury,* 6, 373-380.

Boller, K., Lindgren, K.N., Bonaccrosy, C., & Beecker, M.L (1991). Memory complaints in older adults: Fact or fiction? *Archives of Neurology, 48*, 61-64.

Bond, M. (1984). The psychiatry of closed head injury. In N. Brooks (Ed), *Closed head injury*. Oxford: Oxford University Press.

Bond, M.R. (1986). Neurobehavioral sequelae of closed head injury. In I. Grant & K. Adams (Eds.), *Neuropsychological assessment of neuropsychiatric disorders*. Oxford: Oxford University Press.

Brooks, N. (1984). *Closed head injury*. Oxford: Oxford University Press.

Department of Health (1992). *1991 Hospital and Selected Morbidity Data*. Wellington: Author.

Duckett, S. & Duckett, S. (1993). The neuropathology of the minor head injury syndrome. In S. Mandel, R.T. Sataloff, and S.R. Schapiro (Eds.), *Minor head trauma. Assessment, management, and rehabilitation*. New York: Springer-Verlag.

Gianutsos, R. (1992). *Cognitive retraining*. Paper presented at the Palmerston North Hospital Rehabilitation Unit, Palmerston North, New Zealand.

Gilewski, M.J. & Zelinski, E.M. (1986). Questionnaire assessment of memory complaints. In L.W. Poon (Ed.), *Handbook for clinical memory assessment of older adults*. Washington DC: American Psychological Association.

Goldstein, G. & McCue, M. (1995). Differences between patient and informant functional outcome ratings in head injured individuals. *Journal of Rehabilitation and Health, 1*, 25-35.

Grant, I. & Adams, K. (1986). *Neuropsychological assessment of neuropsychiatric disorders*. Oxford: Oxford University Press.

Grimmer, B.T. (1994). *Performance and effectiveness of strategy use on the Rey Auditory Verbal Learning Test after traumatic brain injury and in a control population*. Unpublished master's thesis, Massey University, New Zealand.

Gronwall, D. (1989). Behavioral assessment during the acute stages of traumatic brain injury. In M.D Lezak. *Assessment of the behavioral consequences of head trauma*. New York: Alan R Liss, Inc.

Gronwall, D. (1989). Cumulative and persisting effects of concussion on attention and cognition. In H.S. Levin. H.M. Eisenberg, and A.L. Benton (Eds.). *Mild head injury*. New York: Oxford University Press.

Gronwall, D., Wrightson, P., & Waddell, P. (1990). *Head injury: The facts*. New York: Oxford.

Grouvier, W.D., Cubie, B., Jones, G., Brantley, P. & Cutlip, Q. (1992). Postconcussive symptoms and daily stress in normal and head injured college population's. *Archives of Clinical Neuropsychology*, 7, 193-201.

Hayes, J.S., Martin, R., Smiroldo, B.B., Stafford, C. & Grouvier, W.D. (1994). *Influences of prior knowledge on the ability to feign mild head injury symptoms in head injured and non head injured college students*. Paper presented at the 14th Annual Conference of the National Academy of Neuropsychology. Orlando, Florida.

Heaton, R.K. & Pendleton, M.G. (1981). Use of neuropsychological tests to predict adult patients' everyday functioning. *Journal of Consulting and Clinical Psychology, 49,* 807-821.

Heilbronner, R.L., Millsaps, C., Azrin, R. & Mittenberg, W. (1993). Psychometric properties of the Patient Competency Rating Scale. *Journal of Clinical and Experimental Neuropsychology, 15,* 67-68.

Kampen, D.L. & Grafman, J. (1989). Neuropsychological evaluation of penetrating head injury. In M.D. Lezak. *Assessment of the behavioral consequences of head trauma.* New York: Alan R. Liss, Inc.

Karol, R.L. (1989). Duration of seeking help following TBI: The persistence of symptom complaints. *The Clinical Neuropsychologist, 3,* 244-249.

Kay, T. & Silver, S.M. (1989). Closed head trauma: Assessment for rehabilitation. In M.D. Lezak. *Assessment of the behavioral consequences of head trauma.* New York: Alan R. Liss, Inc.

Kolb, B. & Whishaw, I.Q. (1990). *Fundamentals of human neuropsychology* (3rd ed.). New York: W.H. Freeman and Company.

Lezak, M.D. (1983). *Neuropsychological assessment* (2nd ed). New York: Oxford University Press.

Lezak, M.D. (1989). *Assessment of the behavioral consequences of head trauma*. New York: Alan R Liss, Inc.

Little, N. (1993). Emergency management of head injury. In S. Mandel, R.T. Sataloff and S.R. Schapiro (Eds.), *Minor head trauma. Assessment, management and rehabilitation*. New York: Springer-Verlag.

Long, C.J. & Schmitter, M.E. (1992). Cognitive sequelae In closed head injury. In C.J. Long and L.K. Ross (Eds.), *Handbook of head trauma: Acute care to recovery*. New York: Plenum Press.

Mandel, S., Sataloff, R.T. & Schapiro, S.R. (Eds.) (1993). *Minor head trauma. Assessment, management and rehabilitation*. New York: Springer-Verlag.

Mandleberg, I.A. & Brooks, D.N. (1975). Cognitive recovery after severe head injury: Serial testing on the Wechsler Adult Intelligence Scale. *Journal of Neurology, Neurosurgery and Psychiatry, 38,* 1121-1126.

Marshall, R.C. (1989). Evaluation of communication deficits of closed head injury patients. In M.D. Lezak, *Assessment of the behavioral consequences of head trauma*. New York: Alan R. Liss, Inc.

McDonald, S. (1992). Communication disorders following closed head injury: new approaches to assessment and rehabilitation. *Brain Injury, 6,* 283-292.

Mittenberg, W., Azrin, R., Millsaps, C. & Heilbronner, R. (1993). Identification of malingered head injury on the Wechsler Memory Scale - Revised. *Psychological Assessment, 5,* 34-40.

Morse, P.A., & Montgomery, C.E. (1992). Neuropsych *ological evaluation of traumatic brain injury.* In R.F. White, Clinical syndromes in adult neuropsychology, New York: Elsevier Science.

New Zealand Head Injury Society Inc. (1993). *Head injury, the silent epidemic. Research into the needs of New Zealand individuals and families effected by head injury.* New Zealand Head Injury Society: Wellington.

Pang, D. (1989). Physics and pathophysiology of closed head injury. In M.D. Lezak, *Assessment of the behavioral consequences of head trauma.* New York: Alan R. Liss, Inc.

Pankratz, L. (1988). Malingering on intellectual and neuropsychological measures. In R. Rogers (Ed.), *Clinical assessment of malingering and deception.* New York: Guilford Press.

Parker, R.S. (1990). *Traumatic brain injury and neuropsychological impairment: sensorimotor, cognitive, emotional, and adaptive problems of children and adults.* New York: Springer-Verlag.

Prigatano, G.P. & Altman, I.M. (1991). Impaired awareness of behavioral limitations after traumatic brain injury. *BNI Quarterly,* 7, 17-23.

Prigatano, G.P., Altman, I.M. & O'Brien, K.P. (1990). Behavioral limitations that traumatic brain injured patients tend to underestimate. *The Clinical Neuropsychologist,* 4, 163-176.

Prigatano, G.P., Fordyce, D., Zeiner, H., Roucehe, J., Pepping, M., & Wood, B. (1986). *Neuropsychological rehabilitation after brain injury.* Baltimore, MD: John Hopkins University Press.

Prigatano, G.P. and O'Brien, K.P. (1991). Awareness of deficit in patients with frontal and parietal lesions: two case reports. *BNI Quarterly, 7,* 17-23.

Ranseen, J.D., Bohaska, L.A. & Schmitt, F.A. (1990). An investigation of anosognosia following traumatic head injury. *International Journal of Clinical Neuropsychology, 12,* 29-36.

Rawling, P.J. & Brooks, D.N. (1990). The Simulation Index:A method of detecting factitious errors on the WAIS-R and WMS. *Neuropsychology, 4,* 223-238.

Rogers, R. (1988). *Clinical assessment of malingering and deception.* New York: Guilford Press.

Rogers, R., Harrell, E.H. & Liff, C.D. (1993). Feigning neuropsychological impairment: A critical review of methodological and clinical considerations. *Clinical Psychology Review, 13,* 255-274.

Ruff, R.M., Levin, H.S. & Marshall, L.F. (1986). Neurobehavioral methods of assessment and the study of outcome in minor head injury. *The Journal of Head Trauma Rehabilitation, 1,* 43-52.

Ruff, R.M. & Wylie, T. (1987). *San Diego Neuropsychological Test Battery: Manual.* San Diego: University of California.

Schwartz, A.F. & McMilla, T.M. (1989). Assessment of everyday memory after severe head injury. *Cortex, 25,* 665-667.

Seidenberg, M., Taylor, M.A., & Haltiner, A. (1994). Personality and self-report of cognitive functioning. *Archives of Clinical Neuropsychology, 9,* 353-361.

Squire, L.R. (1989) *Memory and brain*. New York: Oxford University Press.

Stern, J.M., Melamed, S. & Silber, S. (1985). Behavioral disturbances as an expression of severity of cerebral damage. *Scandinavian Journal of Rehabilitative Medicine, 12,* 36-41.

Stuss, D.T. (1987). Contributions of frontal lobe injury to cognitive impairment after closed head injury: Methods of assessment and recent findings. In H.S. Levin, J. Grafman, and H.M. Eisenberg (Eds.), *Neurobehavioral recovery from head injury*. New York: Oxford University Press.

Sunderland, A., Harris, J.E. & Baddeley, A.D. (1983). Do laboratory tests predict everyday memory? A neuropsychological study. *Journal of Verbal Learning and Verbal Behaviour, 22,* 341-357.

Trueblood, W. & Schmidt, M. (1993). Malingering and other validity considerations in the neuropsychological evaluation of mild head injury. *Journal of Clinical and Experimental Neuropsychology, 15,* 578-590.

Van Horn, K.R., Levine, M.J., & Curtis, C.L. (1992). Developmental levels of social cognition in head injury patients. *Brain Injury, 16,* 15-28.

Wiggins, E.C. & Brandt, J. (1988). The detection of simulated amnesia. *Law and Human Behaviour, 12,* 57-78.

Zelinski, E.M., Gilewski, M.J. & Anthony-Berstone, C.R. (1990). Memory Functioning Questionnaire: Concurrent validity with memory performance and self-reported memory failures. *Psychology and Ageing, 5,* 388-399.

APPENDICES

APPENDIX A

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 909
Facsimile +64-6-350 567

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

PATIENT COMPETENCY RATING SCALE

(Patient's Form)

Identifying Information

Name: _____

Age: _____ Date: _____

Instructions

The following is a questionnaire that asks you to judge your ability to do a variety of very practical skills. Some of the questions may not apply directly to things you often do, but you are asked to complete each question as if it were something you "had to do." On each question, you should judge how easy or difficult a particular activity is for you and circle the appropriate number.

1	2	3	4	5
Can't do	Very difficult to do	Can do with some difficulty	Fairly easy to do	Can do with ease

1. How much of a problem do I have in preparing my own meals?

   1 2 3 4 5

2. How much of a problem do I have in dressing myself?

   1 2 3 4 5

3. How much of a problem do I have in taking care of my personal hygiene?

   1 2 3 4 5

4. How much of a problem do I have in washing the dishes?

   1 2 3 4 5

5. How much of a problem do I have in doing the laundry?

1 2 3 4 5

6. How much of a problem do I have in taking care of my finances?

1 2 3 4 5

7. How much of a problem do I have in keeping appoint ments on time?

1 2 3 4 5

8. How much of a problem do I have in starting conversation in a group?

1 2 3 4 5

9. How much of a problem do I have in staying involved in work activities even when bored or tired?

1 2 3 4 5

10. How much of a problem do I have in remembering what I had for dinner last night?

1 2 3 4 5

11. How much of a problem do I have in remembering names of people I see often?

1 2 3 4 5

12. How much of a problem do I have in remembering my daily schedule?

1 2 3 4 5

13. How much of a problem do I have in remembering important things I must do?

1 2 3 4 5

14. How much of a problem would I have driving a car if I had to?

1 2 3 4 5

15. How much of a problem do I have in getting help when I'm confused?

1 2 3 4 5

16. How much of a problem do I have in adjusting to unexpected changes?

1 2 3 4 5

17. How much of a problem do I have in handling arguments with people I know well?

1 2 3 4 5

18. How much of a problem do I have in accepting criticism from other people?

1 2 3 4 5

19. How much of a problem do I have in controlling crying?

1 2 3 4 5

20. How much of a problem do I have in acting appropriately when I'm around friends?

1 2 3 4 5

21. How much of a problem do I have in showing affection to people?

1 2 3 4 5

22. How much of a problem do I have in participating in group activities?

1 2 3 4 5

23. How much of a problem do I have in recognizing when something I say or do has upset someone else?

1 2 3 4 5

24. How much of a problem do I have in scheduling daily activities?

1 2 3 4 5

25. How much of a problem do I have in understanding new instructions?

1 2 3 4 5

26. How much of a problem do I have in consistently meeting my daily responsibilities?

1 2 3 4 5

27. How much of a problem do I have in controlling my temper when something upsets me?

1 2 3 4 5

28. How much of a problem do I have in keeping from being depressed?

1 2 3 4 5

29. How much of a problem do I have in keeping my emotions from affecting my ability to go about the day's activities?

1 2 3 4 5

30. How much of a problem do I have in controlling my laughter?

1 2 3 4 5

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 9099
Facsimile +64-6-350 5673

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

APPENDIX B

PATIENT COMPETENCY RATING SCALE
(Informant's Version)

Identifying Information

Patient's initials _____

What is your relationship to the person you are rating?

_____

How well do you know the person you are rating? (Please circle) 1 2 3 4 5

Hardly At All	Not So Well	Fairly Well	Pretty Well	Very Well

Instructions

The following is a questionnaire that asks you to judge this person's ability to do a variety of very practical skills. Some of the questions may not apply directly to things he/she often does, but you are asked to complete each question as if it were something he/she "had to do." On each question, you should judge how easy or difficult a particular activity is for him/her and circle the appropriate number.

1	2	3	4	5
Can't do	Very difficult to do	Can do with some difficulty	Fairly easy to do	Can do with ease

1. How much of a problem do they have in preparing their own meals?

   1 2 3 4 5

2. How much of a problem do they have in dressing themselves?

   1 2 3 4 5

3. How much of a problem do they have in taking care of their personal hygiene?

1 2 3 4 5

4. How much of a problem do they have in washing the dishes?

1 2 3 4 5

5. How much of a problem do they have in doing the laundry?

1 2 3 4 5

6. How much of a problem do they have in taking care of my finances?

1 2 3 4 5

7. How much of a problem do they have in keeping appoint ments on time?

1 2 3 4 5

8. How much of a problem do they have in starting conversation in a group?

1 2 3 4 5

9. How much of a problem do they have in staying involved in work activities even when bored or tired?

1 2 3 4 5

10. How much of a problem do they have in remembering what they had for dinner last night?

1 2 3 4 5

11. How much of a problem do they have in remembering names of people they see often?

1 2 3 4 5

12. How much of a problem do they have in remembering their daily schedule?

1 2 3 4 5

13. How much of a problem do they have in remembering important things they must do?

1 2 3 4 5

14. How much of a problem would they have driving a car if they had to?

1 2 3 4 5

15. How much of a problem do they have in getting help when they are confused?

1 2 3 4 5

16. How much of a problem do they have in adjusting to unexpected changes?

1 2 3 4 5

17. How much of a problem do they have in handling arguments with people they know well?

1 2 3 4 5

18. How much of a problem do they have in accepting criticism from other people?

1 2 3 4 5

19. How much of a problem do they have in controlling crying?

1 2 3 4 5

20. How much of a problem do they have in acting appropriately when they are around friends?

1 2 3 4 5

21. How much of a problem do they have in showing affection to people?

1 2 3 4 5

22. How much of a problem do they have in participating in group activities?

1 2 3 4 5

23. How much of a problem do they have in recognizing when something they say or do has upset someone else?

1 2 3 4 5

24. How much of a problem do they have in scheduling daily activities?

1 2 3 4 5

25. How much of a problem do they have in understanding new instructions?

1 2 3 4 5

26. How much of a problem do they have in consistently meeting their daily responsibilities?

1 2 3 4 5

27. How much of a problem do they have in controlling their temper when something upsets them?

1 2 3 4 5

28. How much of a problem do they have in keeping from being depressed?

1 2 3 4 5

29. How much of a problem do they have in keeping their emotions from affecting their ability to go about the day's activities?

1 2 3 4 5

30. How much of a problem do they have in controlling their laughter?

1 2 3 4 5

APPENDIX C

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 9099
Facsimile +64-6-350 5673

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

COMPETENCY ON EVERYDAY ACTIVITIES SCALE
(Subject's form)

Identifying Information

Initials: _____ Age: _____

Ethnicity: _____ Date: _____

Number of Years of Secondary Education: _____

If you have ever had a head injury briefly explain the nature of this injury or injuries_____

_____

Instructions

The following is a questionnaire that asks you to judge your ability to do a variety of very practical skills. Some of the questions may not apply directly to things you often do, but you are asked to complete each question as if it were something you "had to do." On each question, you should judge how easy or difficult a particular activity is for you and circle the appropriate number.

1	2	3	4	5
Can't do	Very difficult to do	Can do with some difficulty	Fairly easy to do	Can do with ease

1. How much of a problem do I have in preparing my own meals?

   1 2 3 4 5

2. How much of a problem do I have in dressing myself?

   1 2 3 4 5

3. How much of a problem do I have in taking care of my personal hygiene?

   1 2 3 4 5

4. How much of a problem do I have in washing the dishes?

1 2 3 4 5

5. How much of a problem do I have in doing the laundry?

1 2 3 4 5

6. How much of a problem do I have in taking care of my finances?

1 2 3 4 5

7. How much of a problem do I have in keeping appoint ments on time?

1 2 3 4 5

8. How much of a problem do I have in starting conversation in a group?

1 2 3 4 5

9. How much of a problem do I have in staying involved in work activities even when bored or tired?

1 2 3 4 5

10. How much of a problem do I have in remembering what I had for dinner last night?

1 2 3 4 5

11. How much of a problem do I have in remembering names of people I see often?

1 2 3 4 5

12. How much of a problem do I have in remembering my daily schedule?

1 2 3 4 5

13. How much of a problem do I have in remembering important things I must do?

1 2 3 4 5

14. How much of a problem would I have driving a car if I had to?

1 2 3 4 5

15. How much of a problem do I have in getting help when I'm confused?

1 2 3 4 5

16. How much of a problem do I have in adjusting to unexpected changes?

1 2 3 4 5

17. How much of a problem do I have in handling arguments with people I know well?

1 2 3 4 5

18. How much of a problem do I have in accepting criticism from other people?

1 2 3 4 5

19. How much of a problem do I have in controlling crying?

1 2 3 4 5

20. How much of a problem do I have in acting appropriately when I'm around friends?

1 2 3 4 5

21. How much of a problem do I have in showing affection to people?

1 2 3 4 5

22. How much of a problem do I have in participating in group activities?

1 2 3 4 5

23. How much of a problem do I have in recognizing when something I say or do has upset someone else?

1 2 3 4 5

24. How much of a problem do I have in scheduling daily activities?

1 2 3 4 5

25. How much of a problem do I have in understanding new instructions?

1 2 3 4 5

26. How much of a problem do I have in consistently meeting my daily responsibilities?

1 2 3 4 5

27. How much of a problem do I have in controlling my temper when something upsets me?

1 2 3 4 5

28. How much of a problem do I have in keeping from being depressed?

1 2 3 4 5

29. How much of a problem do I have in keeping my emotions from affecting my ability to go about the day's activities?

1 2 3 4 5

30. How much of a problem do I have in controlling my laughter?

1 2 3 4 5

APPENDIX D

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 9099
Facsimile +64-6-350 5673

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

COMPETENCY ON EVERYDAY ACTIVITIES SCALE
(Informant's Version)

Identifying Information

Initials of the person you are rating:_____

What is your relationship to the person you are rating?

_____

How well do you know the person you are rating? (Please circle) 1 2 3 4 5

Hardly At All	Not So Well	Fairly Well	Pretty Well	Very Well

Instructions

The following is a questionnaire that asks you to judge this person's ability to do a variety of very practical skills. Some of the questions may not apply directly to things he/she often does, but you are asked to complete each question as if it were something he/she "had to do." On each question, you should judge how easy or difficult a particular activity is for him/her and circle the appropriate number.

1	2	3	4	5
Can't do	Very difficult to do	Can do with some difficulty	Fairly easy to do	Can do with ease

1. How much of a problem do they have in preparing their own meals?

   1 2 3 4 5

2. How much of a problem do they have in dressing themselves?

   1 2 3 4 5

3. How much of a problem do they have in taking care of their personal hygiene?

1 2 3 4 5

4. How much of a problem do they have in washing the dishes?

1 2 3 4 5

5. How much of a problem do they have in doing the laundry?

1 2 3 4 5

6. How much of a problem do they have in taking care of my finances?

1 2 3 4 5

7. How much of a problem do they have in keeping appoint ments on time?

1 2 3 4 5

8. How much of a problem do they have in starting conversation in a group?

1 2 3 4 5

9. How much of a problem do they have in staying involved in work activities even when bored or tired?

1 2 3 4 5

10. How much of a problem do they have in remembering what they had for dinner last night?

1 2 3 4 5

11. How much of a problem do they have in remembering names of people they see often?

1 2 3 4 5

12. How much of a problem do they have in remembering their daily schedule?

1 2 3 4 5

13. How much of a problem do they have in remembering important things they must do?

1 2 3 4 5

14. How much of a problem would they have driving a car if they had to?

1 2 3 4 5

15. How much of a problem do they have in getting help when they are confused?

1 2 3 4 5

16. How much of a problem do they have in adjusting to unexpected changes?

1 2 3 4 5

17. How much of a problem do they have in handling arguments with people they know well?

1 2 3 4 5

18. How much of a problem do they have in accepting criticism from other people?

1 2 3 4 5

19. How much of a problem do they have in controlling crying?

1 2 3 4 5

20. How much of a problem do they have in acting appropriately when they are around friends?

1 2 3 4 5

21. How much of a problem do they have in showing affection to people?

1 2 3 4 5

22. How much of a problem do they have in participating in group activities?

1 2 3 4 5

23. How much of a problem do they have in recognizing when something they say or do has upset someone else?

1 2 3 4 5

24. How much of a problem do they have in scheduling daily activities?

1 2 3 4 5

25. How much of a problem do they have in understanding new instructions?

1 2 3 4 5

26. How much of a problem do they have in consistently meeting their daily responsibilities?

1 2 3 4 5

27. How much of a problem do they have in controlling their temper when something upsets them?

1 2 3 4 5

28. How much of a problem do they have in keeping from being depressed?

1 2 3 4 5

29. How much of a problem do they have in keeping their emotions from affecting their ability to go about the day's activities?

1 2 3 4 5

30. How much of a problem do they have in controlling their laughter?

1 2 3 4 5

APPENDIX E

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 909
Facsimile +64-6-350 567

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

PARTICIPANT INFORMATION SHEET

COMPETENCY ON EVERYDAY ACTIVITIES SCALE

WHAT IS THIS STUDY ABOUT?

This study is a simple technique for measuring an individuals perceived level of competence on everyday activities. This project is being conducted by Miss Latesha Murphy, a researcher in Neuropsychology and Dr. Janet Leathem, Senior Lecturer and Director of the Psychology Clinic at Massey University.

WHAT AM I REQUIRED TO DO?

If you agree to take part, you will be asked to complete the Competency On Everyday Activities Scale. This will take about 5 to 10 minutes. You will then be given an Informants version of the Competency On Everyday Activities Scale to give to an individual that you feel knows you well enough to be able to rate your competency on the same everyday activities you have rated.

WHAT CAN I EXPECT FROM THE RESEARCHERS?

If you agree to take part in the study you have the right to:

- an explanation of the nature of the study being undertaken, prior to your inclusion.
- ask any questions about the study.
- refuse to answer any particular question or to withdrawal from the study at any time.
- provide information on the understanding that it remains completely confidential to the researchers. All records will be identified only by your initials and will be seen only by the researchers. It will not be possible to identify any individual in any reports that result from the study.
- be provided with a summary of the findings from the completed study on request.

Should you wish to clarify any further issues, you are welcome to contact Dr. Leathem at the Psychology Clinic (06) 350 5196.

APPENDIX F

MASSEY
UNIVERSITY

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 9
Facsimile +64-6-350 5

FACULTY OF
SOCIAL SCIENCES

DEPARTMENT OF
PSYCHOLOGY

COMPETENCY ON EVERYDAY ACTIVITIES SCALE

PARTICIPANT CONSENT FORM

I have read the Information Sheet for this study and have been provided with an explanation of the research. My questions about the study have been answered to my satisfaction and I understand that I may ask additional questions at any time.

I also understand that I am free to decline to answer any questions in the study, or to withdrawal from the study at any time. I have been assured that any information I provide to the researchers will remain completely confidential.

I agree to participate in this study under the conditions set out on the Information Sheet.

Name:_____

Signed:_____ Date:_____

* A summary of the findings will be available at the Massey University Psychology Clinic following the completion of this research.