

AN ABSTRACT OF THE THESIS OF

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There are between one and two million occurrences of head injuries in this country each year causing an estimated 140,000 deaths. Fifty to seventy thousand who survive are left with such intellectual impairment as to preclude returning to a normal life. The purpose of this study is to investigate the effects of a multidisciplinary team approach for a brain-injured individual in the learning of alternate responses to his environment with a consequent rise in self-esteem.

A survey of the literature provided an overview of the different cognitive losses experienced by persons with severe head injury as well as patterns in behavior change. It also explored past and current rehabilitation techniques.

There was no research found that used a multidisciplinary team approach to a single subject study. There was a scant amount of material involving the loss of self-esteem due to brain injury.

Participating professionals from a state hospital brain trauma rehabilitation unit formed a multidisciplinary team to evaluate, plan and provide treatment for a head trauma victim. The primary purpose was to measure the difference in self-esteem. Other deficit areas of impaired speech, memory loss, gait disturbance and loss of self-esteem were evaluated and treated.

The areas of speech and memory loss were treated with no significant improvement. The gait disturbance was not considered dysfunctional enough to treat. The patient's self-esteem reflected considerable improvement, thus the data supported the hypotheses: The subject will make gains in self-esteem, provided a multidisciplinary team approach is used.

LOSS OF SELF-ESTEEM DUE TO  
ACQUIRED BRAIN INJURY:  
A MULTIDISCIPLINARY TEAM APPROACH TO  
A SINGLE-CASE STUDY

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CHAPTER I

STATEMENT OF THE PROBLEM

The National Head Injury Foundation (NHIF) reports that trauma is the leading cause of death in the United States for persons under the age of 34. The number of deaths each year resulting from head trauma is estimated to be over 140,000. The estimated prevalence of head injuries in this country is estimated to be between one and two million occurrences. Fifty to seventy thousand people a year who survive with serious head injury are left with intellectual impairment of such a degree as to preclude their return to a normal life. The principal cause of these accidents is a combination of alcohol and motor vehicles.

The NHIF estimates the direct costs, such as hospitals, nursing homes, physician, and allied health professionals, exceed six billion dollars a year. The indirect costs, such as loss of employment, loss of output due to morbidity,

handicaps and mortality, exceed twenty-two billion dollars annually. Other costs that are not easily measured are psychological expenses, such as forced home sales, depression, divorce, loss of children and change of personality.

Almost without exception, states Corrigan (1985), severe brain trauma causes some degree of memory loss. This effects aspects of a person's daily life. Something as simple as misplacing the car or house keys will give one a feeling of how it feels to have a memory loss. For the brain-injured, this loss is multiplied many times over and contributes to disorientation to time and place and a failure to respond to environmental cues.

With memory loss comes a certain level of dysfunction, and that usually causes a personality change, which in turn causes behavioral change. Because of its dramatic effect on other aspects of a person's ability to function, memory loss is probably the most researched area in brain trauma.

Dann (1984), who suffered a brain injury, states that a change in intellectual and body image brings with it a loss of self-respect, self-esteem, and self-love. Tyerman and Humphrey (1984) relate that severe head injury is among the most devastating personal experiences imaginable. The consequences

are multi-faceted and complex because the disability may be physical, perceptual, cognitive, emotional and social. Self-esteem, while being acknowledged as an integral result of brain injury, appears to be one of the least researched areas in the field.

Patients that are more severely injured due to head trauma often undergo a personality change that requires institutionalization. Until recently, they were placed in psychiatric hospitals and wards with patients that had a smorgasbord of mental disorders. One of the marked differences in the two types of patients is that most often the brain injured person was normal prior to the injury. It has only been in the last few years that brain injured clients have been targeted with special programs to address their specific needs.

The purpose of this study is to investigate the effects of a multidisciplinary team approach for a brain injured individual in the learning of alternate responses to his environment with a consequent rise in self-esteem. A review of Psychological Abstracts and a computer search through the California State Library reflects no research on record using a multidisciplinary team in a single subject design. A limited amount of research has

been done in the area of multiple treatment in a single discipline.

Hypotheses: 1) It is anticipated that using a multidisciplinary team approach, a treatment program can be developed to help the client learn new ways to respond to his environment, while limiting his ability to manipulate staff; 2) A multidisciplinary treatment program can be developed which will at least partially restore the client's self-esteem; and 3) Approaches to treatment and results can be observed, described, and evaluated to the extent that a transferable model for multidisciplinary treatment of neurologically impaired patients can be developed.

Until 1980, the "walking wounded" were inappropriately placed in psychiatric hospitals, schools for the retarded, and nursing homes, where little training for the specific needs of the brain injured took place and rehabilitation programs were minimal. Since the public health facilities were not meeting the needs of this special group of patients, the families of the victims began to organize and bring pressure to form appropriate rehabilitation programs.

The California State Hospital system began its first Rehabilitation Program for the Neurologically Impaired (RPNI) in January of 1985.

This program was started because of years of work done by the family of a brain injured person. It is from this program that the subject of this study was chosen.

Research Design: The patient's hospital records will be reviewed to obtain as much information as possible on his prior treatment, both successful and unsuccessful. The family will be interviewed to gather history and gain insight into the patient's premorbid functioning in the anticipation that the degree of impairment caused by the accident might be gauged.

A multidisciplinary team will meet and decide how to best assess the client using standardized testing and naturalistic observation techniques. The client will be pretested, evaluated and have a treatment plan formulated. The plan will be implemented and the results evaluated with post-testing and interpretation of the observation charts. The results will be used to plan for future treatment for this client and other clients with similar impairments.

## JUSTIFICATION FOR THE SINGLE-CASE STUDY

The literature reflects many studies with brain-injured patients which have a small number of subjects in the study, and there are a significant number of single-case studies. No evidence has been located of research done in single-case studies using a multidisciplinary team approach.

One of the most famous cases in the literature concerning brain injury is a single-case study. It is the case of Phinias Gage, and will be discussed later.

Single-case studies are becoming more accepted and can offer contributions to the field of neuropsychology, especially in the area of rehabilitation. Persons engaged in rehabilitation are more interested in individual progress than in the group process because it is the individual who has to return home to work and cope with the consequences of the trauma. Individual differences are masked in research designs using a large number of subjects.

Wilson (1987) suggests that another complication of using group studies for the brain-injured is that neurological patients have diverse problems, such as memory loss, perceptual

difficulties, language impairment, gait disturbances and seizure disorders. Group studies tend to be carried out with homogeneous groups. In individual studies, the treatment can be tailored to an individual's particular needs and responses can be evaluated so that intervention strategies can be continuously implemented.

In his 1982 book, Kazdin states the following regarding single-case studies:

"The research has become identified with several characteristics, including the investigation of one or a few subjects. Single-case studies have been used in many areas of research, including psychology, psychiatry, education and rehabilitation. Single-case research is not new... In the late 1880's and early 1900's, most investigations in experimental psychology utilized only one or a few subjects as a basis for drawing inferences... Analyses of publication in psychological journals have shown that from the beginning of the 1900's through the 1920's and 1930's research with very small samples (e.g. one to five subjects) was the rule rather than the exception... In the 1950's and 1960's, the experimental analysis of behavior and intrasubject or single-case designs became identified with operant conditioning research."

As mentioned earlier, the practice of treating brain injured patients apart from persons with psychiatric disorders is relatively new. The program from which the subject of this study was chosen is only three years old. The patients in this program have injuries sustained mostly from automobile accidents, but also include patients with



damage from disease and drug abuse. Because the population is institutionalized in a state hospital, getting permission to use them in a study encounters a host of legal hurdles, time delays, conservator authorizations and unpredictable discharge patterns.

The subject for this study has had consistent family support and involvement. The client was selected partially because of this fact and because he has been extremely well documented since his accident. Additionally, he suffers from many of the problems indigenous to brain injury. He has a gait disturbance, poor speech habits, a memory deficit and poor self-esteem. While it is true, state Webster, McCaffrey and Scott (1986), that subjects selected for single-case studies should have as few concurrent problems as possible, it is also important that they be interesting.

Assumptions: One of the disadvantages of having the client treated in multiple areas is that if several measures should change, it would be difficult to establish which area of treatment caused the increase in self-esteem. However, because of the amount of time the subject has spent in hospitals, and the availability of members of the multidisciplinary team who are willing to be involved in this study, it was considered in the client's best

interest to target all areas of identified deficit. There is a possibility that there will be improvement because of the amount of time and energy concentrated on the patient and his desire to please the staff. If this were to happen, it would be much like the reason for the positive gains described in the Hawthorne Experiment. It may be difficult to determine if the gains are from internalized techniques or from the amount of attention the patient has received during the treatment program.

## CHAPTER II

### REVIEW OF THE LITERATURE

As mentioned earlier, no research in using a multidisciplinary team approach in single-case studies was located. Copious material is available on the losses and disabilities resulting from brain injury.

Physical disabilities are often caused by trauma to the area that is impaired, but the site may be rendered dysfunctional by damage to a certain area of the brain. Damage to the brain and the resulting cognitive losses and rehabilitation difficulties will be reviewed in this section.

Some of the most common losses caused by severe brain injury are: 1) the loss of memory, 2) diminished attention span, 3) language impairment and 4) a loss of motor coordination. A resulting loss of self-esteem is caused by the consequences of brain trauma.

This review will be confined to the known areas of impairment and rehabilitation difficulties of the subject of this study. Other areas of deficit found in this patient during the study will be addressed in the treatment program.

Memory Loss: Alberta Gilinsky (1987) states that disorders of memory may result from factors that interfere with the acquisition of new material, its retention, or its retrieval from storage. The registration of new information may take place normally, but it is forgotten rapidly and is impossible to recover. "What if," Gordon (1983) asks, "new learning could not occur?" This would be a loss of short term memory and without that, long term memory would not happen. The new information must be retained and stored so it can be retrieved days, months or even years later.

Transient amnesias, which are short lasting, are a common result of head trauma. The memory returns by degrees, sometimes quickly, sometimes not for years. Crosson and Buening (1984) relate that memory impairment depends on the site of the injury. For instance, damage to the left hemisphere would impair memory for verbally presented material and damage to the right hemisphere would cause deficits for the reception of visual, spatial and nonverbal material.

The degree of memory loss depends on the length of time the patient has been unconscious, the extent of the injury, and age at the time of the insult. Quality of recovery depends largely upon how

soon rehabilitation efforts begin after the trauma. Age strongly influences the physical and mental recovery after an injury. There is a more significant chance for better recovery for victims under twenty years of age than for those over fifty.

Memory loss due to brain injury is probably the most researched area in the field, because of the effect that memory has on all other functions in ones daily life. Zomeran and Denburg (1985), in a study of residual complaints two years after severe head trauma, related that loss of memory was the most frequent complaint in reported deficits.

Adamovich, Henderson, and Auerbach (1986) write that memory disturbances following closed head trauma are generally long lasting and patients are often left with permanent memory deficits of varying degrees for which they must learn to compensate. Compensation often depends on how well the other senses have remained intact.

Language Difficulties: According to Adamovich, Henderson and Auerbach (1986), language disturbances following closed head trauma are usually associated with reduced fluency and complex oral commands. Levin (1981) suggested that articulation and fluency problems that are most likely to occur following head trauma will include stuttering,

echolalia and dysarthria. Also due to decreased self-monitoring, the patient may exhibit an abnormally rapid rate of speaking.

Simmons (1985) defines dysarthria as the name for a group of related speech disorders that are due to disturbances in muscular control of the speech mechanism resulting from impairment of any of the basic motor processes involved in speech execution.

Sarno and Levin (1985) maintain that dysarthria is evident in defects of the acoustic aspects of speech such as articulation, resonance, stress and intonation. The problem may range in severity from mild articulatory imprecision to completely unintelligible speech. This is frequently the case when there is left hemisphere damage.

The subject of this study does not stutter and though he often repeats himself, it would not be considered echolalia. We are concerned here with the remaining nonaphasic disorder of speech, dysarthria.

The brain-injured patient often has difficulty making himself understood because of speech presentation, as well as making disjointed statements. Hill (1984) describes a patient who often did not make sense because of loose associations and being disoriented to the present. Because of learning difficulties since the accident,

the patient may feel more comfortable staying in the premorbid time frame.

Self-esteem Problems: Branden (1969) describes self-esteem as having a sense of personal worth. It is the intergrated sum of self-confidence and self-respect, and the feeling that one is competent to live and worthy of living. He goes on to state that when one has high self-esteem he feels appropriate to life while low self-esteem makes one feel inappropriate to life. Normal self-esteem vacillates between high and low.

In a study of self-concept changes following severe head injury, Tyerman and Humphrey (1984) stress the importance of self-concept change following injury. An injury to the head, by reason of the very importance of the organ, in which the ego or the center of self seems to be located, is overwhelming.

Physical disability alone has profound implications for self-concept and causes a dramatic modification of personal, work and social life. The severe head injury also includes the addition of a wide range of psychological, cognitive, emotional and social impairments. These tend to outweigh the physical, causing more distress for both the patient and the family.

The National Head Injury Foundation (NHIF) statistics show that sexual dysfunction, whether physical or emotional, is the rule rather than the exception following severe head trauma. Three out of four victims have decreased frequency of sexual relations. The loss of sexuality can often be attributed to seizures or to the medication that controls them. There is no effective method of treatment available for the problems of decreased libido related to seizures and seizure-related medication. This phenomenon alone could produce enough stress to undermine self-esteem.

Aitken (1982) suggests that denial, as a factor in self-esteem, is often used as a means for a patient to insulate himself from social devaluation. A person's sense of self-worth is diminished just by being hospitalized and being dependent on others to care for him.

Denial is common among the brain injured as the patient confidently anticipates a return to his premorbid self. Tyerman and Humphrey (1984) found that even though patients were grouped with persons of the same age and sex, and acknowledged their problems, they saw themselves well off as compared to the typical head injured person. This would indicate that they clearly retained some degree of self-esteem



as they viewed themselves as better off to some degree than their peers. It seems they try to retain their self-image by identifying with their premorbid state. This attitude is unrealistic since few will escape some degree of persistent impairment.

Dann (1984) shares her own experiences since her head injury of fifteen years ago. She states that her perception of loss has been shaped by an experience which forced her to reevaluate her definition of self. She goes on to say that with the change in intellectual and body image came a loss of self-respect, self-esteem and self-love. Her description of grief stages is very similar to those described in hospice training. Beginning with denial, followed by depression and hopefully ending with acceptance, because only after the damage is accepted can meaningful rehabilitation begin. She describes her attitude in the depression stage as one that was often a feeling of uselessness and being unworthy of life.

Dann relates that in her fourteenth year post trauma, she allowed herself to actively demonstrate her anger toward her loss. This stage of anger was followed by her acceptance, realizing that her lifestyle had drastically changed and her former goals and dreams were unrealistic.

McKay and Fanning (1987) state that self-esteem is essential for psychological survival. Without some measure of self-worth, life can be enormously painful, with many basic needs going unmet. Tyerman and Humphrey (1984) state that for the brain injured, progression towards ultimate adjustment is constrained by lack of insight and reduced intellectual capacity. The patient is rarely aware of the reduced intellectual skills and will deny any change.

Because of a loss of self-esteem, the brain injured tend to spend more time at home, have fewer friends and complain of loneliness, as observed by Newton and David (1985). The concept of adjustment involves coming to terms with one's self and his environment.

The research shows that members of the severely head-injured population are not in any sense content with their restricted lives and disabilities. In order to help the patient get over such discontent, it is essential that the exact nature of his deficiencies be identified, to the greatest extent possible, and rehabilitation strategies be implemented.

Rehabilitation Efforts: Adamovich, Henderson and Auerbach (1986) state that the duration of coma

is considered by many to be the best prognostic indicator of functional recovery. There are those who believe that severe brain injury results if the coma lasts more than six hours. Furthermore, if the patient is in coma longer than seven days, he may not recover to preinjury status, even if he is under twenty-one years of age.

Length of time in a coma is used as a gauge for the severity of injury. There are standard scales used to measure the coma intensity, the most common being the Glasgow Coma Scale (see appendix). It has five categories, ranging from good recovery potential to a persistent vegetative state.

According to Brooks and colleagues (1980), there is, in addition, a poor prognosis, particularly with reference to motor activity, for a patient experiencing intracranial mass lesions (epidural, subdural, and intracerebral hematomas and focal swelling of the brain). Particularly those that require surgical decompression and modification of the mass. Thus, the severity of the injury and the site often indicate which functions will be impaired and to what extent.

As mentioned earlier, denial is often a defense mechanism used to maintain self-esteem. Rosen (1986) suggests that this mechanism may be the

single most debilitating personality characteristic impeding successful rehabilitation. Though denial in head trauma varies in severity, it still represents the failure to accept certain events as true when logic would support acceptance.

Apparently patients tend to deny their loss of cognitive function, while acknowledging their physical impairments. They cling to the fantasy that if their physical disabilities were cured, they would be whole again.

It should be pointed out that there are two types of denial involved here. There is the denial that we all have to some degree, in that we refuse to accept facts as they are, hoping that if we ignore them long enough they will go away. Almost without exception, brain-injured patients possess this type of denial. However, Struss and Benson (1986) describe a denial that is like an unawareness, especially in patients with frontal lobe injuries. A patient may deny, for instance, that he has just done something out of the ordinary, when in fact he was witnessed doing it. They often tend to be in a "clouded" or "dreamlike" state.

If denial does not impede progress in the rehabilitation process, then it might best be left alone. Everyone needs to have hope, and it may be

this hope that motivates the patient to exert the effort needed to move toward recovery.

If denial has led the patient into the realm of unrealistic goals and expectations, then it is necessary to structure an avenue by which he can be helped to return. One of the ways determined by Carberry and Burd (1986) was psychotherapy. The therapy needs to be direct, structured and innovative. When the client is obviously having difficulty distinguishing between reality and fantasy, the therapist needs to gently but firmly guide the patient until he reaches the point where he gains the insight needed to move forward on his own.

Besides the physical rehabilitation, the other two areas of concern are behavioral and cognitive retraining. The behavioral area of treatment most often has to be dealt with first, because due to personality changes, the patient may be resistant to any cognitive change. Adamovich, Henderson and Auerbach (1986) indicate that there are a number of behaviors which are associated with head trauma and which can interfere with treatment programs. For the purpose of this paper, the list will be reduced to those relating to the subject of this study. These behaviors include: (1) personality change resulting in increased irritability; (2)

anxiety and frustration; (3) reduced self-esteem and self-confidence; (4) hyperactivity; (5) impulsivity; (6) inappropriate social judgement; (7) lack of insight; (8) confabulation; (9) perseveration; (10) fatigue; and (11) motor control difficulties. These behaviors may present themselves separately or in any combination.

Treatment Model: The most successful treatment of behavioral problems seems to be behavior modification in some form. Horton and Sautter (1986) encourage the use of Lewinsohn's four step model when doing research. Step one of this model is to make a general assessment of the patient, and to compare him to others with a similar diagnosis. Step two is to understand the patient's problems in terms of unique individual functioning. Step three is the testing of intervention for the patient's problems in a controlled environment. The last step is to translate the laboratory successes into the real world. The authors feel that the quality of incentives used in the last step often makes or breaks the success of the program.

One of the best known cases of behavioral change following a brain injury, as related by Gilinsky (1987), was the trauma suffered by Phineas Gage. He was the foreman of a construction crew, who

as a result of an explosion had a crowbar rip through the frontal lobes of his brain and out the top of his head. He survived the accident and lived for twelve years. His personality and social behavior, however, changed completely after the accident. Before the injury he had been well liked, cheerful and energetic. Afterwards he became fitful, irreverent, profane, impatient and obstinate. He could no longer be tolerated by his fellow workers and lost his job. He supported himself by traveling around the country exhibiting his crowbar and scarred forehead.

If the behavioral excesses can be controlled, the challenge of cognitive deficits remains. Since the list of cognitive deficits resulting from brain trauma is almost unending, the ones discussed here will be limited to those that affect the subject of this study.

It is essential, states Sachs (1986), that the staff have a clear concept of the course of recovery from head injury. The areas of deficit need to be identified and a treatment program that addresses these areas in a consistent way needs to be implemented. The treatment program will vary in intensity depending on the severity of the deficit.

The Acquired Brain Injury programs at Santa Rosa Community College and San Francisco City College

both use group dynamics as a means to help the brain injured support each other. These groups not only help with self-esteem issues but they allow a sharing between the group members that provides insight into the road to recovery.

For the areas of memory and attention-span rehabilitation, the microcomputer is now widely used in brain injury programs. Glisky, Schacter and Tulving (1986) indicate that patients with memory deficits of varying severity can acquire and retain forms of complex knowledge necessary for the operation of the computer. The patient can interact with the computer independently and have material repeated as many times as necessary to gain mastery. The variety of programs available, both in academic areas and in recreation, provides high interest and sequencing for self-direction.

Corrigan, Arnett, Houck and Jackson (1985) stress the importance of orientation to time and place after brain injury. The patient is quizzed on the day, date, year and the time. Time orientation aids such as calendars and clocks may be used. The reality of time and place often stops at the time of the injury.

In the area of language rehabilitation, Sarno and Leving (1985) discuss how severe head injury



frequently includes alterations in behavior and may result in a thinking disturbance that is reflected by the intrusion of irrelevant material into spontaneous speech. The patients are often disabled by a lack of insight regarding the severity of their cognitive deficits and inappropriate verbalizations. This lack of insight coupled with depression and anxiety may affect the course of speech therapy.

The speech therapy is not the responsibility of the speech therapist alone, but of all the staff and family members working with the patient. Elements of a language understanding system may include pictures, pointing, sign language as well as the spoken word.

Where possible, state Adamovich, Henderson and Auerbach (1986), the premorbid functioning levels and behaviors should be examined prior to initiating treatment. This might influence the route of treatment. The treatment should focus on changing and modifying a patient's home and community environment.

Information regarding the loss of memory, speech difficulties, and impairment of physical functioning is abundant. More sparse is the literature reflecting a loss of self-esteem due to head trauma. Two computer searches and a review of

the Psychological Abstracts failed to disclose research done in the area of a multidisciplinary team using a single subject.

The area of rehabilitation is covered extensively in journals as well as texts dealing with the subject of head trauma. Combined with the training expertise offered by each discipline involved in the study and the suggestions for assessment and rehabilitation given in the research, a direction for treatment has been established.

## CHAPTER III

### RESEARCH DESIGN

As stated in chapter one, the brain-injured population have been without adequate treatment programs until the past few years. Since the field is new, those involved in it continue to search for methods of rehabilitation that will expedite these individuals' return to as normal a life as possible. While using a multidisciplinary team approach on a single subject may seem like a costly concentration of resources, it is anticipated that this approach will offer new information in several areas at the same time. It is also expected that it will make future single-case studies beneficial in terms of rehabilitation techniques.

This particular case is unique in two respects. First, no literature was identified which reflected the use of a multidisciplinary team on a single-case study. Secondly, most single-case studies done employing a single discipline are experimental studies. This study will be descriptive, using naturalistic observation to measure behavior and behavior modification to change it.

The hypotheses are: 1) It is anticipated that using a multidisciplinary team approach, a treatment program can be developed to help the client learn new ways to respond to his environment, while limiting his ability to manipulate staff; 2) A multidisciplinary treatment program can be developed which will at least partially restore the client's self-esteem; and 3) Approaches to treatment and results can be observed, described, and evaluated to the extent that a transferable model for multidisciplinary treatment of neurologically impaired patients can be developed.

Data will be collected from current and past hospital records. The client will be interviewed as will his family. He will be tested before the treatment program and again at the end of the program. The tests to be used will be: 1) the Wechsler Memory Scale; 2) the Peabody Individual Achievement Test; 3) the Peabody Picture Vocabulary Test; 4) the Tennessee Self-Concept Scale; 5) the Frenchay Dysarthria Assessment; and 6) the Fullerton Language Test for Adolescents. Comparisons will be made with the test results. Finally, several identified behaviors will be observed and the number of occurrences recorded. The behaviors considered observable will be; 1) spitting; 2) impulsive

behaviors of touching, banging doors, etc.; 3) charging gait; 4) falling asleep; and 5) mumbling speech. Essentially, data source will be observation and discussion.

The disciplines involved and their anticipated roles are as follows:

1. Education: The teacher will evaluate the client's educational ability and his grade level placement using the Peabody Picture Vocabulary Test and the Peabody Individual Achievement Test. Additionally, he will administer the Tennessee Self-Concept Scale and the Wechsler Memory Scale. He will be one of the primary persons using behavior modification techniques to lower the number of occurrences of behavioral excesses in identified areas and will be using cognitive rehabilitation techniques to ameliorate deficits reflected in testing.

2. Speech Pathology: The speech pathologist will evaluate the client's speech patterns and deficits by using the Fullerton Language Test for Adolescents and the Frenchay Dysarthria Assessment. As a team member in this study, he will be involved in cognitive and behavioral rehabilitation and will design specific treatment in the area of speech therapy. Lastly, he will also be video taping the client in activities.

3. Occupational Therapy: The occupational therapist will evaluate the behaviors associated with physical impairments and establish a program to remediate these behaviors.

4. Vocational Rehabilitation: The vocational rehabilitation counselor will schedule the patient in appropriate work settings and supervise the progress as well as keep records for a specified time each week, recording the number of times that a targeted behavior occurred.

5. Recreational Therapy: The recreational therapist will schedule the client into selected recreational and leisure education activities as appropriate. Behavioral excess recording will be done for specified periods of time during these activities.

6. Nursing: The psychiatric technician will monitor the client's behavior in a weekly scheduled activity and record the identified behavioral excesses.

7. Psychotherapy: This person will see the patient on a weekly basis to discuss progress in the treatment program. These sessions are intended to be supportive and provide an outlet for the patient to vent his frustrations.

8. Other professionals: The psychiatrist, social worker, psychologist and nursing personnel will be available for consultation and to provide

observations, but will not be directly involved in data collection.

The data will be organized into four subsections:

1. History will be recorded from hospital records and pre-testing administered.
2. The treatment plan will be developed.
3. The actual treatment given will be described.
4. Observation of the five behavioral areas being recorded will be discussed and graphed.
5. Post-testing results will be described and graphed where appropriate.

The collected data will be analyzed by comparing the pre-testing and post-testing results on graphs. There will be no statistical treatment of the data. Webster, McCaffrey and Scott (1986) state that single-case studies provide an inexpensive, efficient means for systematic study of the interesting patient and when the design results are clear and unambiguous, graphs provide usable information without the need for statistical analysis.

## NATURALISTIC INQUIRY

Naturalistic inquiry, states Welch (1983), studies a situation without manipulation and with minimum imposition or constraints on the subject. It is grounded in the study of behavioral acts. Denzin (1971) states that the focus is on timing, sequencing and consequences of such acts or overt behaviors. To study these acts without manipulation, the process demands that the investigator take his observation to the world of the subject. In the case of this study, the world of the subject is a state hospital, which is a society in itself, with all the trappings of other institutional societies.

Experimental inquiry, offers Welch (1983), is the more common method of research and differs from naturalistic inquiry in numerous ways. Perhaps the greatest point of departure between the two approaches occurs in the inquirer's view of reality. The experimental researcher seeks to uncover a single reality, while the naturalistic inquirer accepts multiple realities which grow out of differing observer perceptions. Another area of difference is that the experimentalist uses laboratory conditions while the naturalistic observer uses the natural



setting. Differences exist also at the philosophical and operational level.

While experimental research dominates the literature, and has for the past several decades, ethnographic or naturalistic inquiry has come on the scene in recent years, more in an effort to enhance statistics rather than replace them.

Stoneman, Brody, and MacKinnon (1986) state that most of the naturalistic studies have been done in the field of anthropology, but in the field of education and psychology they are being used extensively in the area of studying children's education where behavioral excesses are often responsible for the student being flagged for services.

In observational research of subjects, there is always the possibility that the presence of an observer will influence the subject's behavior. To reduce the chance of this happening, the observers and the behavior modifiers should be different people.

The summary will discuss the findings of the study. A discussion of what seemed to work and why as well as what did not work. Suggestions for future treatment will be given.

## CHAPTER IV

### COLLECTION AND ANALYSIS OF DATA

#### CLIENT HISTORY

F.M. is the oldest of three children. His sister is two years younger and his brother is eight years his junior. His mother's pregnancy was considered normal, though labor had to be induced and instruments were necessary during the delivery.

He was born in New York and lived his first two years with an invalid grandmother who doted on him. As a two year old he would have tantrums and beat his head on the floor when told to do something that he didn't want to do.

His developmental stages were normal, with the usual childhood diseases. He did suffer from asthma.

He did not get along well with his siblings, especially his sister. They were constantly bickering. There was an absence of a big brother, little brother relationship. They were not antagonistic towards each other, there just seemed to be a lack of interest. His peer relationships were good. He had lots of friends.

The parent child relationship with F.M. was the most difficult of the three children. He was hard to handle and seemed to be totally irresponsible. Of the three children, F.M. was the only one to have corporal punishment used.

His academic performance was poor. His father felt that he should not have graduated from high school. F.M. was not involved in sports, clubs or extracurricular activities.

Passing into adolescence did not show a loss of friends, but F.M. did tend to become a bully. However, when his bluff was called, he backed down.

He pulled numerous pranks. Baby sitters seemed to be overwhelmed by his hyperactivity. Unlike his siblings, F.M. lacked having the trust of his parents. If, for instance, money were left around, he would help himself.

F.M.'s premorbid social relationships were good. He had a girlfriend at the time of his accident.

There is no history of encounters with law enforcement agencies and no history of drug abuse. He did drink some vodka on occasion, but the amount was considered insignificant. He smoked, but infrequently.

He was considered a poor driver and had a history of automobile accidents that were a result of carelessness. The night of the accident that resulted in the brain injury, he was driving home alone after working on a catering job. He lost control of his car, which was traveling a high rate of speed, and went off the road into a canal embankment. His head went through the windshield.

As a result of the accident, F.M. suffered multiple skull fractures and a left frontal hematoma. During surgery, which took place within an hour after he was found, he underwent evacuation of the hematoma and partial amputation of the left temporal lobe. In a later surgery an acrylic prothesis was placed in the temporal area to replace the amputated lobe. F.M. was 22 years old at the time of the accident; he was in a coma for at least three weeks after surgery.

Following recovery from the accident, F.M. showed a marked change in personality behavior. Movement on one side is hindered and his gait is characterized by a leaning forward and charging ahead. His moral judgement is severely impaired. For instance, he will steal whether he needs the items or not. F.M.'s speech is of such poor quality that unless he is reminded to speak slowly and

loudly, he cannot be understood. His speech before the accident was clear and his volume loud enough that he could be easily understood. He became incontinent of both urine and feces.

After the accident F.M. ran the gamut of hospital and alternative placements. He was placed in over a dozen board and care homes, half-way houses and locked facilities. All of the facilities expelled him because of his unacceptable behavior. In the two to three years of going from one placement to another, his maximum stay was six months. At this particular placement he walked into the parking lot, entered a staff member's car and totally destroyed the interior of the car. He seemed especially attracted to defacing cars and breaking off antennas.

At another placement, which required clients to be out of the house between nine a.m. and four p.m., F.M. went into the neighboring manufacturing area and broke out all the windows in one of the buildings with a stick. And at yet another placement, he was dismissed after being found in bed with a female patient.

As it became increasingly clear that community placement was not an option for F.M., he entered the state hospital system. It should be noted that when he entered that system, there was no

special program for brain injured patients. They were placed on wards with persons who were retarded and/or suffering from various mental disorders. His first hospital placement lasted two months, and he was transferred to a second because a more suitable program was found. F.M. was there approximately three months, and though it was a good program, the leaders of that program left and the program was discontinued.

F.M. was transferred to a third state hospital, but due to his behavioral excesses, he was often beaten by other patients. He was moved to yet a fourth state hospital.

His behavior did not change, thus he continued to be the object of abuse by other patients and there is some suggestion of staff abuse as well. On a visit, shortly before Christmas, his parents were so distraught over the bruises and "zombielike" behavior from overmedication, they took him out of the hospital, fearing for his safety.

After some intervention from administrative officials in the Department of Mental Health, F.M. was placed in a Clinical Research Unit (CRU) at a state hospital, with a contract that addressed protection from abuse. The contract also specified that he would receive treatment for his problems.

Upon entry into that program in 1976, his problems were described as follows:

1. Assault and property destruction, including the following behaviors:
  - a. Stealing.
  - b. Agitation of other patients until they may become hostile or violent.
  - c. Clicking door locks.
  - d. Slamming doors.
  - e. Banging doors and walls.
  - f. Setting fires by putting his ashes and lighted cigarette butts in waste baskets.
  - g. Stuffing toilets.
  - h. Spitting.
2. Inappropriate speech (low voice volume, speech rapidity, speech repetition and lewd, impolite conversation.)
3. Incontinence of urine.
4. Hypersomnia during daytime, even though extremely hyperactive when awake. Insomnia during the night.
5. Tendency toward weight loss.
6. History of seizures.

To address these problems, the CRU implemented the following treatment program. The results are included.

As with all patients on the CRU, F.M. was involved in the token economy system. He could earn tokens for appropriate behaviors (getting up on time, making his bed, grooming, showering, complete cleaning tasks) and exchange them three times a day at the canteen for privileges (cigarettes, coffee, candy, room time and grounds pass).

The behaviors that were listed under assault and property destruction are the ones that caused F.M. to be in the most difficulty. Various interventions were used.

1. Locked time out for fifteen minutes.
2. Second intervention combined locked time-out for fifteen minutes followed by twenty-four hours extinction. He was not allowed to do any work or purchase any reinforcers, and he was ignored by the staff except for minimal necessary conversation. He was allowed to have his meals and sleep accommodations as usual. He had to go twenty-four hours without any act of assault and property destruction prior to reentry into his program.
3. The third intervention program used required relaxation. Immediately after any act of assault or property destruction, F.M. was required to lie completely still for ten minutes wherever the act



was detected. He was not allowed to move or talk. If he spoke or moved, the timer was reset for another ten minutes.

4. His fourth and last intervention program was a return to locked time out for fifteen minutes, contingent upon acts of assault and property destruction, followed by four hours of extinction.

For the behaviors of stealing, agitation, clicking door locks, slamming doors and banging doors and walls, the average of five incidents per day during the first month were reduced to an average of two and one half incidents per day during the last month. Extinction and relaxation had significant effects. Even though it was not possible to terminate these behaviors, his acts of assault and property destruction were reduced by fifty per cent.

Behaviors of firesetting (careless with smoking materials), stuffing toilets and spitting require special programs. For setting fires by putting ashes and lighted cigarette butts into wastebaskets, he was consequented with smoking restrictions for two hours and a fifty token fine. These consequences decreased this behavior by sixty per cent in two months.

F.M. would stuff toilets by sitting at the toilet and shredding toilet paper into little pieces until he had shredded an entire roll of tissue. This sometimes flooded the toilet. A program of satiation was developed to decrease this behavior. Everytime he was seen shredding toilet paper or any other object on the unit, he was taken to his room and for four hours was required to shred toilet paper, one square at a time, into tiny pieces. The four hours was subsequently reduced to one hour. F.M. had to request to be accompanied to the toilet if he were going there for any reason. The staff listened for shredding. When stuffing occurred, the required relaxation program described above was used as this was considered property destruction. The behavior was reduced by fifteen per cent.

The first program developed for spitting was a differential reinforcement of other behaviors. F.M. was allowed to ask for a cigarette and/or coffee anytime he wanted it, with a limit of once every twenty minutes. If he spit, he would not smoke or have coffee for one hour. Should he spit again during the timed out period, another hour was added to that period.

Spitting on others was defined as assault and was consequted by delaying F.M.'s meal for an hour.

He was fined twenty tokens when he spit on other patient's food. His average number of spits was twenty times per day. The punishment consequences did not significantly decrease the number of times he spit.

A second program was carried out during a two month period. Besides the consequences applied in the first program, reinforcers were removed from F.M. when spitting occurred while consuming them, plus a fifteen token fine when spitting on others. The average number of spits was reduced from twenty times per day to twelve per day (a forty per cent reduction), but it increased again at the end of this period.

A third program included total extinction for twenty four hours. Should he spit during this time, the twenty four hour extinction was to start again. This program appeared to be effective in reducing the average of spittings per day by twenty per cent. However, it increased again after one month.

And yet another program, which included negative practice, F.M. was required to spit in a container until he had ten cc's of saliva. These programs were only temporarily effective.

In the next program, extinction was applied again for twenty four hours and F.M. was under

constant observation. The number of spits initially increased dramatically for a few days to over 1,000 spits. This may be explained because it was the only time the staff recorded every occurrence for twenty four hours per day. Constant observation was discontinued and extinction reduced to six hours and later to four hours. This appeared to be very effective, leading to a considerable reduction in assault, property destruction and spitting, (a fifty per cent reduction). In addition to time out and extinction, a program of overcorrection was added. In the program, F.M. was required to go about the unit cleaning up spit for one hour prior to each canteen. This appeared to have little effect on him.

A different overcorrection program was established to consequate spitting. Following any detected spit, whether on persons or otherwise, F.M. was required to clean a small area of floor with a cloth for thirty minutes. This was highly effective in reducing the rate of spitting to five times per day until staff surveillance was impaired, then the number of occurrences increased to over 500 times per day.

The last program went back to four hours of extinction again. Extinction appears to be the simplest, most effective program and requires only

that the acts that are to be consequted be detected and that F.M. be immediately placed on extinction by the staff.

For inappropriate speech, when F.M. approached a staff member, he was to start his conversation with, "Excuse me please, may I talk with you?" Also he was taught three times a day to talk in cadence, emitting syllables every one half second until completing two minutes of conversation successfully. The rest of the time he had to use his fingers to mark cadence for appropriately slow speech. Inappropriate speech was followed by extinction from the staff. This program was effective in reducing his speech rate during his interactions with staff, but did not generalize to interactions with others.

F.M. was incontinent of urine several times during the night and occasionally during the day. An overcorrection program was developed that involved twenty positive trials, walking from his bed to the bathroom every hour for five consecutive days. Cleanliness training sessions were employed if he wet his bed. These sessions required him to clean up his bed, change his clothes and put everything away. The cleanliness training was followed by twenty positive practice trials. After five days the twenty positive

practice trials plus cleanliness training was used when he was incontinent. His incontinence was dramatically reduced to no more than every two weeks.

To counteract F.M.'s falling asleep and the possibility of narcolepsy, Ritlain was tried in dosages up to fifteen milligrams three times per day. The data was inconclusive, but the anecdotal reports from the staff indicated that he slept less and was less hyperactive.

When admitted to the CRU, F.M. had a history of significant weight loss. He was placed on a regime of multivitamins, food supplements and double portion meals. His weight gradually increased to the point where it was possible to discontinue the food supplement and the double portion diet.

As is often the case with brain injuries, F.M. had a history of post accident grand mal seizures. He was maintained on 300 milligrams of Dialantin daily, and seizures were brought under control.

When F.M. was transferred to the Rehabilitation Program for the Neurologically Impaired (RPNI) where he currently resides, he came with recommendations for generalization of improvement from the hospital that housed the CRU. The recommendation for assault and property

destruction was the use of extinction. The possibility of developing long periods of overcorrection might be successful too, but it requires intensive one to one staffing. At the same time, smoking restrictions can keep his fire hazard tendencies under control. When using negative contingencies, they must follow inappropriate behavior immediately. On the other hand, he must be rewarded quickly when it is due. He is usually very responsive to staff praise and attention and has excellent interpersonal skills when he chooses to use them. He is helpful to staff, likes to converse and responds positively to simple requests for assistance, such as opening a door when one has his hands full.

As for his speech rate and content, he needs to be motivated to speak slowly, politely and clearly. It was suggested that all staff members carry out the procedure of stating the following rule in a firm, clear tone of voice: "F.M., if you speak slowly, politely and clearly, I will answer you." If he speaks too quickly or too low or in a lewd way, simply turn attention away from him by averting gaze, turning head away from the subject, or turning body away. As soon as he speaks understandably and politely, turn full attention to him and respond to

him in a natural and spontaneous way. DO NOT REMIND HIM TO SPEAK CLEARLY, as this will reinforce the rapid and/or lewd speech.

The program used to control the client's incontinence was very successful and kept this behavior well controlled. It is highly recommended that the plan be employed by any new facility to which F.M. transfers. This will ensure generalization. In addition to the positive practice and cleanliness training contingencies for this plan, F.M. must be rewarded for maintaining himself dry.

It is recommended that a daily multi-vitamin supplement be added to F.M.'s diet. This in addition to a regular diet should be sufficient to reduce his tendency to weight loss.

As for the hypersomnia, the client's abnormal sleep-waking cycle is a diagnostic puzzle. It might be useful for him to be definitively evaluated at a specialized sleep laboratory like the ones located in the departments of psychiatry at Stanford Medical School or University of California San Francisco. All night and all day sleep EEG recordings could be made and a diagnosis ascertained. It might be useful for F.M. to receive a clinical trial of Protryptilene (Vivactil) up to 60 milligrams a day since this drug



has been reported to be helpful for patients with hypersomnia.

With these recommendations, F.M. was discharged from the CRU and transferred to the RPNI in July of 1985. At the seventy two hour conference, F.M. was noted to have a problem with hyperactivity, essentially because he had not slept since his admission.

The next two years saw F.M. go through his history of problems to some degree. His destructiveness or other patient's property became so intense that he was removed from the dormitory and given a private room. The private room is usually used for a patient in restraints. His removal from the dormitory created a significant reduction in the number of altercations in which F.M. was involved. Some of the behaviors that caused the altercations were spitting on peers beds, turning on the lights in the middle of the night and smoking in bed. He did not like the isolation of a private room.

At this point it was decided to use F.M. as the subject of this study. The staff reactions were mostly negative and were verbalized with predictions of a poor prognosis for any success.

### SURGERY EVALUATION

To better understand and possibly predict some of the behaviors and rehabilitation problems that we would encounter with the subject, his surgery report was requested from the admitting hospital involved following his accident. He was admitted immediately following the accident on June 25, 1969, with multiple scalp and face lacerations, accompanied by bleeding and swelling. The x-ray examination showed fractures over the temporal area and extending into the frontal bone. The lacerations were repaired in the emergency room and the patient taken to intensive care for observation. There was a suspected subdural hematoma in the left frontal region, and surgery was indicated. Golden (1981) describes a subdural hematoma as resulting when blood vessels are disrupted, producing pools of blood within and between the meninges.

Since the site of the multiple fractures was mostly in the temporal region, this was the first place examined. There was no evidence of a hematoma, though excessive edema was causing brain tissue to be pushed through the broken bone. Because of the extensive damage in this area of the brain, the front tip of the temporal lobe was removed. The exact amount was not specified in the report and x-rays

were not available. The psychiatrist on the RPNI unit, who is also a neurosurgeon, estimated the amount. The approximation is shown in the shaded area on the following page.

## BRAIN SURFACE

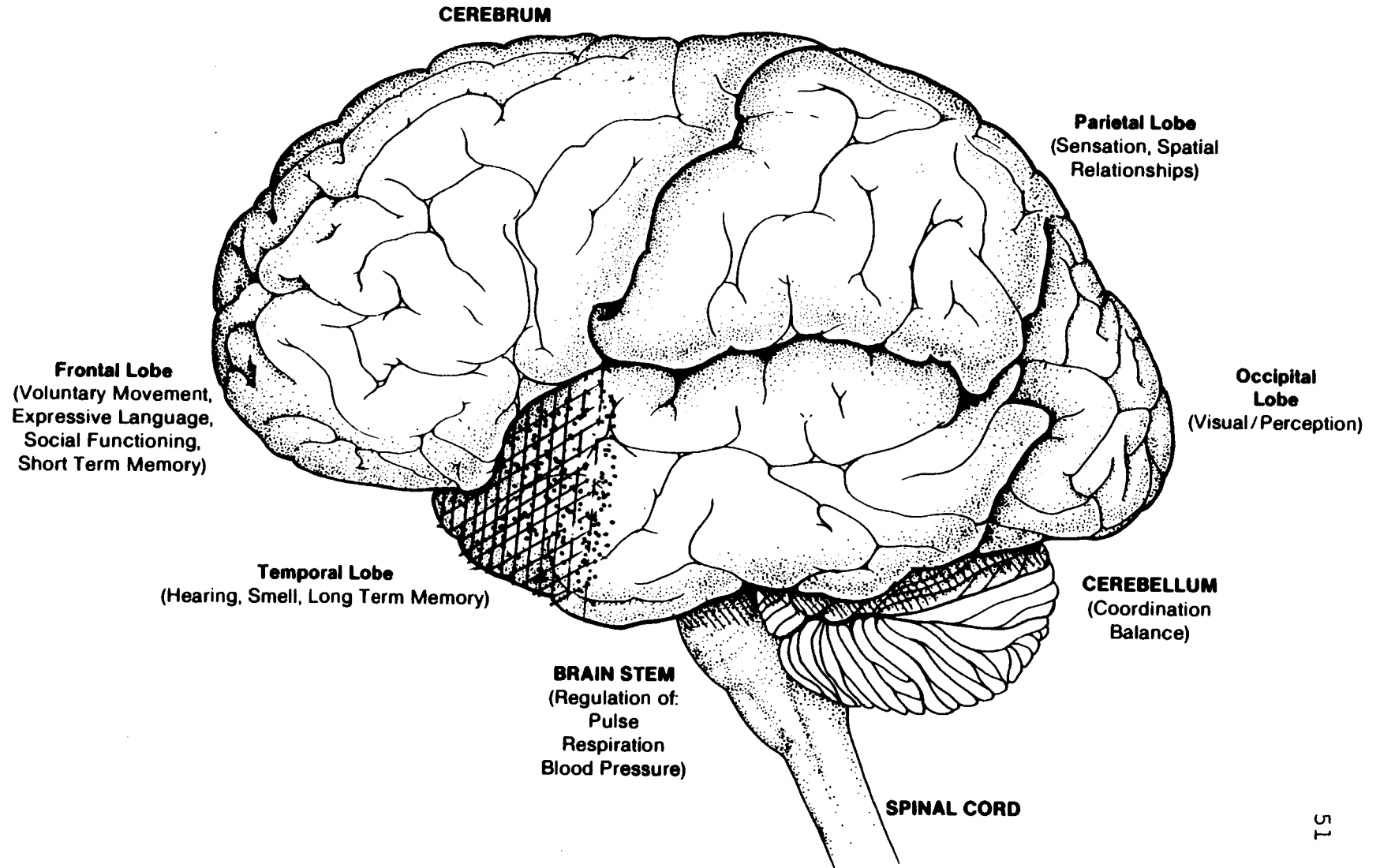


Figure 1: Temporal Lobectomy Site

After removal of the temporal lobe, a burr hole was made in the left frontal lobe area. Here a large epidural hematoma was located and approximately 250 cc's of clotted blood was removed. An epidural hematoma is most often caused by bleeding from the middle meningeal artery. It is uncommon, but important because continued bleeding for longer than twenty-four hours may cause potentially fatal compression of brain tissue. The amount of 250 cc's is considered significant and it is anticipated that due to the amount of pressure from this bleeding that some damage to the frontal lobe occurred. How much damage, however is impossible to determine. The diagram on the following page is shaded in the anticipated area of the hematoma.

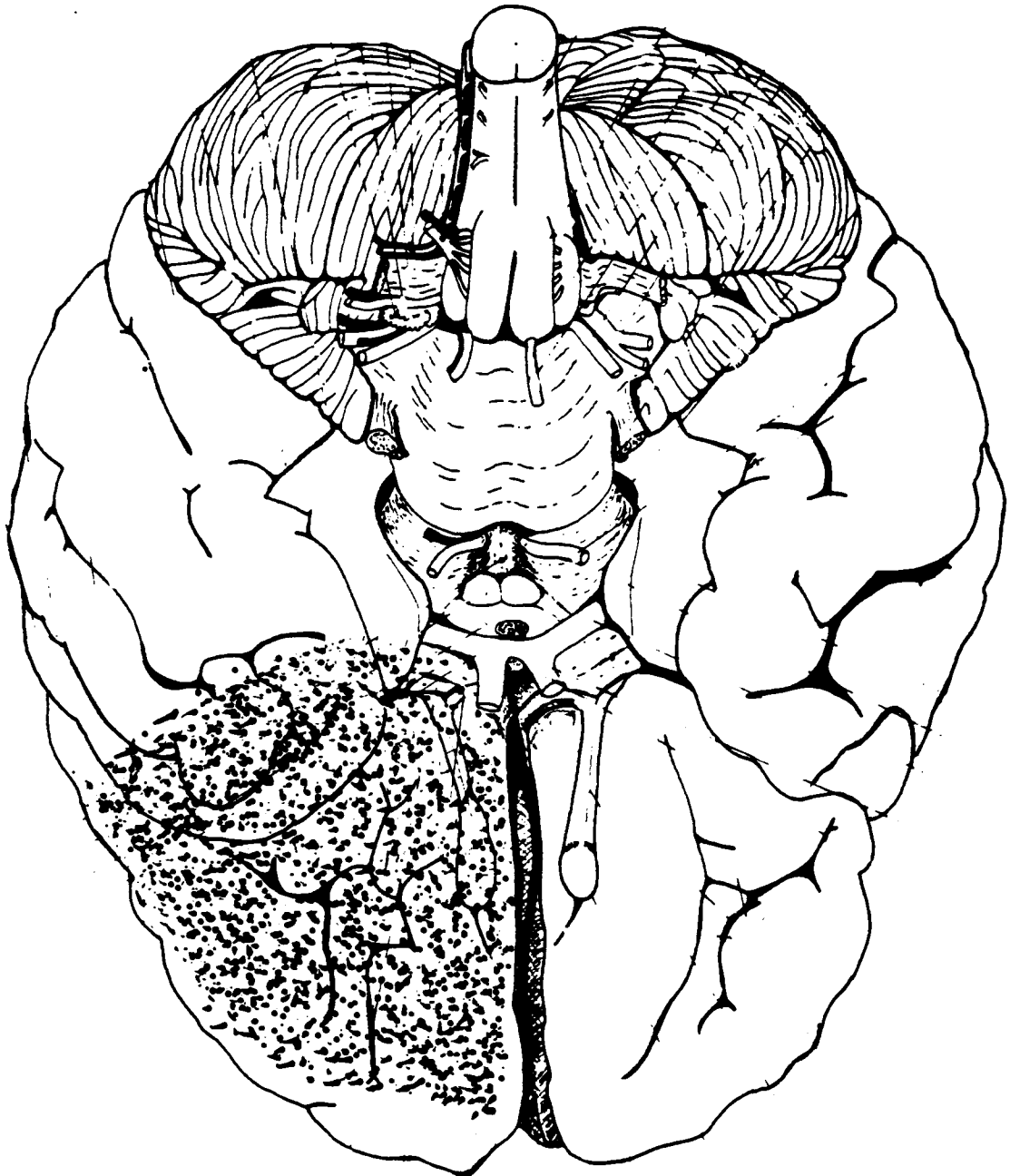


Figure 2: Frontal Lobe Hematoma Site

The second surgery occurred in November of 1969. The purpose was to remove fractured teeth. The surgery was successful and F.M. currently wears dentures.

The third and final surgery was performed in January of 1970. The purpose was to correct the swelling of the dura under the temporalis muscle. This was accomplished by removal of bone fragments that were weak and forming an acrylic plate to fit the space of the previously removed section of the temporal lobe. This procedure was completed and successful.

Even though it is not known exactly what damage was done to the patient's brain, it can be surmised with some accuracy that both the temporal and frontal lobes in the left hemisphere were damaged. Golden (1981) indicates that the major deficits in the left temporal disorders are speech problems. We must assume, since F.M. still has his speech, that damage to the temporal lobe did not extend into his speech center. A given area may be only partially injured and cause only partial impairment.

Struss and Benson (1986) attribute a number of deficits to frontal lobe damage. The control of motor response is most evident. The impaired control

or awareness of micturition and defecation may follow frontal lobe damage. This was true in F.M.'s case for several years following the accident. His charging gait may also be attributed to damage in his motor response area.

Behavior of left frontal injuries is characterized, states Golden (1981), by a lack of planning and an impulsive style. Certainly F.M. demonstrates both.

Most of the behavioral excesses demonstrated by F.M. have been reflected in the literature as being part of frontal lobe injury patients. Attention span and deficits of emotion, both almost undefinable because of their scope, are part of his repertoire. Impulsiveness, stealing, confabulation, lying and denial are a large part of his documented behaviors and characteristic of frontal lobe damage.

How much of this patient's behavior is due to frontal lobe injury is open to conjecture, but the evidence points to that site. The RPNI psychiatrist offers the possibility that F.M. may have had marginal impulse control before the accident. The ensuing trauma may have lifted the thin veil of fragile impulse control thus causing him to now move through life with unchecked impulsiveness.



### PRETREATMENT TEAM CONFERENCE

Each client on the RPNI is reviewed every nintey days with staff members from each discipline on the treatment team. At this conference, the problems, both medical and psychiatric are discussed and progress or lack there of are examined. It is here that changes in treatment approaches are made. For the purposes of this study, the ninety day conference that immediately preceeded the beginning of the treatment plan will be reviewed.

F.M.'s diagnosis is Organic Personality Disorder. There are alerts in the areas of seizure history, fire hazard and asault. He is allergic to ampicillin.

Psychiatric medications include Mellaril at bedtime for impulse control. He also receives Tegretol for seizure control. He has had no seizure activity since his admission to this facility. To prevent him from falling asleep during the daytime activites, he receives Dexidrine. For sleep, he receives Tryptophan. No extrapyramidal symptoms have been noted in the chart as a reaction to any of these medication.

The patient strengths noted at this conference were his participation in all groups and

his desire to please. He seems motivated to work hard. He must, however, have constant supervision to direct his impulsive behavior toward positive endeavors.

There were no physical or medical problems noted. He had previously had a medical problem of dermatitis, but that was resolved at this conference.

For record keeping purposes the state hospital system used the Clinical Records Documentation System (CRDS). The psychiatric and medical problems of a patient are assigned a number by CRDS.

F.M. has as his first listed problem number 129, which is hyperactivity. It continues to be a major problem during the daytime. His inability to direct his energy results in intrusive and impulsive behavior that periodically causes a restriction of privileges. This problem is crossreferenced with problem 137, intrusiveness; problem 132, impulsiveness; and problem 110, damages property. On a scale of intensity, F.M. is being maintained on a level two, which is moderate or twenty-six to fifty percent of the maximum possible intensity. The goal is that in six months, he will be at a level one, which means that intensity of his hyperactivity will

be reduced to twenty-five percent or less on the maximum time.

His second problem is 102, abusive verbally. He becomes verbally abusive periodically with peers and staff when his needs are not immediately met. He has shown improvement in this area and was moved from a frequency of once every eight hours or less to a frequency of every twenty-four hours or less.

His last problem is 168, inappropriate use of cigarettes and matches. In addition to his own use of smoking materials in restricted places, he often gives materials to peers who are not allowed to have them. He is currently on a level three of intensity, which is severe. He is being closely supervised by staff for this problem.

Discharge is not being considered at this time because the patient does not have the impulse control that would be required in a less restrictive placement. Neither is a hospital grounds privilege pass a possibility because of the patient's continued activities of property destruction.

### EDUCATIONAL ASSESSMENT

Since there are a number of tests to be given to F.M. before and after the treatment program, it was deemed important to ascertain his level of performance ability and his grade level. He was given the Peabody Individual Achievement Test (PIAT) and the Peabody Picture Vocabulary Test (PPVT). The results are as follows:

#### PIAT .

Subtests	Grade Level
Mathematics-----	12.9
Reading Recognition-----	11.4
Reading Comprehension-----	12.8
Spelling-----	9.8
General Information-----	10.5
Total Test-----	11.3

In the math and reading recognition subtests, he topped out and had virtually no scatter. In reading comprehension, a test that requires both attention and short term memory, there was considerable scatter. He did not know what an eclipse was and gave iceberg as an answer that should have been glacier. To the question, "What do we call a person who plays instrumental music?" he answered,

"a musician." He did not know what an unfinished drawing was called.

During the test, the client nodded off to sleep several times and was asked to stand up and walk around. When he was asked if he would like to discontinue testing for the day, he declined. The testing was done over two sessions, each of about an hour each.

The absence of scatter in the test indicates an accurate assessment of his academic skills and it is anticipated that he will be able to understand and complete the testing to be used in the study.

#### PPVT

Standard Score Equivalent ---91

Percentile Rank -----27%

Age Equivalent -----18 years 1 month

These scores fall within the low average range of ability, again supporting the anticipation that the subject will be able to understand and complete further testing.

## OCCUPATIONAL THERAPY EVALUATION

F.M. was evaluated by the occupational therapist because of his charging gait. He is constantly in a near run as he moves about the unit or hospital grounds. The results of that evaluation are as follows:

1. Motor strength: Client's range of motion for all extremities is within normal limits.
2. Strength: His strength is good to normal in both upper extremities. His left hand grip strength measures sixty-one pounds and his right hand grip strength measures seventy-one pounds. He is right hand dominant and this accounts for the ten pound difference between the right and left. His grip strength is within functional limits, but is on the low end of the scale for a forty year old male.
3. Sensory: This system is intact.
4. Balance: His standing balance is minimally impaired when he balances on his left leg. He is only able to maintain position for an average of seven seconds. His right leg balance shows no impairment, and he is able to maintain position for one plus minutes.
5. Gross Motor: The patient's coordination and quality of skills appear good. He displayed no

difficulty with bimanual tasks such as folding and tearing paper, assembling a nut and bolt or catching a ball. He was able to kick a ball with agility and speed.

6. Fine Motor: Diadochokinesis, the ability to make alternating movements, is intact. He has full pronation and supination as tested by shaking liquid inside a bottle. He was able to tap with his whole hand and his fingers individually. He was able to transfer objects (marbles) from one box to the other without apparent difficulty.

Recommendations: The patient displays a good normal level of motor skills and does not appear to need a structured occupational therapy program. Although his balance and grip strength are below average, this does not appear to hinder his daily functioning. Basketball and volleyball would be helpful for gross motor refinement. Certain types of crafts would be helpful for his fine motor refinement.

Due to the fact that the client was functioning within the limits of someone not in need of occupational therapy, the refinement of his fine and gross motor skills will be addressed in vocational work projects and recreational therapy. In both of those programs his behavioral excesses will be observed and recorded.

### WECHSLER MEMORY SCALE

The Wechsler Memory Scale (WMS) was developed during World War II and was commonly used to evaluate the extent of head injury and subsequent memory loss in the returning troops. The WMS consists of seven subtests, all of which were administered to the subject. The pre-test results are as follows:

1. Test one is comprised of six simple questions about personal and current information, such as "How old are you? When is your birthday? etc." This subtest is useful in the examination of subjects with special defects, such as brain injury. F.M. obtained a pre-test score of twenty, which falls in the severe deficit range on a psychological evaluation profile. It is noteworthy that though he scored low in this pretest, he scored at the mid-tenth grade level in the general information subtest of the Peabody Individual Achievement Test.

2. Test two is the orientation and asks questions like, "What year is this? What day of the month is it? and What city are you in?" It is designed to test the subject's immediate orientation. In most severe brain injury cases, disorientation is a common phenomenon. F.M.'s pre-test score was sixty, which is in the high average range.



3. Test three is mental control and asks the subject to count backwards from twenty to one, repeat the alphabet and count by threes. Its value in the case of organic brain syndrome that is not too far advanced, is to show defect which would not be made evident by simple rote memory items. He obtained a score of sixty-two, which is in the high average range.

4. Test four is logical memory passages. This test is intended to measure immediate recall of logical material. F.M.'s pre-test score was fifty-eight, which falls in the high average range.

5. Memory span for digits forwards and backwards is the focus of test five. It is the same digit span test used in the Bellevue Intelligence Scale. The subject scored forty-seven, which is in the average range.

6. Test six is a test of visual reproduction which requires the subject to draw, from memory, simple geometric figures. These figures have been exposed to the subject for a period of ten seconds. The subject rushed through this task and did not use his full ten seconds. He merely glanced at the pictures. His pre-test score was forty-six, which falls in the average range.

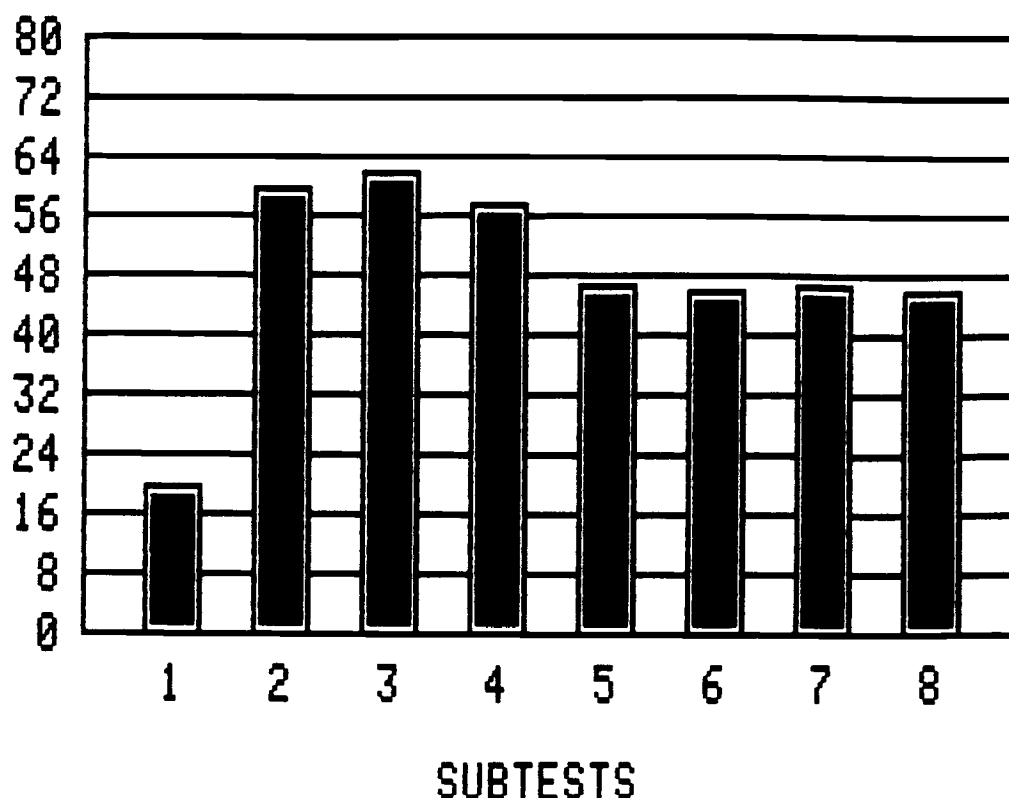
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7. Test seven is associate learning and consists of ten paired associates, some easy and some hard, which the subject is required to learn in three trials. The pre-test score was forty-seven, which falls in the mild average range.

The total pretest score was forty-six. This is within the mild average range. The following page is table number one showing the Wechsler pretest scores.

# WECHSLER MEMORY SCALE

## SCORES



0-25=SEVERE	45-55=AVERAGE
25-35=MODERATE	55-65=HIGH AVERAGE
35-45=MILD AVERAGE	65+=SUPERIOR

1-INFORMATION	5-DIGITS TOTAL
2-ORIENTATION	6-VISUAL REPRODUCTION
3-MEMORY CONTROL	7-ASSOCIATE LANGUAGE
4-MEMORY PASSAGES	8-TOTAL TEST

Table 1: Wechsler Memory Pretest

## SPEECH-LANGUAGE EVALUATION

Initially F.M. was seen in the RPNI program for speech therapy services in 1985. He was discontinued after a few months because of poor participation and a failure to show any progress. He was rescheduled for services on a regular basis for the purposes of this study.

He was given the Frenchay Dysarthria Assessment at the beginning of the study. The assessment yielded the following results:

### 1. Reflex:

Coughing - no difficulties.

Swallowing - no abnormality.

Dribbling or drooling - no difficulty.

### 2. Respiration:

At rest - no difficulty.

In speech - the patient has to speak quickly because of poor respiratory control - voice fades.

### 3. Lips:

At rest - no abnormality.

Spread - no abnormality.

Seal - good lip seal.

Alternate - the patient is able to articulate both movements in ten seconds, rhythmically.

In speech - some weakness and briskness, variable with occasional omissions.

**4. Jaw:**

At rest - jaw relaxed in normal position.

In speech - minimal deviation when fatigued.

**5. Soft Palete:**

Forward - no difficulty.

Maintenance - slow, symmetrical movement of palete fully maintained.

**6. Laryngeal:**

Time - patient can say "Ah" for ten seconds.

Pitch - minimal change in pitch; shows difference between high and low.

**7. Tongue:**

At rest - no abnormality at rest.

Protrusion - movement conducted smoothly and clearly within normal limits.

Elevation - no abnormality, but moves slowly.

Lateral - no abnormality but moves slowly.

Alternate - no difficulty observed.

In speech - no abnormality observed.

**8. Intelligibility:**

Words - ten words correctly interpreted by the teacher but had to use particular care in listening and interpreting what was heard.

Sentences - seven to nine sentences interpreted correctly.

Conversation - speech abnormal but intelligible;

the patient occasionally has to repeat.

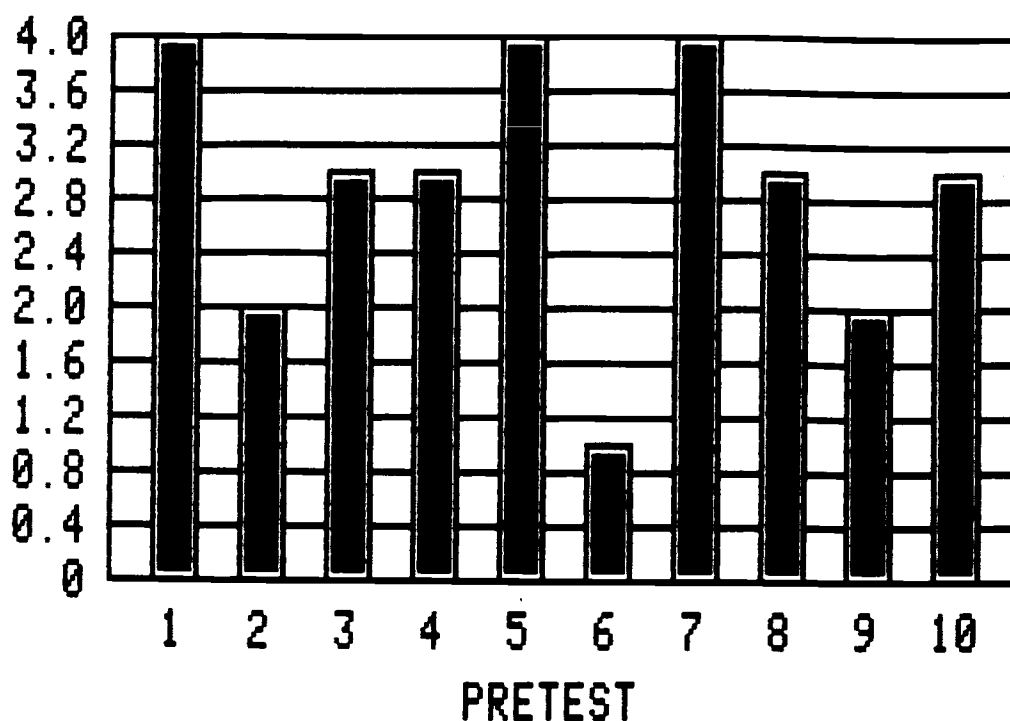
The reason the patient was given the above test was to determine if he displayed any dysarthria. The term dysarthria is used to describe speech abnormalities caused by neuromusculature disorders. The assessment was developed at the Frenchay Hospital and is standardized to categorically diagnose dysarthria.

The patient's category of dysarthria closely resembled the Frenchay's group two, "mixed upper and lower motor neuron lesions." This is indicated by low scores in the laryngeal section. This resemblance to Frenchay's group two is also seen in the unaffected areas of reflex, lip, palate, and jaw. Although the test results indicate that the patient has a slight dysarthria, it would be categorized as mild. Dysarthria can be defined as a motor-speech disorder resulting from weakness, paralysis, incoordination, or alterations in tone of the speech musculature due to central and/or peripheral nervous system lesion.

The following page is table number two indicating the Frenchay pretest results.

# FRENCHAY DYSARTHRIA ASSESSMENT

FUNCTION



4.0-NO ABNORMALITY

0-UNABLE TO PERFORM TASK

1-REFLEX

2-RESPIRATION

3-LIPS

4-JAW

5-PALATE

6-LARYNGEAL

7-TONGUE

8-INTELLIGIBILITY-WORDS

9-INTELL. SENTENCES

10-INTELL. CONVERSATION

Table 2: Frenchay Dysarthria Pretest

The patient was given the Fullerton Language Test for Adolescents to assess his language skills. This test is divided into eight subtests, seven of which were administered. The purpose of this test was to develop an assessment to meet the increasing need for a valid language assessment instrument so that one could distinguish normal from language impaired adolescents. However, this test is also used with brain-damaged adults to determine their language impairment. The pretest results are as follows:

**1. Auditory synthesis:**

This subtest assesses the patient's ability to synthesize phonemic sounds or units of sounds that are presented separately in one word or utterance. F.M. scored at the instruction level on this test. The instruction level indicates that the examinee is in a period of transition and has many of the prerequisite skills or processes required to perform the task, but that further instruction is needed to achieve competence.

**2. Morphology competency:**

This test assesses the patient's ability to analyze the morphological elements of words and to demonstrate competency in correct usage.



F.M. scored at the competence level. The competence level indicates that the examinee has adequate command of the specific processes or skills in that area.

3. Oral commands:

This subtest not given because memory assessment done in other testing.

4. Convergent production:

This test was designed to assess the patient's ability to identify, retrieve and formulate responses to different words that have specific meanings. His score was at the instruction level.

5. Divergent production:

This test was designed to assess the patient's ability to categorize, retrieve, and formulate responses that satisfy the semantic expansion imposed by the context. He scored at the instruction level.

6. Syllabication:

This test was designed to assess the patient's ability to identify syllables and to detect the number of syllables in words. He scored at the frustration level. The frustration level indicates that the examinee does not have the necessary prerequisites to perform the tasks. In other words, the readiness skills are missing

and the instruction has to be on a basic fundamental level.

**7. Grammatical competency:**

This test was designed to assess the patient's ability to identify whether a sentence presented orally is grammatically correct or incorrect and to present a correct form where appropriate. He scored at the instruction level

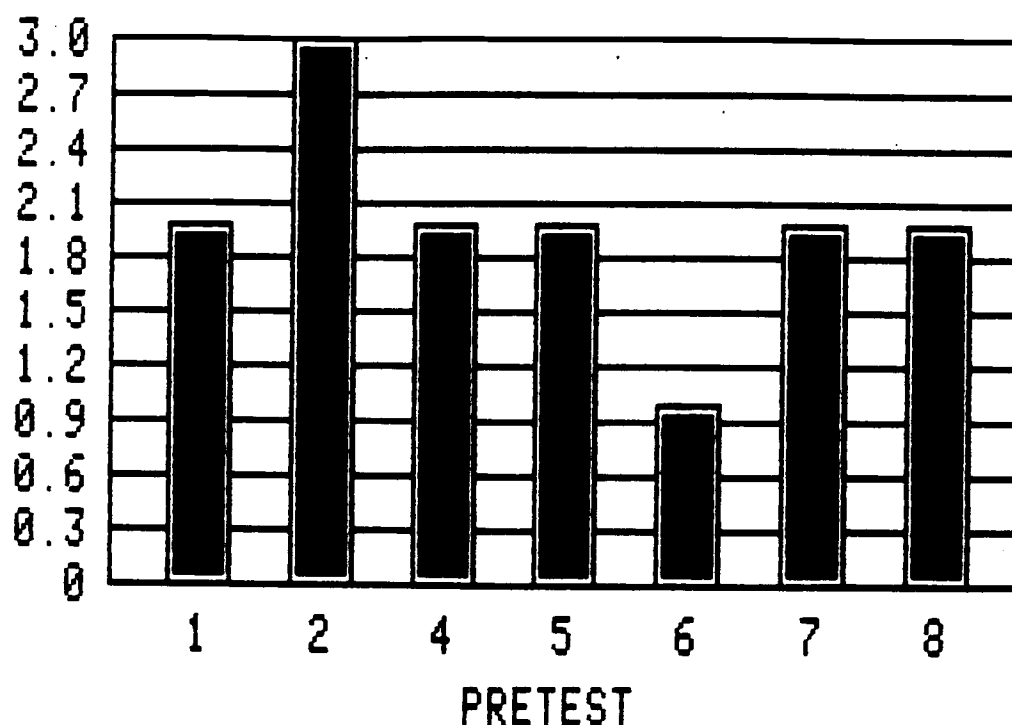
**8. Idioms:**

This test was designed to assess the patient's ability to identify the underlying meaning of utterances that may have several meanings. He scored at the instruction level.

The following page shows graph number three indicating the pretest results of the Fullerton.

# FULLERTON LANGUAGE TEST FOR ADOLESCENTS

## PERFORMANCE PROFILE



3.0-COMPETENCE LEVEL  
2.0-INSTRUCTIONAL LEVEL  
1.0-FRUSTRATION LEVEL

1-AUDITORY SYNTHESIS  
2-MORPHOLOGY COMPETENCY  
4-CONVERGENT PRODUCTION  
5-DIVERGENT PRODUCTION  
6-SYLLABICATION  
7-GRAMMATIC COMPETENCY  
8-IDIOMS

Table 3: Fullerton Language Pretest

## SELF-ESTEEM EVALUATION

The Tennessee Self-Concept Scale was administered to F.M. This test, which is comprised of a hundred questions, examines the client's feelings about certain components of his self-esteem. Additionally, it suggests four prototype patterns, so most people would be representative to some degree of one or more of these patterns. The four prototypes are as follows:

1. Well-intergrated:

This type of individual has been judged to have a strong sense of self-worth in many aspects and to function in a fully healthy way.

2. Normative:

These individuals function in a typical or average way and do not show any evidence of psychological problems related to self-esteem.

3. Clinical internalizing:

These individuals have self-esteem patterns like those of a number of groups, such as anxiety reactions, conversion reactions, obsessive-compulsive reactions, and depressive reactions, which would traditionally be considered to be neurotic disorders.

4. Clinical externalizing:

These individuals have self-esteem patterns

commonly associated with such severe psychological problems as antisocial behaviors, alcoholism, and other major disorders.

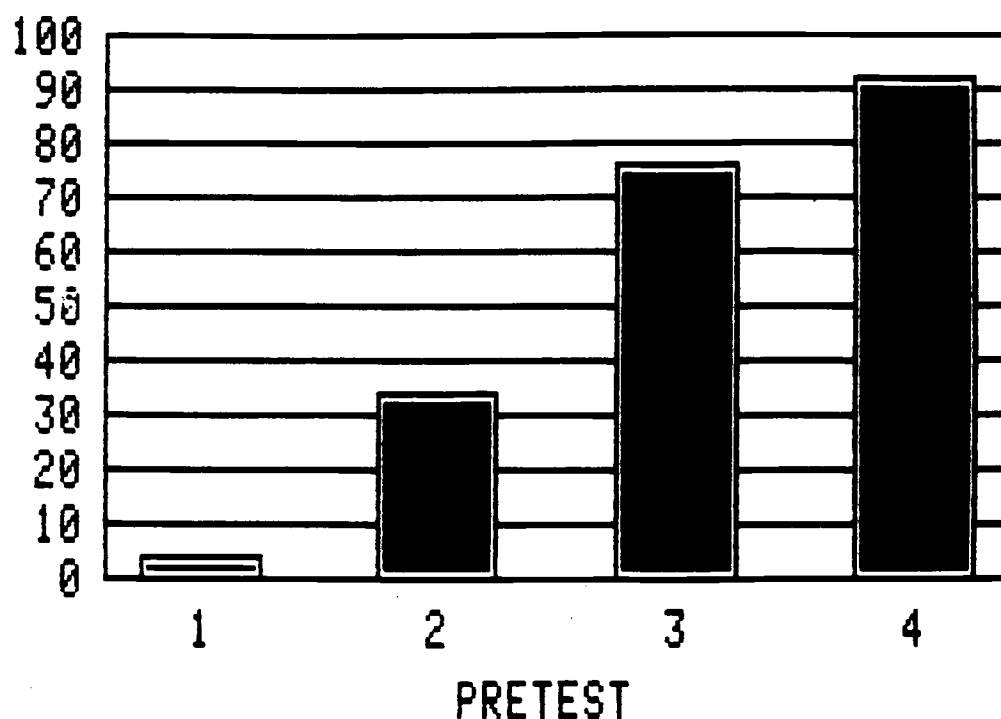
Self-concept is defined as a multifaceted set of perceptions and expectations concerning the person's competencies, limitations, typical behavior, relationships with others and feelings of positive and negative worth. The items on the scale were constructed to measure aspects of the self-concept from both an internal and external frame of reference. The three internal dimensions are identity, self-satisfaction, and behavior. The five external dimensions reflect the individual's descriptions of self in reference to the major areas of interpersonal arenas of life. They are physical, moral-ethical, personal, family, and social.

Due to the length of analysis for this scale, certain parts of the pretest and post-test are included in the appendix. The analysis of the basic positive scores indicates that the client's total self-esteem is in the below average range. It suggests a person who had self-doubts and felt anxious, confused, or unhappy at the time of testing. He may have a low degree of self-confidence and other disturbing thought patterns that should be explored in detail.

The interpretation of personality of intergration indicates that the bulk of evidence shows that the subject has a low level of self-regard, with few of the signs of competence or confidence that characterize the highly intergrated, self-actualizing person striving for maximal performance and growth. There appears to be a significant lack of clarity in self-definition, some history of poor quality in personal relations, and lowered effectiveness in dealing with everyday anxieties. The capacity for intimacy may be limiting, and the individual may have difficulty relating to others in noncontrolling, peer-like ways. There are likely to be feelings of inadequacy, apathy, or lack of direction in pursuing self-improvement, habit management, or personal-achievement activities. The following two pages offer tables four and five showing the results of group membership probabillity and the self-concept profile.

# PROBABILITY OF GROUP MEMBERSHIP

SCALE



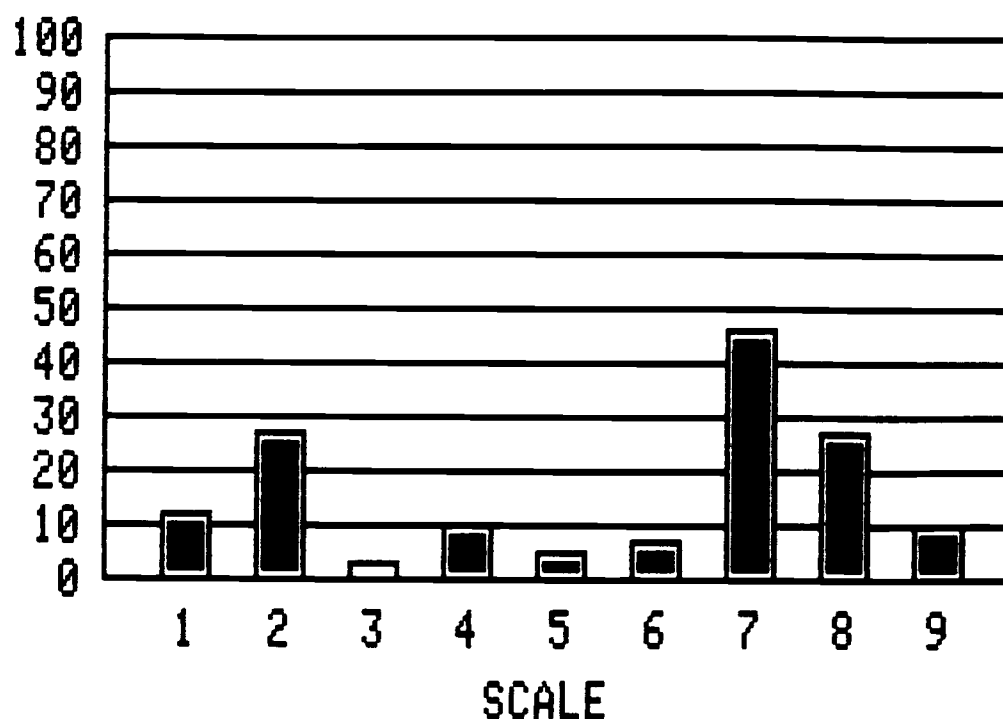
0-25=MARGINAL      50-80=HIGH  
 25-50=MODERATE    80-100=VERY HIGH

1-WELL-INTEGRATED  
 2-NORMATIVE  
 3-CLINICAL INTERNALIZING  
 4-CLINICAL EXTERNALIZING

Table 4: Group Probability Pretest

# THE TENNESSEE SELF-CONCEPT SCALE

PERCENTILE SCORE



PRETEST

1-IDENTITY	6-PERSONAL SELF
2-SELF SATISFACTION	7-FAMILY SELF
3-BEHAVIOR	8-SOCIAL SELF
4-PHYSICAL SELF	9-TOTAL SCORE
5-MORAL SELF	

Table 5: Self-Concept Pretest



## TREATMENT PLAN

There are several areas of behavioral excesses that will be recorded and correction measures implemented. The behaviors are as follows:

1. Mumbling speech
2. Spitting
3. Charging gait
4. Falling asleep during activities
5. Compulsive behaviors
6. Fire hazard
7. Hyperactivity
8. Intrusiveness
9. Destruction of property
10. Verbally abusive

The first five of the behaviors will be observed and recorded. Some of the behaviors overlap. There will be three recorders, who will observe for one hour each week, making a total of three hours a week for observations. The observers will be:

- A. Vocational Rehabilitation Counselor
- B. Recreational Therapist
- C. Psychiatric Technician

The cognitive areas that will be addressed are:

1. Memory

2. Speech
3. Attention
4. Self-esteem

The primary people working on the cognitive skills and correction of the behavioral excesses being measured for the purposes of this study are:

- A. Teachers
- B. Speech Pathologist
- C. Occupational Therapist

The psychotherapist will be the patient's advocate and trouble shoot for signs of frustration, denial and undermining of the program. Such problems will be resolved as quickly as possible and program adjustments made accordingly.

F.M. will be scheduled into activities for as much of the day as possible. Since he has no problem with personal daily living skills relating to eating and hygiene, he will continue going to the dining hall for his meals and be responsible for his own bathing and clothes maintenance.

For cognitive skills rehabilitation efforts, he will be scheduled into the following activities:

1. Current events: for an hour each day.
2. Thinking circle: a problem solving group that meets two times a week for a total of three hours.

3. Speech therapy: meets for a total of three hours per week.

4. Group therapy: meets for a total of two hours per week.

The remaining activities address both behavioral and cognitive retraining: They are as follows:

1. Independent living skills: a weekly off grounds activity for the entire day.

2. Recreational therapy: meets for different activities for approximately seven hours per week.

3. Cooking class: meets weekly for three hours.

4. Work crew: meets for approximately eight hours a week, for two to three hours each meeting.

5. Ward activities: Vary in type, but mostly recreational and resocialization in content.

6. Individual psychotherapy: meets once each week for an hour.

The lines of distinction between behavioral and cognitive retraining are not clear or territorial. All staff members will be correcting inappropriate behaviors. It will be one of our primary goals to make corrections more consistent than in the past so the patient may learn alternate behaviors with which to substitute for inappropriate ones.

Measurement for the behavioral excesses will be done by observation and recording the number of occurrences. Pretesting and post testing will be used for the cognitive areas. Results for both will be graphed.

## TREATMENT PROGRAM

It was the original goal of the treatment program to include all of the ward staff in this study. This was to be done during an inservice where the treatment plan would be presented. Unfortunately, the staff morale on the RPN unit is exceptionally low and it was felt that there might be those who would undermine the effort. The reasoning behind this decision was discussed at length. Before the treatment plan was developed, F.M. was being moved into groups and activities that were to be a part of the study. He was receiving extra attention and his behavior improved significantly. Many of the staff commented on this improvement, and his chart reflected the positive trend. However, when it was explained why F.M. was getting the extra attention and that he was going to be the focus of a study, there was a rattling of discontentment. Statements like, "Do you think you can cure him after all this time?" and "Other patients wouldn't be allowed to present this kind of behavior and still go on outings." As a result of this undercurrent and a firm desire to have as much positive reinforcement as possible, the staff to be involved were carefully

selected and the weekly meeting to assess progress were kept on a low profile.

As the treatment began it was decided because of F.M.'s almost disgraphic type handwriting, he would not be able to keep a written record of the weeks to come. This inability to write legibly may be a result of his brain injury, but there was no premorbid handwriting sample available to compare. The staff, however, kept weekly notes and there were many activities that were videotaped. The team had F.M. view these tapes in the hope that he could form alternate behaviors.

For three hours a week, he was scheduled into thinking circle, which is a group oriented toward solving everyday problems. An example of an activity would be to watch a segment of People's Court, and to make a decision regarding the participants of the case. Additionally, members of this group would be asked to make suggestions as to how the situations might have been avoided in the first place. This is a group in which F.M. tended to fall asleep, probably due to the amount of time he was sitting without some type of physical stimulation.

He attended current events for four hours a week, but did not usually participate in questions

and answers unless he was using humor. This was another group in which he tended to fall asleep.

The last group that he was specifically assigned to for cognitive rehabilitation was speech therapy. In addition to the drills and exercises he practiced for better speech control, he was working on the computer in a varied number of tasks. Successful performance and/or good participation in these activities allowed him free time on the computer for games.

The remaining groups were for the purpose of rehabilitation in both cognitive and behavioral areas. For approximately eight hours a week he was on the work crew, which is described in the Naturalistic Observation section of this paper.

As with all patients on the RPNI, F.M. attended group therapy for two hours a week. The clients were grouped according to their communication level. He was in one of the higher functioning groups. This group was used to discuss and explore workable solutions to common problems.

Recreational therapy was one of the areas that F.M. seemed to enjoy. He attended these activities for approximately seven hours per week. They are described in the Naturalistic Observation section of this paper.

Cooking class met for three hours per week. This was one of his favorites as it gave him an opportunity to get away from the ward to help plan, prepare and consume a meal in a small group. This is an area in which he had difficulty with peers and staff. Because of his inability to attend to his own task without intruding into other areas, he was usually given a single dish to prepare. His favorite was dessert. In the beginning of the treatment program it was observed that he dashed indiscriminately about and caused some disturbance among the group. The solution to this problem was found in providing all the necessary ingredients and tools in a designated place before he arrived in the kitchen.

Independent living skills provided an all day outing away from the hospital. It varied from week to week, but focused on community resocialization and translocation. Public transportation was used often as people with brain injuries must rely on this mode of movement in the community. Because of seizure disorders, they are denied drivers license. Map reading, money handling, phone directory training and restaurant etiquette were emphasized. Trips were made to the beach, museums, movies, parks and shopping



centers. F.M.'s behavior ranged from poor to excellent.

It was observed that his spitting took place mostly on outside activities. When quizzed about this behavior, he didn't know why he did it, but it was a habit that he developed after the accident. He did state that he remembers having a mouth full of mud in the accident and the sensation of having it in his mouth continued for some time. The staff kept an ample supply of chewing gum available and this seemed to curb the spitting.

His falling asleep was limited to groups where he was required to sit for longer than a few minutes. When he fell asleep, he would be asked to stand or move about the room. This was only mildly effective as a solution. Medication has been successful in the past and might be suggested for future treatment.

F.M. has an enormous intake of sugar on a daily basis. It is not unusual for him to drink a half dozen colas a day and consume that many candy bars. He would put six to ten sugars in his coffee or tea. During the course of this study, locker checks yielded several hundred packets of sugar. This intake of sugar is a suspected cause of his alternating hyperactive/sleeping behaviors. The

dilemma for the staff is that F.M. has access to funds with which to purchase these items and to keep him from purchasing these items is a denial of patient's rights. To deny a patient of any of his rights involves a good deal of paperwork and often court intervention.

In the groups that F.M. attended that were involved with this study, only sodas with sugar substitutes were available. On outings he was requested to purchase only sugar free beverages and allowed substitute sweeteners for his tea and coffee. Fruit, nuts and sugarless gum were also made available to him. He cooperated well with these changes, but because of his sugar intake elsewhere, he did not change his alternating pattern of hyperactivity and sleeping.

The mumbling speech was evident in all areas of his treatment. The most effective way to deal with his refusal to speak clearly was to ignore his requests after two unsuccessful attempts to understand him. It also became evident that this was a way that he expresses his anger, because he can make himself understood when he so desires. Another effective device to control this behavior was the introduction of a three by five card with the words on it, "Speak slowly, clearly and separate your

words." There were ten spaces on the card for check marks. If he had to be asked to repeat himself, the staff member would put a check on the card. If he got ten checks during an activity, he would not be allowed to go on a future activity that had been predetermined .

The first time this technique was used, he had his card filled in two hours. The frequency diminished rapidly as the program advanced. By the end of the study, he would get only two or three checks for a seven hour period.

The largest problem by far was his compulsive touching, pulling and other hyperactive behaviors. This seemed to propel him into difficulty with both staff and peers. This is the behavior that suggests frontal injury.

The problem of lying and stealing usually surfaced after bouts of hyperactive behaviors. Unless he were caught in an act of destruction, he would deny it. Often times when he is stealing, he is not even clever in his attempt. Most often he gives away what he had taken. This is true of all his belongings, be it cigarettes, candy or clothes. In his desire to be accepted and liked, he tries to buy friends. He is constantly being taken advantage of by his peers, many who survive on the weakness of

others. F.M. has been encouraged to refrain from giving away his possessions, but to no avail.

When he is caught stealing and has to suffer some consequence, it is most likely that other behaviors will surface. For example, he took some money from a fund raiser in which he was involved. He was caught and made to return the money. Within half an hour he had stuffed several toilets. Another incident on an outing in San Francisco, he was caught pocketing coffee packets in a cafeteria. Later, he refused to stay with the group. He finally had to have a staff member hold him by the arm to keep him nearby.

What he seems to consider helping others is interpreted as intrusive. He cannot do his task without trying to help others do theirs. Yet when he is asked for help the outcome is unpredictable. For instance, on a outing one of his peers was given a medication to take. While opening his medication, he asked F.M. to hold the drink that he was going to use to swallow the pill. F.M. drank it.

His charging gait also seems to be tied into the impulsiveness. As he runs he can hit, pull, touch items and people harder and faster.

When he was evaluated by the occupational therapist, she suggested it is possible that as a

consequence of the injury, F.M. is not getting an input of stimulation that is adequate for him. Therefore the water pressure, the water in the toilets, the pulling, touching and hitting are ways to feed his body the desired stimulation.

It became obvious that F.M. was using toilet stuffing as a way to vent anger toward staff or perhaps the world in general. As an example, before leaving for a beach trip, the group had stopped at the trust office to withdraw funds. Since F.M. had already taken his weekly draw, he had no funds. Within ten minutes he was caught stuffing paper towels into two urinals at the same time. Since the group was still on the hospital grounds, he was given a choice. He could be taken back to the ward or he could go on the trip, but he could not get out of the van when the group stopped for coffee. He would be confined to the van until the group reached the beach. He chose to go on the trip. When the group stopped for coffee, F.M. used every excuse available to get out of the bus. This seemed to be a very effective consequence, and was used on subsequent occasions.

Another way he displayed his anger was to go to the restroom during an activity. He would stay for long periods of time. We handled this by giving

him a choice. At cooking class, for instance, he was told that he could go to the bathroom or have his dessert, but not both. He always chose dessert. On outings when he said he had to go, he was given a choice of going or having a treat later with the group. He would always choose the treat.

It should be injected here that while in the community, F.M. interated well with people. His manners are good and his sense of humor excels. While touring the senate building in the state capitol, the guide asked the group if there was a law they would like to see enacted. F.M. replied, "Yes, give Los Angeles back to Mexico."

Sometimes his sense of humor and his anger get intertwined. While on the work crew, F.M.'s assignment was to clean the inside windows of a hospital van. He was using a spray bottle of ammonia. When he got out of the van, he sprayed a peer. This was seen by the staff member, who got close to F.M.'s face to repremand him. F.M. apoligized repeatedly. When he walked away, the staff member looked down to see that while F.M. was apoligizing, he had been spraying him in the crotch with the ammonia bottle.

His destructive behaviors tend to cycle. However, when he was taken off Tegretol, they seemed

to go out of balance. Within a week of stopping the medication, he was suspected of ripping plumbing fixtures off the wall. The behavioral observation graphs indicate this increase in behavioral excesses shortly after the medication was discontinued.

Medication or not, F.M. has an unusual fascination with water, especially when it is under high pressure. He will turn on faucets to their highest volume and spray himself, others, walls, and floors.

An interesting incident in connection with his fascination with water occurred during a recreational therapy activity. He was taken swimming. The therapist described F.M.'s behavior as being like a totally different person. While in the pool, he talked clearly, interacted well with peers and appeared relaxed. This suggests an avenue to be explored might be hydrotherapy. They have tubs with high pressure jets for relaxation. This might be a way to calm him down if he were in an agitated state. Alternatives may be the swimming pool or a tub bath.

It is obvious that F.M. likes to have one to one attention. That is why he does well in individual psychotherapy. He does not have to compete with or be defensive in front of his peers. The opposite is true in group therapy. He is

constantly being confronted with his stealing and intrusive behavior. For instance, his peers are angry with him because toilet paper cannot be left in the bathroom and is given out at the office.

It was found to be most effective if two staff members met with F.M. shortly after an incident to discuss it. One staff member would point out the gains that he has made and support his improvements. The other staff member would point out why his recent negative behavior was inappropriate and encourage him in seeking alternative avenues of expression. During these sessions he would keep his eyes open and seemed to respond in a positive way. Unfortunately, the carryover did not last for any length of time, which might lead one to the conclusion that he was being agreeable only to please staff.

Because of his intrusive behaviors, F.M. has been the object of peer attacks. He was moved from the dormitory to a private room. This decreased his night time problems with peers.

F.M., like many brain-injured patients, seems to feel that he is better off than his peers. This is probably one of the reasons that he interacts so well with staff. He is a likable person and does so want to please. It was this attitude and motivation



to be involved that kept the staff involved during the treatment phase of the study.

As the treatment phase came to an end, the staff involved felt they were getting a handle on how to cope with some of the behavior manipulations used by F.M. Because of the intensity of the activities, there was little time to begin new strategies. One that was felt to have some potential is to have staff members role play some of F.M.'s behaviors and have him talk about how to handle the problem.

Adamovich et al, (1985) stated that motivation is one of the most important ingredients in the rehabilitation process. F.M. was a motivated person before his accident and he is now. The missing piece of the puzzle seems to be that he does not know what he is motivated toward. He is obviously angry, and has not come to terms with that anger so that he might move on the the next level.

Most of the team agrees that F.M.'s chances of getting into a less restrictive placement are fair. It is reasonably certain that the entire staff would have to revamp its attitude and engage in a much more consistent behavior modification program. The prevailing attitude at this point seems to be, "Well, F.M. is just being himself." Admittedly, he has been in the hospital for almost nineteen years,

but the responsibility should now rest with staff to at least attempt to break his old patterns and support new ones.

## NATURALISTIC OBSERVATIONS

To minimize the possibility of behavioral change because of outside observers in this study, the data collectors who were chosen were already working with the client. The data was derived from and recorded in three areas of his treatment program. There was an off ward activity which was vocational work training. The recreational therapy groups were held on the ward and in various settings away from the unit. The third observation group was held on the ward each week. The client was involved in several other activities, but these were the areas chosen to record behavioral excesses.

Five identified areas of behavior were selected for observation. These areas are:

1. Falling asleep during activities.
2. Mumbling speech.
3. Spitting
4. Impulsive touching.
5. Charging type gait.

**Falling asleep:** As stated in the client's history, there was the possibility that he had developed narcolepsy because of his brain injury. He will often fall asleep while sitting for a short length of time. He will fall asleep while eating

with his mouth full, while playing a game or watching T.V. On one occasion, he fell asleep while playing cards and his head hit the table with such a force it broke his dentures.

**Mumbling speech:** The subject usually has to repeat something several times before he can make himself understood. The anticipation is that the speech evaluation will determine if this problem can be ameliorated. This is an area that will be given considerable attention during the treatment phase of the study.

**Spitting:** This is the third and most unattractive of the behaviors to be observed and recorded. The number of times this behavior occurs has been covered extensively in the client's history. He has become very clever with the way he exhibits this conduct. If one could become subtle at spitting, he has. For instance, if he wants to spit on a peer, but being observed, he will take the secretion from his mouth with his hand and fling it at his target.

**Impulsive touching:** This behavior consists of touching objects, people, doors, walls, trees, and picking up objects for examination. Though it has subsided in intensity over the years, it continues on

a less destructive level. Depending on his hyperactivity level for the day, he can range from calm to whirling dervish.

Gait: The last behavior to be observed for this study is his gait. F.M. does not walk at what would be considered a normal pace. He leans forward to such a degree that he almost has to run to keep his balance. And run he does, whether he is carrying an arm full, empty handed or pushing a wheelchair.

There are numerous behaviors that are not being observed, but have been listed as behavior problems for F.M. The most observable are being addressed here because the consistency of the activities allow observation without influencing behavior. Behavioral intervention will occur in other areas of the treatment program.

As mentioned at the beginning of this section there are three different settings in which these behaviors will be observed. These consist of off ward groups, groups on and off the ward and a group activity on the ward.

The off ward group used for observation was the Vocational Experience Group, which was established to provide experience and training in a variety of work related activities. The participants in this group are given an activity comensurate with

their capabilities and will be advanced as they shows ability to handle work activities with less supervision. The activities in this group include: janitorial, vehicle washing, clean up, curb and crosswalk painting, grounds maintenance and gardening. In addition to using different work implements, the exercises emphasize following directions and practice of basic safety procedures. Evaluation is performed on a consistent basis and positive reinforcement given for appropriate performance.

F.M.'s involvement in the work crew is regular and he is always anxious and motivated to be involved in the day's activity. Though he is active in accomplishing his task, he often hurries to such an extent that he creates problems or disorder. He also likes to order the other workers around and constantly call them uncomplimentary names. At times, he seems to forget completely what he is doing and will begin reading any sign or written material at hand or begin performing totally uncalled for actions such as mopping walls and windows or painting sidewalks.

He cannot keep his hands to himself and seems compelled to reach out and touch peers or inanimate objects. He bangs windows and pulls leaves and

branches off trees and bushes constantly. He also spits occasionally and is often difficult to understand because he mumbles and rushes his speech in the same way he rushes his body from place to place.

Another particular activity of F.M.'s involves total strangers. He will approach them, hold out his hand to shake and mumble, "My name is F., what's yours?" To the ladies he will offer a compliment, but usually follow it with a spate of personal questions such as, "How old are you? How long have you worked here?" After such encounters he often walks away muttering vicious insults under his breath.

In general, F.M. is a good worker but must be watched and supervised constantly to keep him from destroying property and to assure that he completes assigned tasks. He often does not seem to listen or remember, and can have an activity or procedure explained to him again and again without apparently understanding or incorporating it into his routine.

F.M. likes to play practical jokes that seem to have a spiteful edge to them. He tends to direct them toward those he dislikes.

The group activities that were both on and off the ward varied in content and purpose. An example of these groups is as follows:

1. Stretch and aerobics: This group was designed to increase muscle tone, regulate elimination and decrease congestion.
2. Leisure education: This group taught skills concerning planning, locating resources and budgeting for leisure. It included components of stress management, nutrition and listening skills.
3. Activity clinic: These activities were oriented toward crafts, designed to increase attention span, following directions, pre-vocational skills and enhance self-esteem. The clinic provided opportunity for structured projects in individual and group settings.
4. Graphics: This group emphasized self-expression through different modes and textures. It helped increase attention span.

F.M.'s behavior in these groups tended to be similar to those described in the Vocational Education Group with two interesting differences. First, when F.M. is asked to read directions out loud for a project, he ceases to mumble and can be clearly understood. Secondly, the discovery that when he is in a swimming pool, he talks clearly, his compulsive



touching is almost non-existent and his peer interactions are more civil. This will be discussed in more detail in the summary.

The last group in which F.M. was observed for the listed behaviors was the on ward activity, which was bingo. This group was designed to encourage attention to task and friendly competition among peers. Because of the small area where the game was played, it seemed that F.M.'s agitation of peers was more pronounced. His spitting was less because it was an inside activity.

The next five pages are tables number six through ten. They indicate the number of occurrences observed and recorded in the three groups for a period of twelve weeks. The observations were for a period of one hour in each group once a week. The numbers on the "Y" axis are different as the graph program did the number of frequencies according to the number of occurrences fed into the computer. The number of behavior frequencies reflect the number of times per week an observed behavior was during the time designated for observation.

Table number six, Falling Asleep, indicates that F.M. fell asleep no more than two times in the activities being observed. This is partly due to the fact that all of the activities in which he was

observed involved movement of some type. This behavior presents itself more in quieter groups such as classroom activities.

Table number seven, Mumbling Speech, indicates that F.M.'s highest number of frequencies with unintelligible speech was fifteen in the three hour period while being observed. This is however, one of his most deficit areas and creates frustration on the part of peers and staff alike.

Table number eight, Spitting, recorded a frequency of thirty-three times that F.M. spit during the time he was being observed during a week. This behavior is more obvious in outdoor activities than inside.

Table number nine, Compulsive Behaviors, included several behaviors. These behaviors include touching things or people, pulling leaves or limbs on trees, and slamming doors. His highest number of occurrences recorded in a week was twenty-three.

Table number ten, Gait, recorded the number of times F.M. ran in a charging type run during the observation times. This behavior is demonstrated in all activities, whether inside or outside a building. It is often interweaved with his compulsive behaviors of touching and hitting. As the table indicates, this behavior was sporadic. It is interesting to

note that several of the behaviors escalate beginning in the ninth week when the Tegretol was stopped.

# FALLING ASLEEP

BEHAVIOR FREQUENCY

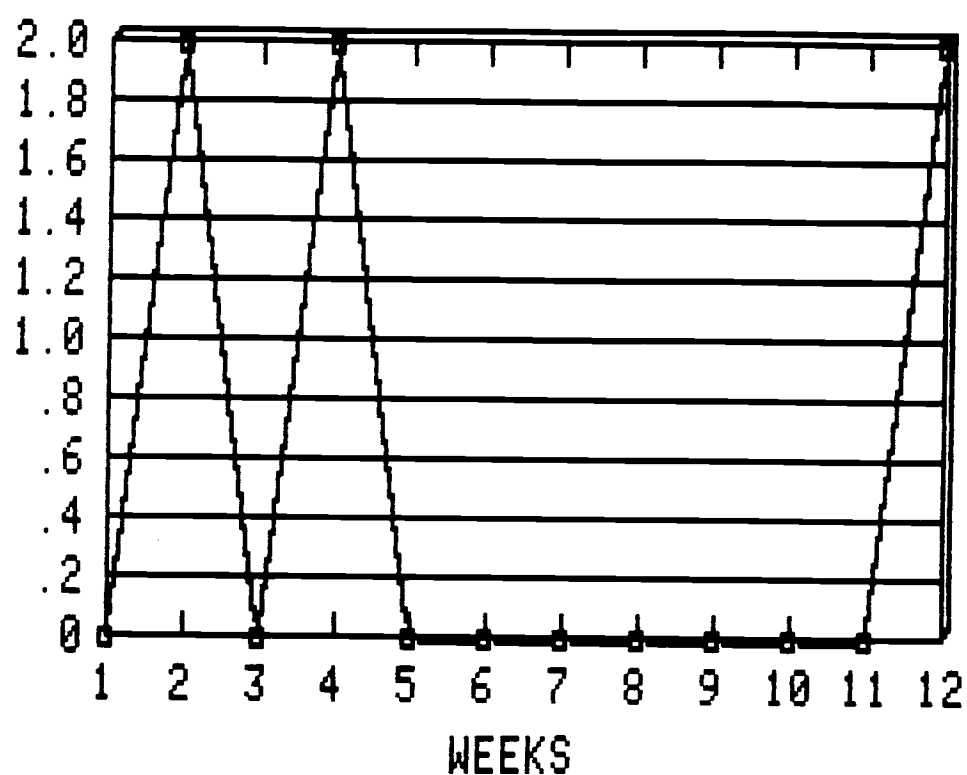


Table 6: Falling Asleep Frequency

# MUMBLING SPEECH

BEHAVIOR FREQUENCY

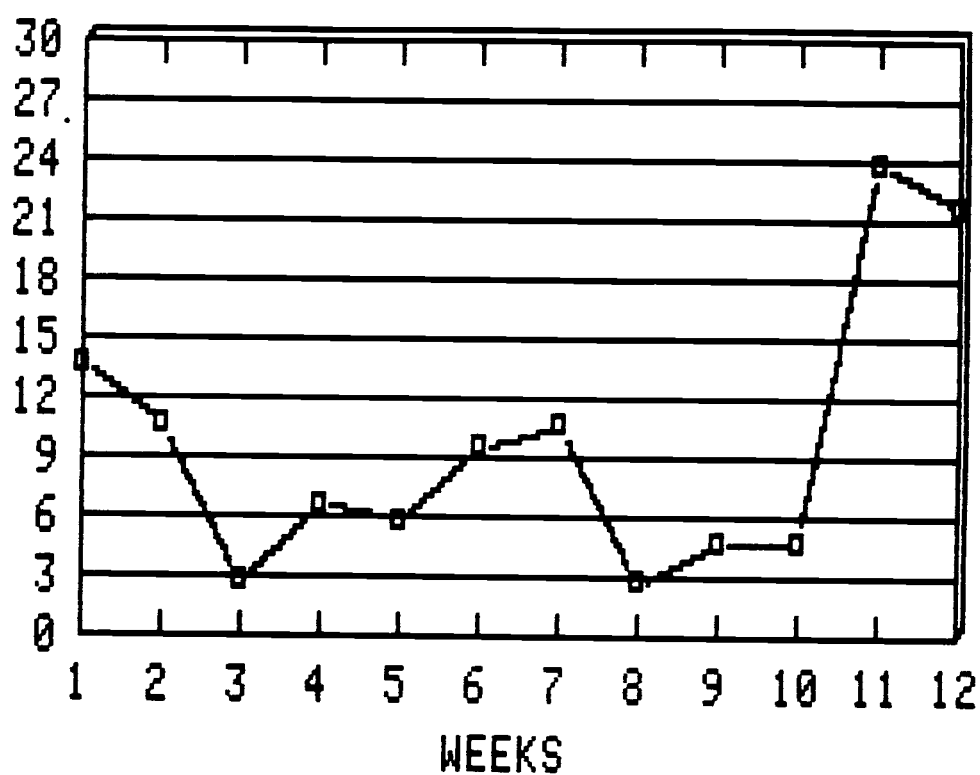


Table 7: Mumbling Speech Frequency

# SPITTING

BEHAVIOR FREQUENCY

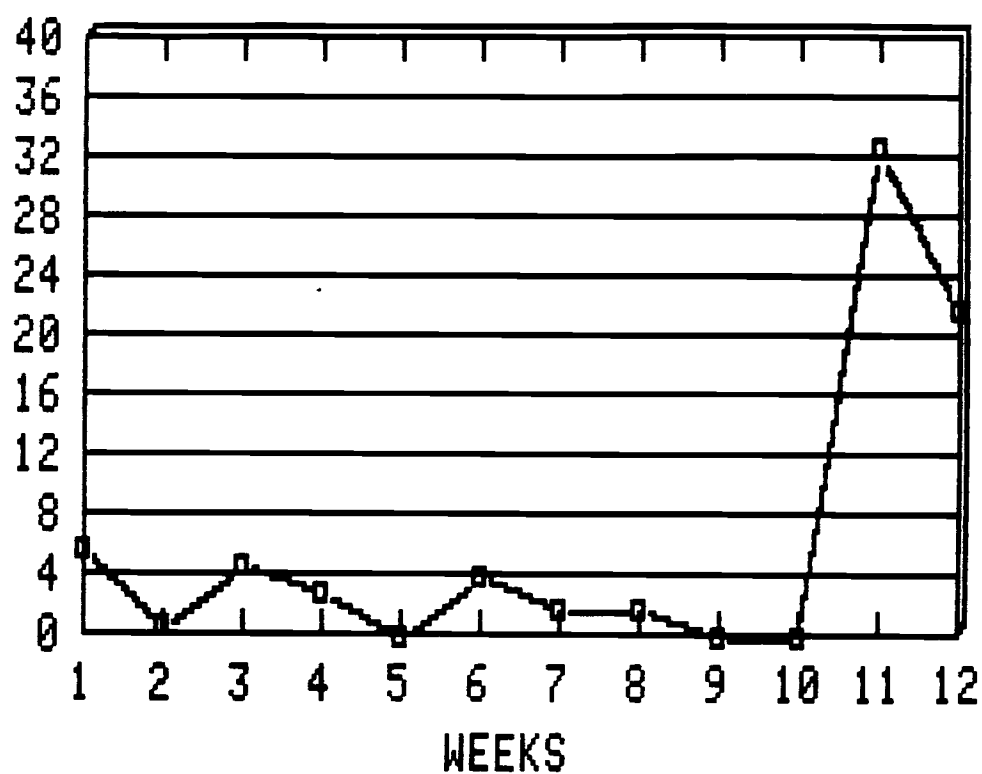


Table 8: Spitting Frequency

# COMPULSIVE BEHAVIORS

BEHAVIOR FREQUENCY

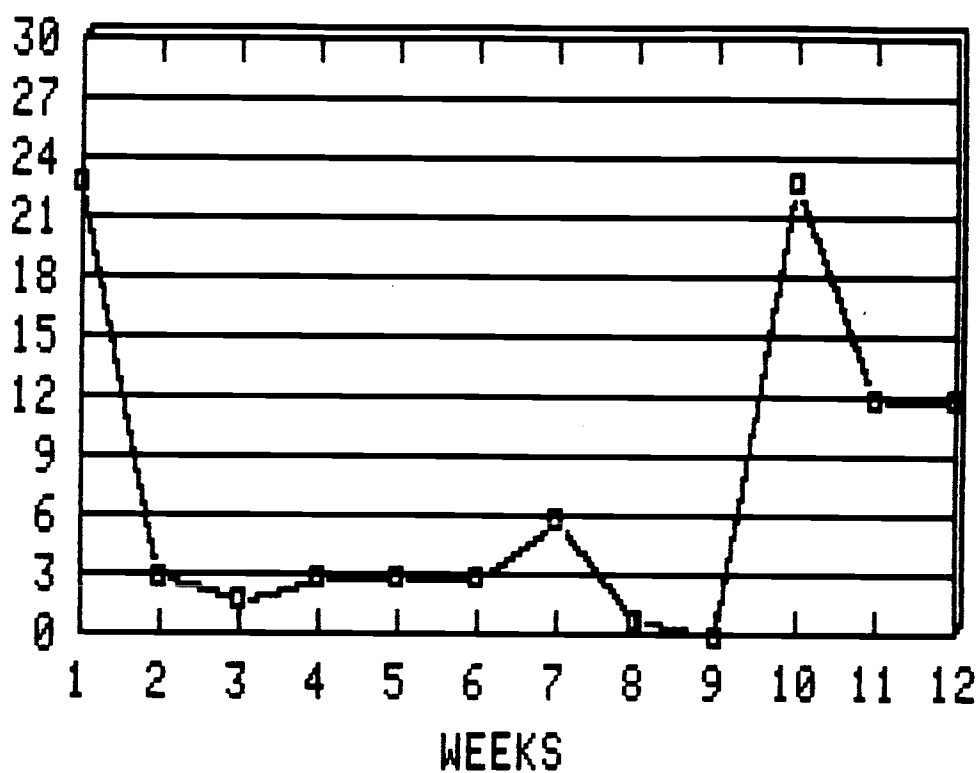


Table 9: Compulsive Behaviors Frequency

# GAIT

BEHAVIOR FRQUENCY

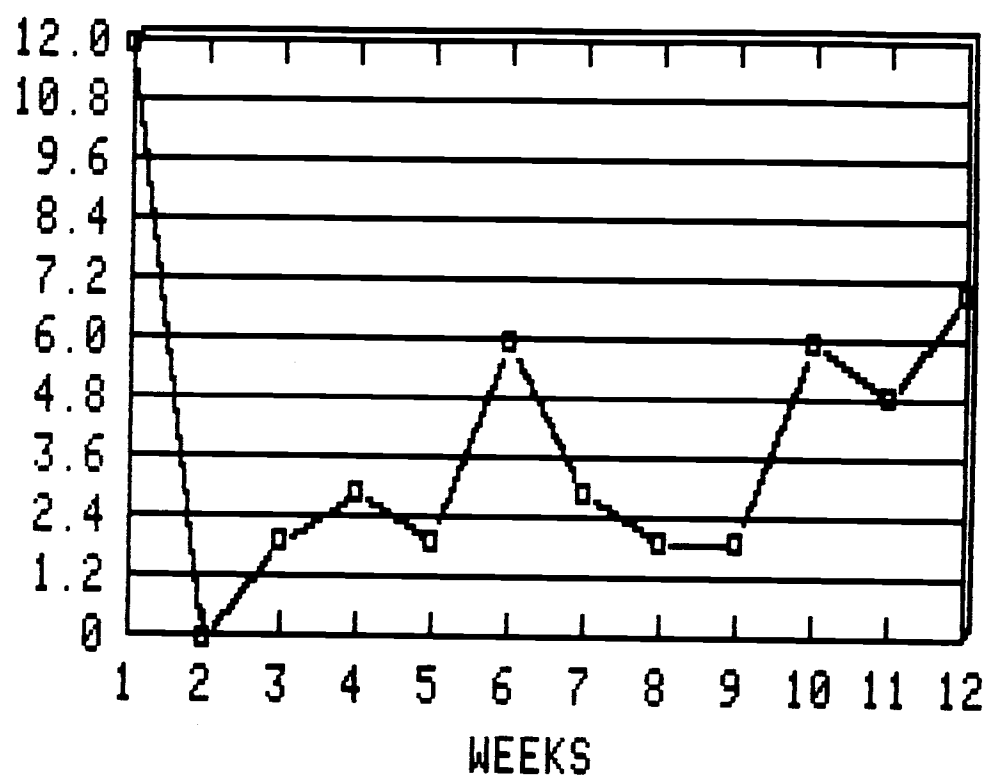


Table 10: Gait Frequency



### POST TESTING ASSESSMENT

Because the Peabody Picture Vocabulary Test and the Peabody Individual Achievement Test were given to assess the client's academic and intellectual ability to read and understand other testing material and follow directions, he was not post tested in these areas. And since he scored at the normal range in the area of motor coordination and was not given a regime of occupational therapy activities, he was not post tested in that area.

He was post tested in the areas of memory, speech, and self-esteem. The results are as follows:

#### Wechsler Memory Scale

1. Test one: On current information, his post test score was forty, which showed improvement from mild to average.
2. Test two: On orientation, his score was unchanged.
3. Test three: Mental control remained the same.
4. Test four: On memory passages there was a slight improvement, going from a score of fifty-eight to a score of sixty-one. These are both in the high average range.
5. Test five: On memory span, he measured an increase from a score of forty-seven to a score of sixty. This was an improvement from average to high average.

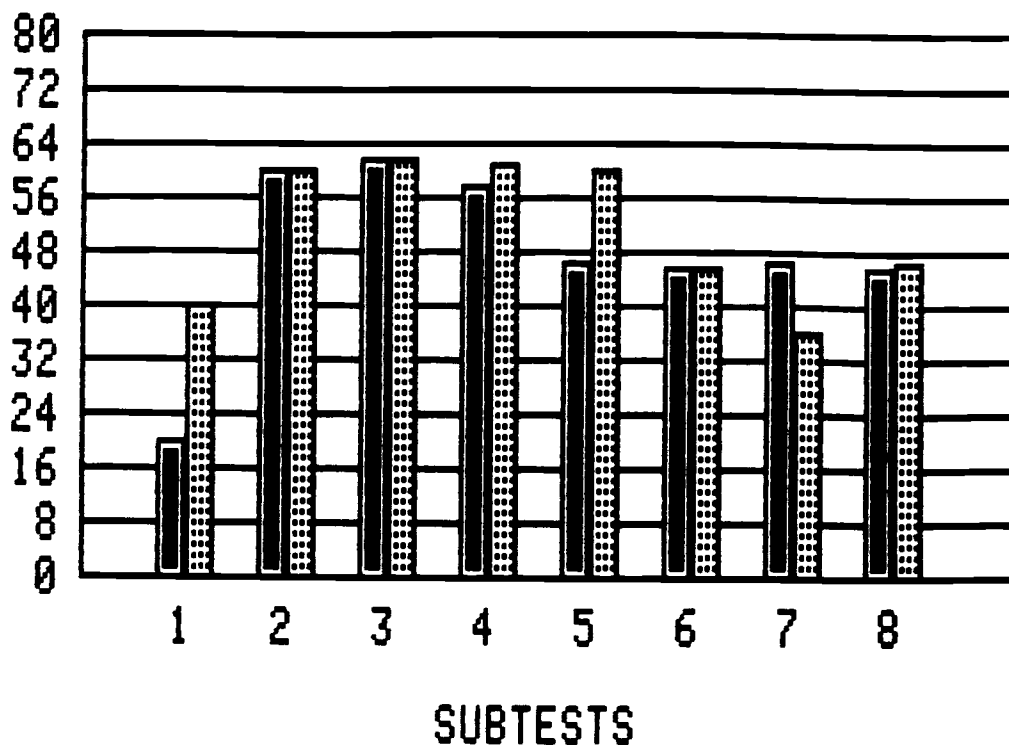
6. Test six: Visual reproduction remained the same. Again, the client hurried through the task, not using his time wisely.

7. Test seven: On the associate learning test, the subject's score fell from forty-seven to thirty-six. This lowered him from the mild average range to the moderate impairment level.

Total test: The total test score in the pretest was forty-six. Compared with his total test score in post testing, the improvement would not be considered significant. Table number eleven on the following page offers comparison scores of the pretest and post-test.

# WECHSLER MEMORY SCALE

## SCORES



■ PRETEST    ▤ POST-TEST

0-25=SEVERE	45-55=AVERAGE
25-35=MODERATE	55-65=HIGH AVERAGE
35-45=MILD AVERAGE	65+=SUPERIOR

1-INFORMATION	5-DIGITS TOTAL
2-ORIENTATION	6-VISUAL REPRODUCTION
3-MEMORY CONTROL	7-ASSOCIATE LANGUAGE
4-MEMORY PASSAGES	8-TOTAL TEST

Table 11: Wechsler Post-Test

## FRENCHAY DYSARTHRIA ASSESSMENT POST TEST

1. Reflex: No change
2. Respiration: No change
3. Lips: The only change was in speech. There is some weakness and briskness, consistently poor movement, acoustically represented as weak. There were many omissions of various shaping.
4. Jaw: No change
5. Soft palate: No change
6. Laryngeal:

Time- The patient can say "ah" for fifteen seconds.

Pitch- The patient is able to represent four distinct pitch changes on even progression.

Volume- No change

In speech- the patient's voice quality persistently shows difficulty in maintaining clear phonation, appropriate volume, and pitch. These are constantly impaired.

7. Tongue: No change

8. Intelligibility:

Words- seven to nine words interpreted correctly.

Sentences- no change

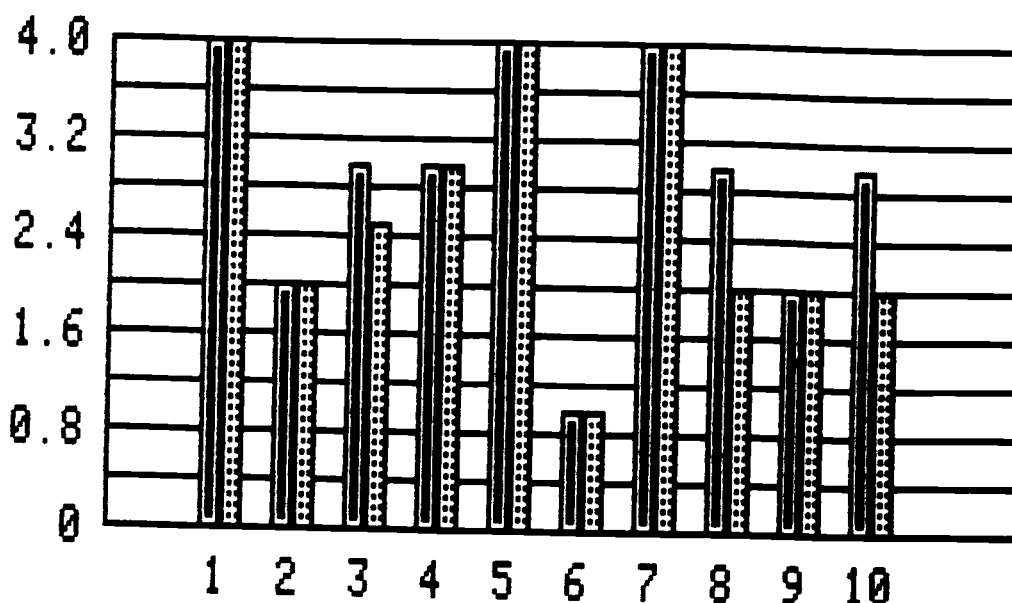
Conversation- speech is severely distorted; can be understood half the time; very often has to repeat.

The post testing results indicate that F.M. did not make progress in the period of time in which he was in the treatment phase of the study. This is indicated by the laryngeal section subtest under "time and pitch" and in the intelligibility subtest under "words and conversation." These subtest results indicate that the patient had digressed in his intelligibility and his pitch.

He did make progress in the laryngeal subtest under time. He was able to sustain the "ah" sound for fifteen seconds versus ten seconds in the pretest. Unfortunately, this did not carry over into conversational speech. Table number twelve on the following page shows the pretest and post test comparisons for this test.

# FRENCHAY DYSARTHRIA ASSESSMENT

FUNCTION



■ PRETEST    ▨ POST-TEST

4.0-NO ABNORMALITY

0-UNABLE TO PERFORM TASK

1-REFLEX

2-RESPIRATION

3-LIPS

4-JAW

5-PALATE

6-LARYNGEAL

7-TONGUE

8-INTELLIGIBILITY-WORDS

9-INTELL. SENTENCES

10-INTELL. CONVERSATION

Table 12: Frenchay Dysarthria Post-Test

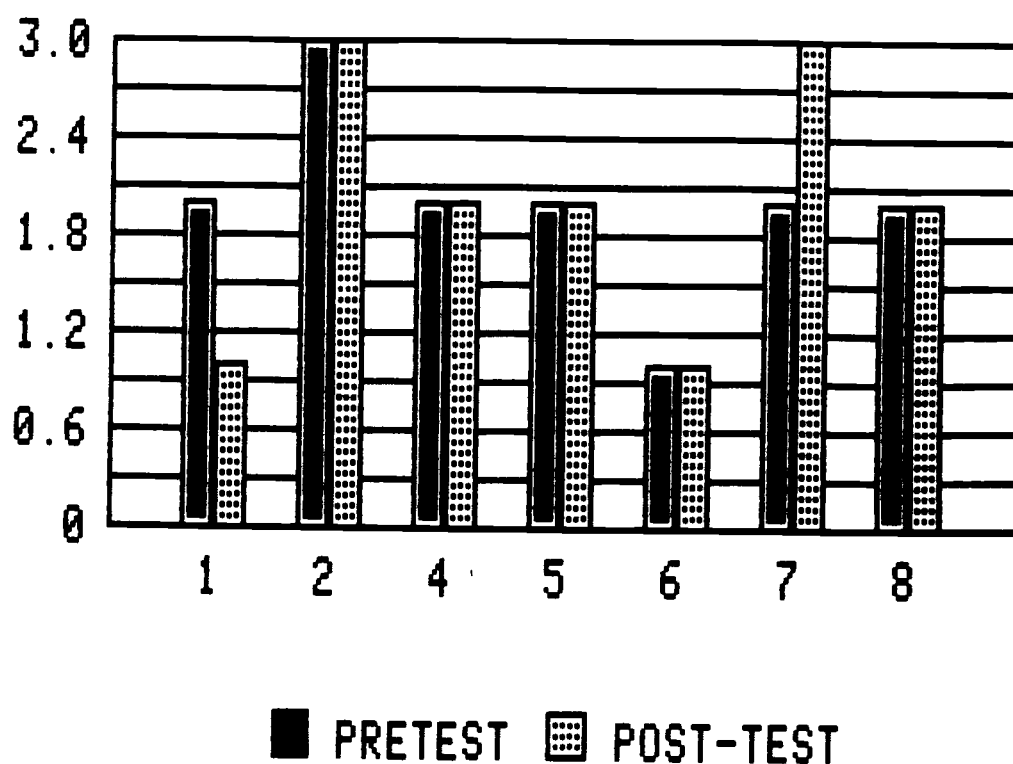
## FULLERTON LANGUAGE POST TEST

1. Auditory synthesis: The patient digressed.
2. Morphology competency: No change.
3. Oral commands: Test not given.
4. Convergent production: No change.
5. Divergent production: No change.
6. Syllabication: No change.
7. Grammatical competency: The patient progressed from the instruction level to the competence level.
8. Idioms: No change.

The following page offers table number thirteen showing the pretest and post test comparisons on the Fullerton.

# FULLERTON LANGUAGE TEST FOR ADOLESCENTS

## PERFORMANCE PROFILE



3.0-COMPETENCE LEVEL  
2.0-INSTRUCTIONAL LEVEL  
1.0-FRUSTRATION LEVEL

1-AUDITORY SYNTHESIS  
2-MORPHOLOGY COMPETENCY  
4-CONVERGENT PRODUCTION  
5-DIVERGENT PRODUCTION  
6-SYLLABICATION  
7-GRAMMATIC COMPETENCY  
8-IDIOMS

Table 13: Fullerton Post-Test



### SELF-ESTEEM POST TESTING

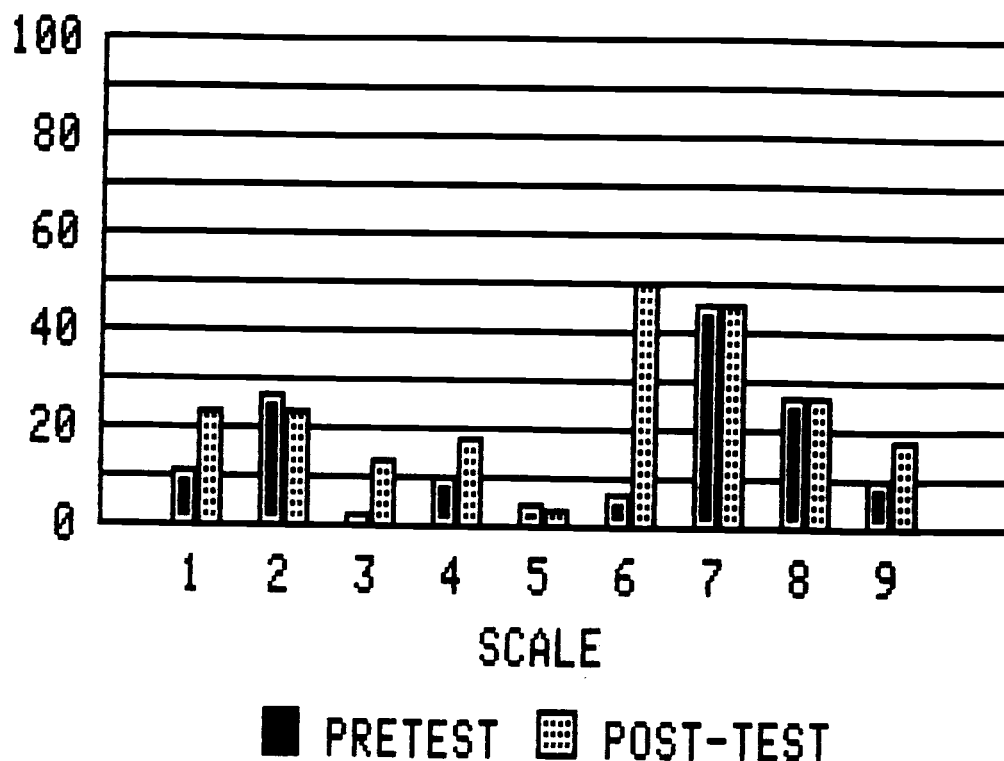
The post testing on the Tennessee Self-Concept Scale shows considerable improvement in the client's self regard. The most evident area is personal self, which went from seven percentile in the pretest to fifty percentile in the post testing. Behavior and identity are two other areas that showed significant improvement.

The total self-esteem of F.M. appears to be in the normally expected range, which is an improvement for the below average range in the pretest. There appears to be both clear and unclear, consistent and inconsistent areas of self-concept. This partial diffusion is not likely to occur in the highly self-actualized person performing at maximal potential.

The following page offers table number fourteen showing a contrast between the pretest and post test results on the total self-concept scale.

# THE TENNESSEE SELF-CONCEPT SCALE

PERCENTILE SCORE



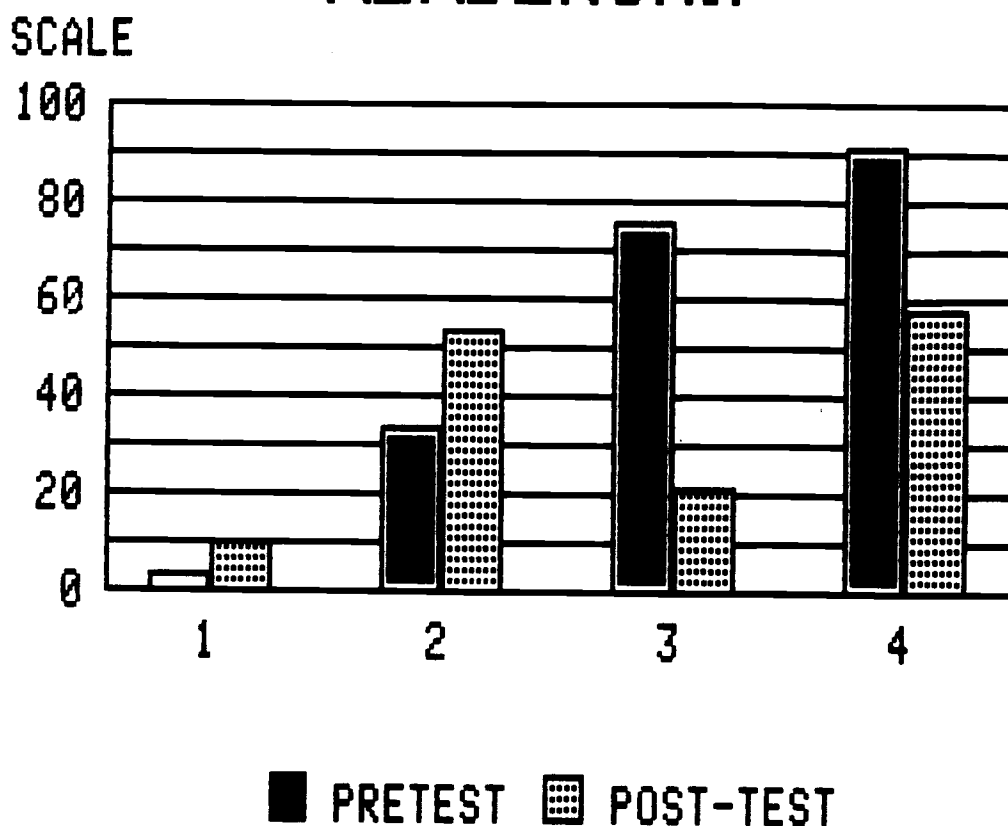
- |                     |                 |
|---------------------|-----------------|
| 1-IDENTITY          | 6-PERSONAL SELF |
| 2-SELF SATISFACTION | 7-FAMILY SELF   |
| 3-BEHAVIOR          | 8-SOCIAL SELF   |
| 4-PHYSICAL SELF     | 9-TOTAL SCORE   |
| 5-MORAL SELF        |                 |

Table 14: Self-Concept Post-Test

F.M. improved in the area of Probability of Group Membership. He went from a high in Clinical Internalizing to moderately high and a very high in Clinical Externalizing to a moderately high. Though he still scored marginal in the Well-integrated group, he improved considerably in the Normative area. This would indicate that he could function adequately in a group situation outside an institution.

The following page shows table number fifteen showing the differences in the pretest scores and the post test results. This table indicates a substantial improvement.

# PROBABILITY OF GROUP MEMBERSHIP



0-25=MARGINAL    50-80=HIGH  
 25-50=MODERATE    80-100=VERY HIGH

1-WELL-INTEGRATED  
 2-NORMATIVE  
 3-CLINICAL INTERNALIZING  
 4-CLINICAL EXTERNALIZING

Table 15: Group Probability Post-Test

### POST TREATMENT CONFERENCE

The next ninety day conference following the end of the treatment plan was held five weeks after the data gathering and post testing was completed. All of the disciplines involved in the study were represented by attendance or written documentation at that conference.

All medications remain the same except Tegretol, which was discontinued by recommendation of the Jamison-Farrabee Team. This is a review board set up by the legislature to monitor patient medications to insure that they are not being over medicated. Their recommendation was made because of the absence of any documented seizures since his placement in the current program.

It was observed by the staff that shortly after this medication was discontinued, F.M.'s behavior became increasingly more pronounced in all areas of behavioral excesses. He did more property damage, was involved in more altercations with peers and received more prn (as needed) medications. His insomnia has also increased.

As mentioned above, his problem number 123, hyperactivity has increased considerably since the Tegretol was stopped. His verbal abuse continues but until the medication was discontinued he had shown

much improvement. He was moved from a moderate level on the intensity scale to a severe level, which is fifty per cent or more of the time.

To lower the risk of inappropriate use of matches and cigarettes, he has been placed in a smoking program where he is given one cigarette an hour. He can smoke this only in a supervised designated area.

Because of the treatment plan, problem number 302, coordination, gross and fine motor, was opened by the speech pathologist. The staff has been encouraged to prompt F.M. to speak more slowly and separate his words so that he might be understood. He is currently at a level four on an intensity scale, which is maximal impairment or more than seventy-five per cent of the time when he speaks.

Discharge planning at this time is not active. There are no placements that will accept a patient that has destruction of property, fire hazard and assault as active problems. The current goal is to have the client free of these behaviors for a period of six months before placement planning will begin. Appropriate placement will be discussed in the summary.

### PSYCHOTHERAPY EVALUATION

It was intended that the treatment program for F.M. be intensive and that when his behavioral excesses were not being observed for data collection, they were being corrected when observed. So that he might have a place to express his frustration because of this intensity, it was felt that a weekly one to one psychotherapy session would be beneficial. The session would also be aimed toward reinforcing his gains and increasing his self-esteem.

To increase the advocate position, it was felt that the psychotherapist should not be directly involved with F.M.'s treatment program. As he seemingly related better with females, this was taken into consideration in the selection of the therapist. A therapist who had worked with him in the past, but was no longer connected with the RPNI agreed to see him.

At his sessions, he presented himself well groomed and clean shaven. His manner was friendly and he seemed anxious to please. He was most cooperative.

Drawing pictures was used as a medium in these sessions. His drawings reflected him as very depressed. His description of the drawings was bleak

regarding his present situation and his future. It was obvious that his self-esteem was impaired.

During the sessions he offered no complaints about the treatment he was receiving at the hospital, but did express a strong desire to leave. When asked how he could leave, he offered no plan by which to gain his discharge. He denied that he had any problems and seemed to be involved in magical thinking, like someday the doors would open and he would leave.

After the first few weeks this therapist left and another therapist continued with F.M. The change in therapist did not seem to bother him and he was anxious to resume with the new person. He basks in extra attention.

Both therapists commented on F.M.'s sense of humor and his cooperation. Though his cooperation was good in the beginning of the sessions, after about twenty minutes or so he needed to be redirected to the task at hand. It was noted that due to the way he processes information, it is difficult for him to attend to task. He did not fall asleep during sessions, which is unusual for him not to do so when sitting for more than a few minutes.

The second therapist felt that there is organicity, compensatory behavior for those deficits



and extremely poor self-esteem. This is suggested by the way the patient rapidly processes information and the level of psycho-motor agitation that accompanies his actions. His attempts at compensation through humor, attempts to please others, problem behaviors associated with stopping up toilets, destruction of property are all indicative of his poor self-esteem that is super-imposed on organicity.

Both therapists recommend that future treatment include one to one therapy, preferably with a female. More specific recommendations will be made in chapter five.

## CHAPTER V

### CONCLUSIONS

The focus of this study was raising the client's self-esteem. Application of a multidisciplinary treatment approach to address this problem rather than the traditional single treatment approach was a major portion of this research. The hypotheses were: 1) It is anticipated that using a multidisciplinary team approach, a treatment program can be developed to help the client learn new ways to respond to his environment, while limiting his ability to manipulate staff; 2) a multidisciplinary treatment program can be developed which will at least partially restore the client's self-esteem; and 3) approaches to treatment and results can be observed, described, and evaluated to the extent that a transferable model for multidisciplinary treatment of neurologically impaired patients can be developed. Due to the amount of significant losses the patient suffered as a result of his brain injury, it is impossible to say which one contributed most to his self-esteem impairment. By simultaneously addressing as many of the losses as possible through use of the multidisciplinary team approach, his self-regard, as

hypothesized, did show considerable gain. This gain was measured by the Tennessee Self-Concept Scale and revealed growth from the seventh percentile to the fiftieth percentile. The amount of improvement cannot be attributed to a single factor during the treatment.

In the eight areas of self-esteem in which the subject was assessed, he improved in four, regressed in two and remained unchanged in two. His areas of regression were in self-satisfaction, which showed a loss of three percentile points and the moral self, which showed a loss of one percentile. Both of these losses, by virtue of the small differences, appear minimal. The two unchanged areas were in family self and social self. There have been no changes in F.M.'s social environment or in his family support base during the course of this study. His areas of improvement were in identity, which showed an advance of twelve percentile; behavior, which measured an eleven percent increase and physical self, an advance of eight percent. The major improvement was in the area of personal self, which he demonstrated a forty three percent increase and would be considered quite meaningful.

As the other areas of F.M.'s behavioral excesses showed no improvement, and he made no

cognitive gains, it is the opinion of the multidisciplinary team that the elevation of self-esteem came about because of the amount of special attention he was accorded throughout the study. The emphasis was on positive reinforcement, both verbal and otherwise. Normally, unacceptable behaviors exhibited by the patient would have excluded him from some of the activities. However, due to the need to have him included for observation and modification of these behaviors, he was allowed to attend. Therefore, he had a twelve week period of consistent, positive reinforcement.

One advantage of having this consistency was that it created a need for the staff to design and experiment with new behavior modification techniques. Another outcome is that it opened a dialogue between team members to discuss new approaches. It became apparent to staff members not involved in the study that some new techniques were being investigated, thus arousing their interest. Some of the reactions were positive, but pessimism was the predominate projection.

Another area that the self-concept scale ranked was group probability. Again, F.M. made significant gains. In the pretest, he ranked very high in Clinical Externalizing and Clinical

Internalizing. Individuals having high scores in these groups include persons with anxiety reactions, depressive reactions and self-esteem patterns commonly associated with severe psychological problems. F.M. advanced from a high to a marginal in Clinical Internalizing, and from a very high to high in Clinical Externalizing. In the Normative prototype group, he advanced from moderate to high. Individuals in this group function in a typical way and do not show psychological problems related to self-esteem. Lastly, in the Well-intergrated group, he improved from a plus-zero to marginal. This group has been judged to have a strong sense of self-worth.

There were five behaviors selected for observation and modification during the study. They were: 1) falling asleep; 2) mumbling speech; 3) spitting; 4) compulsive touching; and 5) gait impairment. These behaviors indicated improvement in the beginning of the study and continued to maintain improvement until the ninth week when his Tegretol was lowered and subsequently discontinued. The behavioral excesses of mumbling speech, compulsive touching and spitting began to escalate significantly at this time. This escalation is attributed to the removal of the medication, as this

medication reduces hyperactivity as well as controls seizures.

One disadvantage of having limited the behaviors to be observed to five areas is that there were other behaviors far more destructive that needed to be addressed. Because they could not be observed, however, they continued without having intervention that was consistent. An example would be toilet stuffing. F.M. would deny any behavior that he was suspected of, but not caught in the act of performing. Therefore, the behaviors that were readily observable were selected, because even if he could be observed in some of his covert behaviors, it would not have been on a consistent basis.

### MULTIDISCIPLINARY TEAM CONSIDERATIONS

The multidisciplinary team met formally as a group in the treatment team conference, where individual patients were discussed at length, and twice a week at rand, where all patients were discussed briefly. Ideas were exchanged informally as often as possible between these meetings.

There were a number of advantages of the multidisciplinary team approach. Major advantages were:

1. It allowed each discipline to become more familiar with the job description of their colleagues.
2. There was a free exchange of ideas and frustrations. Thus, one approach of behavioral change might not be working for one person, but was for another and this idea exchange created the needed element to give success to the one that is not working.
3. Because of the communication improvement between staff, it commandingly reduced the patient's ability to manipulate.
4. Working together increased the focus of goals for the patient.
5. There was a sharing of incidents and situations that would have gone undiscussed prior to the study.

6. There was a decrease of the "them and us" attitude between staff members.

7. It allowed a patient's problems to be addressed globally as opposed to a single-discipline approach, which addresses them by small sections.

This approach also generated some disadvantages. These included:

1. When people left the team, there was a vacuum created for the other members to fill.
2. Scheduling was sometimes difficult.
3. Cost of man-hours concentrated on one subject.
4. Caused other patients to view the single subject as "special" because he was allowed to have special privileges.



## STAFF RECOMMENDATIONS AND CONCLUSIONS

At the conclusion of the first stage of this approach, and considering the gains made by the patient, the staff has made recommendations for treatment at the next stage.

Speech Pathology: The speech pathologist states that F.M. has a skewed sense of how his speech sounds. What he wants to communicate is clear to him. Making his needs contingent on making himself understood will be the key to improvement in speech. He has mumbled for so long that it will be hard to change.

Occupational Therapy: The occupational therapist suggests that much of his compulsive behavior is due to the lack of stimulus input. A modified form of programs to stimulate children might be an area to explore. Activities such as placing warm compresses on his stomach, having him rock quietly or placing hands on his face when he is hyperactive. Certainly the lowering of his sugar intake will help curb the hyperactive/sleep alternating cycle.

Recreation Therapy: The recreational therapist states that F.M.'s self-image doesn't agree with who he is today. He tries to see himself as who

he should have been. He describes himself as a good lover, cook, business man, etc. His self-image is superficial and he avoids dealing with his anger or confrontations. He undermines small successes by destroying his projects as they near completion. He cannot enjoy the moment and is constantly asking what is happening next week or next month.

He can plan realistically and has the skills and knowledge for independent leisure. He can read maps, use the phone, plan menus and has a good leisure attitude. Again, this therapist emphasized further exploration of the patient's behavior change while in a swimming pool.

Psychotherapy: The psychotherapist feels that F.M. should continue his one-to-one sessions, preferably with a female therapist. His prognosis is fair to good. If he could contain his destructive behaviors for a long enough period to gain positive reinforcement that could be internalized, he could function in a less restrictive environment. This less restrictive environment should have a twenty-four hour program that is small and highly structured with a "homelike" atmosphere. A demanding and nurturing staff would add greatly to his chances for success.

Education: The teachers agree that the many overwhelming behavioral excesses, such as hyperactivity, impulsiveness, spitting, charging about, all impede his ability to make cognitive gains. The difficulty of dealing with these behaviors in a class situation is that some of the behaviors are so severe that the patient needs to be removed from the group.

For instance, one of the consequences that was used successfully at the CRU was to have F.M. lie down when an infraction occurred. This was not used during this treatment program because it could not be carried out with any consistency. It would not be feasible to have the patient lie down on an outing. It is, however, a consequence that might be implemented if the environment allowed.

As with many of the things tried and tested in this study, the behavioralist must decide what works best. It would be beneficial to take F.M. to visit possible placements and find out what their expectations are. In this way, clear goals can be spelled out and plans to reach them made.

## RECOMMENDATIONS FOR FUTURE TREATMENT

The picture is gloomy regarding the number of existing placements for the brain-injured. The ones that do specialize in that clientele are expensive and have waiting lists. They can be particular about whom they accept and would be reluctant to accept clients who have a history of property destruction, stealing, etc.

If one were to have an optimal situation that would allow several rehabilitation techniques to be integrated into F.M.'s life at the hospital, it is felt the following suggestions would bring maximum benefit. The patient has the motivation to be involved, the intelligence to understand directions and he is a very likable person. The following recommendations are suggested:

1. The modification techniques that are going to be used must be consistent twenty-four hours a day.
2. His speech therapy must continue on a daily basis, with the staff reinforcing clear speech and ignoring unintelligible attempts.
3. He should have one-to-one therapy at least one hour per week and ideally two. This should be with a female therapist. The thrust of this therapy should be oriented toward dealing with his anger, the loss

of his normal functioning, the death of his mother and other unresolved issues.

4. His sugar intake should be drastically cut. Alternative snacks with sugar substitutes and fruit would make good alternate choices. Sugarless gum will not only reduce his spitting, but he likes it.

5. When he is given a task, it should be focused for him. All materials and supplies should be available in one area and directions should be clear and short.

6. Behavioral excesses can be controlled by using a point system where future rewards depend on his current behavior.

7. Begin using Tegretol again.

8. When he is going to have to suffer consequences for a behavior, in as much as possible, give him choices. It diffuses his anger and raises his self-esteem to have some power in his life.

9. Using a multidisciplinary team approach will lower his ability to manipulate.

### SUMMARY

This study examined many different areas of the patient's problems. This would not have been possible without a multidisciplinary team approach. This approach allowed the team to focus on, record a baseline and treat several of his behavioral excesses. It also allowed them to see cognitive areas needing amelioration and behavioral excesses that needed rehabilitation. The need to problem solve as a team has given the staff a new attitude toward other challenges.

The patient's self-esteem increased significantly. In addition to the special attention, the patient was able to see that the staff's right hand knew what the left hand was doing. This created a challenge for the patient to become more creative in his manipulation techniques. The consistency of the special attention seemed to give F.M. a feeling of predictability. The last element which was felt to contribute in his rise in self-esteem was including him in conversations about his problems and the techniques being used. This was often done by using the videotapes showing his behavior, and enlisting his help in the quest for problem solving.

Adamovich et al (1985) state that motivation is one of the most important ingredients in the

rehabilitation process. F.M. was a motivated individual before his accident and continues to be now. The missing piece of the puzzle that remains is that he does not know what he is motivated toward. This may be due in some small part to the fact that much of F.M.'s earlier hospital treatment was less than desirable. By the time he had a treatment program to address his specific problems, he had been so entrenched in his behaviors for so many years that it will be difficult to break the pattern. It is the consensus of the team that only a consistent behavior modification program will do that. He is obviously angry, and has not come to terms with that anger. A direction to focus the excess of energy he possesses is sorely needed.

It should be remembered that F.M. has spent almost nineteen years of his life in hospitals and/or treatment. There is no doubt an underlying fear that he is better off in a setting that has external controls structured to keep him safe.

As the treatment phase came to an end, the staff involved felt they were getting a concrete direction on how to cope with some of the behavior manipulations used by F.M. Because of the intensity of the activities, there was little time to begin new strategies. One that was felt to have some potential

is to have staff members role play some of F.M.'s behaviors and have him determine needed changes.

Not only did F.M. gain self-esteem in this study, but so did the team. Staff members not involved in the study have begun to ask different members of the multidisciplinary team what they would suggest for other patients in terms of rehabilitation techniques.

In addition to the gains made by the subject and other members of the team, the author has learned a profound amount about research, building teams, support systems, bureaucratic red tape, behavior modification and communication. The computer has taken on new meaning as well.

Problem solving as a team expands options toward meeting new challenges. There were frustrating times, especially when trying to determine which data was useful and how to measure it. Since this was not an experimental study, it was often an intuitive direction that led to decision making. There was gratification in the fact that often that direction yielded positive results.

An unforeseen outcome has been the development of team approaches throughout the unit. Communication has improved, patient care upgraded and a higher level of morale developed.



The patient has gained new levels of self-esteem. Other patients are also gaining as the successful methods used in this study are being implemented into their programs. There seems to be a more focused energy directed toward program development for individual patients.

Recommendations for future study would include pretesting and post-testing of the team members as well as the client. Researchers aware of their own self-esteem issues will be more motivated to problem-solve with and for their subjects. This emphasis on problem-solving extends into all areas of ones life, not just self-esteem. And lastly, the selection of a compatible and cohesive team is a must.

## GLOSSARY

1. Anterograde Amnesia: Refers to deficient storage or retrieval of events during or after a cerebral insult.
2. Attention Deficit: Involves a disturbance of attention, inhibition and arousal.
3. Confabulation: The patient has a tendency to fill gaps in memory either by substituting earlier events or by constructing unusual stories.
4. Dilantin: A drug that prevents or controls seizure activity; may be used alone or in combination with other drugs to control seizures.
5. Dysarthria: Slurred, weak speech due to weak oral muscles.
6. Echolalia: The repetition of words spoken by others.
7. Extinction: Being nonresponsive to a patient except to meet his basic needs.
8. Glasgow Coma Scale: Indicators to measure level of coma.
9. Hawthorne Experiment: An experiment on incentives carried out at the Hawthorne works of the Western Electric Company, the general result of which appeared to show that external incentives had a relatively slight influence compared with better morale and the development of an esprit de corps, arising particularly from the feeling on the part of the worker that the management had a personal interest in him.
10. Long-Term Memory: Relatively enduring memories (lasting days, weeks, years). The number of forms of long-term memories and mode of storage and retrieval are unknown.
11. Mellaril: A drug that reduces anxiety, agitation, and tension.

12. Organic Disorder: Transient or permanent dysfunction of the brain, caused by a disturbance of physiologic functioning or brain tissue at any level of organization; structural, hormonal, electrical, biochemical, etc.
13. Range of Motion: Exercise of the joints.
14. Rehabilitation: Restoration of function to optimal level after injury or disease.
15. Retrograde Amnesia: Refers to deficient storage or retrieval of events prior to cerebral insult.
16. Seizure: Attack of uncontrolled activity.
17. Self-Esteem: Self-esteem has two interrelated aspects: It entails a sense of personal efficacy and a sense of personal worth. It is the integrated sum of self-confidence and self-respect. It is the conviction that one is competent to live and is worthy of living.
18. Short-Term Memory: A memory system that lasts longer than immediate recall (longer than ten seconds) and is responsible for the storage of new memories into long-term memory.
19. Tegretol: A drug that controls seizure activity. It also reduces hyperactivity.

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## Appendices



## GLASGOW COMA SCALE

<u>Rescuer's Test</u>	<u>Victim's Response</u>	<u>Assigned Score</u>
Spontaneous speech	Opens eyes on own	4
	Opens eyes when asked to in a loud voice	3
Pain	Opens eyes when pinched	2
Pain (nil)	Does not open eyes	1
Commands(obey)	Follows simple commands	6
Pain(localizing)	Pulls rescuer's hand away when pinched	5
Pain(withdrawal)	Pulls a part of body away when rescuer pinches victim	4
Pain(abnl. flex.)	Flexes body inappropriately to pain	3
Pain(ext. resp.)	Body becomes rigid in an extended position when rescuer pinches victim	2
Pain(nil)	No motor response to pinch	1
Speech(oriented)	Carries on a conversation correctly and tells rescuer where he is and the month and year	5
Speech(confused)	Seems confused or disoriented	4
Speech(inapprop.)	Talks so rescuer can understand victim but makes no sense	3
Speech(incomp. snds.)	Makes sounds that rescuer can't understand	2
Speech(nil)	Makes no noise	1



DATE: TUE, APR 23, 1987      CLIENT NUMBER:      082446

\*\*\*\*\* YOUR RESULTS ON THE TENNESSEE SELF-CONCEPT SCALE \*\*\*\*\*

When you completed this questionnaire, you had an opportunity to describe your ideas and feelings about yourself, your abilities, and your day-to-day actions. It was not a test, in the sense of having right or wrong answers, so there is no "grade" or concern about getting a high score here. Instead, you will have a chance to compare several parts of the scale in order to find areas of relative strength or areas that you may feel need attention.

Hopefully, this information will help you and your counselor (or the professional helping you) to further explore your feelings about yourself. Please feel free to ask as many questions as necessary until you have a good understanding of this report.

First, you will see a score "profile." This shows your scores based on different parts of the questionnaire. The names of the parts, listed along the left side, should help you to understand which areas of your self-concept are either high or low. The numbers running along the top and bottom of the profile are "percentiles," which go from 1 to 99. These numbers help you see how your scores compare to a large sample of people who have taken this questionnaire before. If you score at the 50th percentile, this means that half (50%) of the people scored lower than you did. If you scored at the 75th percentile, 75% of the people scored below you, and so forth.

Scale	Percentile Score	1	5	10	25	35	50	65	75	90	95	99
TOTAL SCORE	10	I					:					I
IDENTITY	12	I					:					I
SELF SATISFACTION	27	I					:					I
BEHAVIOR	3	I					:					I
PHYSICAL SELF	10	I					:					I
MORAL SELF	5	I					:					I
PERSONAL SELF	7	I					:					I
FAMILY SELF	46	I					:					I
SOCIAL SELF	27	I					:					I
		I					:					I
	Percentile Score	1	5	10	25	35	50	65	75	90	95	99

DATE: TUE, APR 23, 1987

CLIENT NUMBER: G82446

#### YOUR TOTAL SCORE

Your answers to the questionnaire show that you describe your total self-concept (TOTAL SCORE) in more positive terms than about 9% of the general population. Thus, your overall self-evaluation is in the below-average range.

Although there may be many reasons for your answers to the questionnaire, you apparently have serious concerns about several areas of your life right now. Perhaps past events, habits, other people, or your own inner thoughts have caused your overall feelings about yourself to be "down" right now. Perhaps a helping professional can talk with you about these things. It is important to consider working on the way you rate yourself because of the strong way that a low self-rating can affect your life and relationships with other people.

#### YOUR LOWEST AND HIGHEST SCORES

One important combination of your lowest score was Behavior (How you try to carry through or function, including habits) and Moral-Ethical Self (your feelings of being a "good" or "bad" person).

72. I am true to my religion in my everyday life.  
(You marked this Mostly False)

88. I do what is right most of the time.  
(You marked this Partly True and Partly False)

90. I have trouble doing the things that are right.  
(You marked this Partly True and Partly False)

One important combination of your highest score was Self Satisfaction (your "Judging self," desire for change, or self-acceptance) and Family Self (getting along with and accepted by family and friends).

45. I understand my family as well as I should.  
(You marked this Completely True)

61. I treat my parents as well as I should. (Past tense if parents not living)  
(You marked this Completely True)

44. I am satisfied with my family relationships.  
(You marked this Mostly True)

#### SUGGESTION

It has been shown over and over again that, with help from others, a person can improve his or her self-concept and feelings of self-worth. Perhaps this report will encourage you to find out more about the way you see yourself and to talk about your self-evaluation with someone who understands your home, work (or school), or relationships with people around you.

CLIENT NUMBER: 012400 AGE: 41 SEX: Male DATE OF REPORT: WED, NOV 18,

# ANALYSIS OF PROBABLE MEMBERSHIP IN VARIOUS CRITERION GROUPS

This section summarizes the detailed computations which determine how well the profile of this individual matches a number of prototypic patterns. The prototypes were developed through empirical cluster analyses.

The statistics for matching this client to the prototype are hypotheses about how much this individual is like different groups. If, for instance, this person has a high match to one group, there is no absolute guarantee that the client is a member of that group, although the information from this inventory would support that conclusion.

The figure below shows the probability that this client is in each group. The probability is given as a percentage. Technically, to say that a person is definitely not a member of the group, the probability should be less than 5 percent that he/she is a member of the group. While it can never be proven that a person is a member of a group, probabilities in excess of 50 percent might be considered good evidence of membership. The groups are not necessarily empirically or conceptually independent and the probabilities of group membership will not sum to 100 percent.

	Probability of Group Membership										
	No	Marginal	Moderate			High			Very High		
	+0...	10...	20...	30...	40...	50...	60...	70...	80...	90...	100+
Well-Integrated	I		:			:			:		I
	I		:			:			:		I
Normative	I								:		I
	I								:		I
Clinical Internalizing	I			:		:			:		I
	I			:		:			:		I
Clinical Externalizing	I								:		I
	I								:		I
	+0...	10...	20...	30...	40...	50...	60...	70...	80...	90...	100+
	No	Marginal	Moderate			High			Very High		



DATE: WED, NOV 16, 1967 CLIENT NUMBER: C-1446

#### YOUR TOTAL SCORE

Your answers to the questionnaire show that you describe your total self-concept (TOTAL SCORE) in more positive terms than about 18% of the general population. Thus, your overall self-evaluation is in the low-average range.

Although it is possible that your answers to the questionnaire would be different if you answered again, there appear to be areas of your life that you would wish to change. Also, you have areas where you are satisfied with yourself and feel that there are times when you act about as good as can be expected. Maybe it is only during times of great stress that any concerns about your habits or self-image become important to you. If this is the case, and you wish to prepare for future times of stress, study the section on your lowest scores below, and discuss it with a friend or other helpful person.

#### YOUR LOWEST AND HIGHEST SCORES

One important combination of your lowest score was Behavior (How you try to carry through or function, including habits) and Moral-Ethical Self (your feelings of being a "good" or "bad" person).

- 72. I am true to my religion in my everyday life.  
(You marked this Mostly False)
- 73. I try to change when I know I'm doing things that are wrong.  
(You marked this Partly True and Partly False)
- 39. I sometimes use unfair means to get ahead.  
(You marked this Partly True and Partly False)

One important combination of your highest score was Self Satisfaction (your "Judging self," desire for change, or self-acceptance) and Personal Self (your rating of your personality and "smarts").

- 43. I despise myself.  
(You marked this Completely False).
- 58. I am as smart as I want to be.  
(You marked this Mostly True)
- 59. I am not the person I would like to be.  
(You marked this Mostly False)

#### SUGGESTION

It has been shown over and over again that, with help from others, a person can improve his or her self-concept and feelings of self-worth. Perhaps this report will encourage you to find out more about the way you see yourself and to talk about your self-evaluation with someone who understands your home, work (or school), or relationships with people around you.