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Traumatic brain injury : vocational rehabilitation services in Federal Region IV

Sandra Kaye Cardwell

To the Graduate Council:

I am submitting herewith a thesis written by Sandra Kaye Cardwell entitled "Traumatic brain injury : vocational rehabilitation services in Federal Region IV." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Counseling.

J. H. Miller, Major Professor

We have read this thesis and recommend its acceptance:

Jack Cassell, John Ray

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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James H. Miller
J. H. Miller, Major Professor

We have read this thesis and recommend its acceptance:

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John R. Ray

Accepted for the Council:

Lawrence Dowminkel
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TRAUMATIC BRAIN INJURY: VOCATIONAL REHABILITATION SERVICES IN FEDERAL REGION IV

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Degree

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ABSTRACT

It was the purpose of this thesis to study specific vocational rehabilitation services offered to persons with traumatic brain injury in the Rehabilitation Services Administration, Federal Region IV, including the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. A questionnaire was mailed to 73 rehabilitation facilities that offered services to persons with traumatic brain injury in Federal Region IV, accompanied by a cover letter explaining the purpose of the study.

The subjects of the study were the rehabilitation facilities themselves. The questionnaires were addressed to the director of each facility for completion. Types of facilities surveyed included: private not-for-profit, private for-profit, hospitals, and Federal/State Rehabilitation Facilities. Ten days after the first mailing, those who had not responded were sent another, identical questionnaire and a cover letter that restated the nature and purpose of the study and asked for participation in the study by completing and returning the questionnaire.

Data gathered from the questionnaire was tabulated using a frequency distribution with percentages for each question and each facility. Two open-ended questions on the

questionnaire were analyzed using content analysis. Results were presented in tabular form.

Results of the study, specifically concerning the availability of vocational services for persons with traumatic brain injury, were as follows:

1. Vocational programming was offered at 22 of the 33 facilities responding to the questionnaire.

2. Vocational rehabilitation outcome was included as part of the facility's basic model or goal in 18 of the 33 facilities.

3. A vocational evaluation was conducted as part of the evaluation process for development of the treatment at 22 of the 33 facilities responding to the questionnaire.

4. At 21 of the 33 facilities, a vocational rehabilitation counselor was included as part of the rehabilitation staff.

5. The treatment plan or rehabilitation plan included vocational goals at 19 of the 33 facilities.

6. The supported employment model with job coaching was utilized at 14 of the 33 facilities.

7. Job readiness training was implemented at 19 of the 33 facilities completing the questionnaire.

8. Independent living skills training was offered to persons with traumatic brain injury at 15 of the 33 facilities.

9. A very small number of the facilities (10) offered follow-up services, including substance abuse counseling, family counseling, and counseling for the client.

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CHAPTER I

INTRODUCTION

Background

The incidence of traumatic brain injury has reached epidemic proportions in recent years and will increase dramatically during the 1990s. Each year, two million traumatic brain injuries occur (Spivack & Balicki, 1990). Five hundred thousand cases require hospitalization, with 75,000 to 100,000 deaths occurring each year. It is estimated that of these two million traumatic brain injuries occurring each year, 50,000 to 70,000 persons are discharged from acute care hospitals with little or no hope of functioning at pre-injury level, socially, academically, or economically (Bush, 1989). A greater understanding of traumatic brain injury in society is paramount in dealing with this overwhelming problem. The impact upon the health care and social service delivery systems is staggering. More importantly, the lost productivity within the work force and the resulting costs to society demands effective treatment that helps the person with traumatic brain injury function at maximum capacity.

As a matter of comparison, in the past decade, the Human Immunodeficiency Virus (HIV) epidemic has moved to the

forefront as a major public health concern. A projected 450,000 Americans will be diagnosed as HIV positive in 1993 (Spivack & Balicki, 1990). The large number of expected cases undoubtedly has caused concern within our society. However, awareness of the overwhelming effects of traumatic brain injury (TBI), the major cause of death and disability for persons under the age of 35, is the first step toward effective treatment (Spivack & Balicki, 1990). This statistic calls for immediate attention to the prevention, causes, and treatment of traumatic brain injury.

Statement of the Problem

Vocational rehabilitation as a vital part of the overall treatment effort is oftentimes not at the forefront of service planning. Because of the varied deficits that result from traumatic brain injury, job placement may not be of primary focus. Rehabilitation facilities that serve the traumatic brain injured population have increased rapidly in number to meet an ever-increasing need (Wehman & Kreutzer, 1990). These facilities provide a much needed service and offer a wide range of programs, including coma intervention; acute care; all aspects of cognitive, behavioral, and physical therapies; and independent living skills training. However, there exists a significant lack of resources, including restrictive regulations, traditional models, and lack of trained

vocational professionals within treatment facilities in the public and private sectors (Spivack & Balicki, 1990). It is proposed that vocational planning for persons with traumatic brain injury should be individualized, providing specialized vocational services (Wehman & Kreutzer, 1990). These specialized vocational services must be included as a rehabilitation facility program service to assist persons with traumatic brain injury in reaching their maximum potential and returning to the work force.

Significance of the Problem

Medical management and rehabilitation efforts must be closely scrutinized. In the early 1980s, there were less than 10 brain injury rehabilitation facilities. Today, there are more than 600 rehabilitation treatment facilities in the United States that offer TBI rehabilitation services (Burke, Weslowski, & Guth, 1988). While filling a great need, many facilities are not comprehensive in the services being offered. A major concern is the lack of vocational rehabilitation services for persons with TBI. Medical, cognitive, and behavioral aspects of TBI are often emphasized, but little attention is given to vocational implications. Maximizing the person's residual assets (behavioral, physical, and cognitive) is a forefront to effective vocational

rehabilitation, i.e., helping the person to become gainfully employed.

The financial cost to society is tremendous. Although difficult to calculate, monetary costs incurred due to the long-term nature of treatment and the implications of lost productivity can be substantial. The National Head and Spinal Cord Injury Survey conducted in 1981 gives the best figures on the dollar cost of traumatic brain injury (Corthell & Tooman, 1985). It was estimated that direct and indirect costs of traumatic brain injury in 1974, expressed in terms of 1980 dollars, was four billion dollars. This figure does not reflect the loss of income or extended rehabilitation costs over the lifetime of the patient. The projected cost for 1991 will have almost doubled.

Due to increasing medical technology, the survival rate for persons with traumatic brain injury has risen. Persons with traumatic brain injury are being sustained in coma longer and are surviving once-fatal injuries. The increased survival rate brings with it a more severely disabled population that will require specialized and intense rehabilitation planning. Vocational planning and outcome should be encompassed in the total rehabilitation effort. Vocational programming as a part of the overall recovery plan should be included as a part of the initial treatment plan development. Specific vocational-oriented goals and objectives ideally would be developed and

integrated throughout the long-term rehabilitation planning process.

Purpose of the Study

The purpose of this study was to identify the services available to persons with traumatic brain injury, as offered in rehabilitation treatment facilities listed in the 1988 National Directory of Head Injury Rehabilitation in the eight Southeastern states that comprise the Rehabilitation Services Administration Federal Region IV. Major attention will be given to the vocational component of the programs. A questionnaire will be mailed to directors of hospitals, Federal/State rehabilitation facilities, private care providers, and various other institutions throughout the eight states in Region IV (i.e., Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee).

Questions were constructed from various sources, including recent articles, publications addressing traumatic brain injury, and books relevant to vocational programming. Each question was designed to assess a specific service that may be a part of the vocational rehabilitation process. A copy of the questionnaire is in Appendix A. The results of the survey will provide rehabilitation facility personnel, rehabilitation counselors, family members, and community facilities with a

comprehensive listing of vocational services offered to persons with traumatic brain injury in Federal Region IV. Secondly, the questionnaire is designed to heighten awareness of the need for vocational programming as an essential service in the total treatment and rehabilitation process.

The needs of the individual with traumatic brain injury are varied and complex. Several components must be considered when evaluating the vocational services offered by rehabilitation facilities. Services offered for rehabilitation of cognitive, behavioral, emotional, and physical deficits are vital components. These residual deficits may be the root cause for an array of related problems such as interpersonal inadequacies, family problems, sleeping disorders, language problems, and alcohol or drug abuse. These problems in turn lead to an inability of the person with traumatic brain injury to cope effectively with the many changes that accompany TBI. The questionnaire addresses the following research questions which have been identified through an extensive review of the literature.

1. Level for acceptance into the traumatic brain injury rehabilitation program based upon the Rancho Los Amigos rating scale (I-VIII) (Corthell, 1990).
2. Specialists and professionals included on the treatment team (Corthell & Tooman, 1985).

3. Thorough neuropsychological evaluation with vocational implications (Stambrook, Peters, & Moore, 1989).
4. Complete evaluation of residual physical capacities (Bray, Carlson, Humphrey, Matrilli, & Valko, 1987).
5. Presence of a vocational rehabilitation counselor on staff who could complete a vocational rehabilitation plan (Musante, 1983).
6. Placement alternatives, including supported employment, job coaching, competitive employment (Wachter, Fawber, & Scott, 1987).
7. Services such as substance abuse counseling (Sparadeo, Strauss, & Barth, 1990), psychotherapy, and family counseling (Klonoff & Prigatano, 1987) provided.
8. Use of an interdisciplinary team approach in the development and implementation of a treatment plan (Wilson, 1984).
9. Cognitive rehabilitation services (Namerow, 1987).
10. Presence of job readiness training (Kreutzer, Gordon, & Wehman, 1989).

Definition of Terms

For the purpose of this study, the following listed terms are defined:

Traumatic brain injury may be defined as trauma to the head causing damage to the brain, whether temporary or permanent. Trauma may occur when the head is struck, strikes a stationary object, or is shaken violently (Corthell & Tooman, 1985). The head may or may not be penetrated from the outside. Whether penetration occurs from a foreign object, or the head meets a foreign object with force, the impact may cause severe and diverse injuries. Usually, a period of unconsciousness follows a trauma to the head, whether closed or open. This clinical definition of traumatic brain injury does not include damage occurring from stroke, tumor, aneurysm, anoxia, or arterio-venous malformations (Corthell & Tooman, 1985).

The Glasgow Coma Scale (Corthell, 1990) is one of the measures used by clinicians to determine the level of recovery during this period of unconsciousness. This scale is used to determine depth of coma and monitor emergence from coma (Sohlberg & Mateer, 1989). The scale utilizes motor response, eye opening, and verbal response with assigned point values for each level of response.

The Rancho Los Amigos Scale of Cognitive Level and Expected Behavior (Corthell, 1990) is a measurement often used to describe present functioning level of the TBI person. The Scale is frequently used to establish admission criteria for facilities and eligibility for the Federal/State Vocational Rehabilitation Program, and to determine appropriate

placement. The rating scale consists of eight defined levels of behavior and cognition, with level I indicating that the injured person is unresponsive to all stimuli, and level VIII indicating that the person's behavior is purposeful and appropriate (Sohlberg & Mateer, 1989). Most Federal/State Rehabilitation Programs are not equipped to assist the TBI individual who has not reached level VIII. Further, rehabilitation facilities have admissions criteria for a person seeking services. The level of functioning acceptable to the facility is contingent upon the orientation of the facility and services available. A person with traumatic brain injury may progress through these eight levels or remain at one level for an extended period of time, depending on residual abilities and level of functioning.

Assumptions

For the purpose of this study, it is assumed that rehabilitation facility personnel receiving the questionnaire answered all questions honestly and to the best of their ability.

Delimitation of the Study

In an attempt to thoroughly identify vocational program components in a specific geographical area, the study was limited to the Rehabilitation Services Administration, Federal Region IV, the Southeast region which includes the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

Organization of the Study

Chapter I, the introduction, contains background information, statement of the problem, significance of the problem, purpose of the study, definitions of terms, assumptions, and delimitation and organization of the study. Chapter II contains a review of related literature and summary. Chapter III describes the research methodology. Chapter IV contains the results of the study and discussion of the results. Chapter V contains a summary of the study, conclusions, and recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The review of related literature is divided into two major sections: (1) the impact of traumatic brain injury, and (2) a discussion of treatment programs. The section on impact of traumatic brain injury is categorized into six sub-headings: (1) cognition, (2) behavior and emotion, (3) psychosocial implications, (4) family implications, (5) physical impairments, and (6) vocational implications. The section dealing with treatment programs discusses the program component involved in each of the six areas of impact listed above. The vocational subheading (i.e., #6) is further subdivided into four categories, including: (1) evaluation, (2) work adjustment, (3) job readiness training, and (4) job placement.

Impact of Traumatic Brain Injury

Traumatic brain injury creates many problems. Likewise, a rehabilitation program must be diversified to adjust to and

meet the varied needs of the individual. It has been estimated that only one-third of severe closed head injury patients will return to gainful employment within the traditional rehabilitation framework (Prigatano et al., 1984). Within the acute care setting, cognitive, behavioral/ emotional, psychosocial, family, and physical problems must be addressed, moving toward eventual vocational placement.

The injury itself is usually caused by the violent and unnatural movement of the brain within the skull. The brain mass is shaken up, literally bouncing off the bony skull, which has protrusions on the inside surface, which is what results in the brain injury. The injury itself may be diffuse, concussive, or of a coup/countercoup nature (Corthell & Tooman, 1985). Diffuse or widespread injury results from the stretching and tearing of nerve fibers. Concussive injury results in the frontal and temporal lobe of the brain bouncing off the front of the skull, which has sharp, bony ridges, causing contusions or bruises. Coup/countercoup damage occurs when the skull is depressed, bruising the brain beneath it and bouncing the brain off the other side, therefore causing the countercoup bruise (Corthell & Tooman, 1985).

In addition to these injuries, bleeding within the skull either between the skull and the brain (subdural hematoma), or within the brain itself (intracranial hematoma), may occur (Corthell & Tooman, 1985). The collection of blood may compress brain tissue. Also, intracranial pressure can rise

as swelling occurs within the brain. All of these secondary factors complicate the injury itself, causing widespread cerebral disability, which will vary greatly among individuals.

Identical injuries will not affect any two persons the same way. It is interesting to note that each injury will result in different and diverse limitations. The residual deficits occurring from the injury will depend on a wide set of factors, including pre-injury characteristics of the person such as age at injury onset, length of coma, history of substance use, and educational level. The individualized nature of injury calls for treatment programs that adjust to the varied cognitive, physical, behavioral, and vocational needs of the individual and take shape around the person's long-term rehabilitation goals.

The typical person with traumatic brain injury is male between the ages of 15 and 24. Over 70% of persons who sustain a traumatic brain injury are under the age of 35 (McMahon & Flowers, 1986). The young age of the injured suggests the need for effective vocational rehabilitation. The lost productivity of this population is tremendous.

Most likely, the injury is sustained in a motor vehicle accident while the person was not wearing a seat belt (Spivack & Balicki, 1990). It has been estimated that 48% of traumatic brain injuries were sustained in transport, with 20.6% in falls, 12% in assaults, 9.7% in sports and recreation, 5.7%

involving firearms, while 3.9% result from "other blunt force," which includes forceful contact from a foreign object (Corthell & Tooman, 1985). Persons in the 15-24-year age range most likely will have few vocational skills and minimal job training. In terms of lost productivity and life years, the need for vocational programming as part of the treatment process is re-emphasized.

Cognition

Cognitive deficits can be detrimental to the successful rehabilitation of the person with traumatic brain injury. Residual problems in the cognitive and emotional areas significantly interfere with independent living and productive community living (Burke et al., 1988). Typically, a wide array of deficits occur, including impairments in arousal, attention/concentration, learning and memory, abstraction, conceptualization, and problem-solving (Corthell & Tooman, 1985). Impairment in executive functioning or ability to complete planned, organized goal-directed activities can be extremely debilitating to successful vocational outcome. Sometimes mistaken for a lack of motivation, impairment in executive functioning is actually an organically-based deficit (Corthell & Tooman, 1985).

Behavior and Emotion

Remediation of behavioral and emotional problems is very important to successful vocational rehabilitation. Most persons who experience a minor traumatic brain injury will return to work within six months of release (Haffey & Lewis, 1987). Likewise, it has been estimated that one-third of these individuals with minor traumatic brain injuries will experience great difficulty in employment in subsequent years (McMahon & Flowers, 1986).

Many causes for employment problems have been identified, including reduced work endurance, poor work quality, and impaired ability to follow punctuality and attendance requirements (Corthell, 1990). Personality problems create conflict with co-workers and employers. Lack of initiative, impulsivity, and social isolation are just a few of the behavioral/ emotional problems that may emerge and inhibit successful vocational outcome for the person with traumatic brain injury (Corthell & Tooman, 1985).

The inability to adapt to different situations presents a major problem for workers with traumatic brain injury. In many cases, instructions are not accepted or understood by the person. These maladaptive behaviors must be corrected throughout the rehabilitation process. Involvement in job simulation, on-the-job training, and job coaching experiences provides an opportunity for work adjustment applications and problem resolution.

Psychosocial Implications

Remediating psychosocial problems is an important consideration in successful reintegration of the head injured client into family and community activities. The injured person may experience severe personality change, mood swings, and behavioral outbursts. Reduced tolerance of stress, increased emotional lability, verbal threatening, or physical aggression are common problems (Wood, 1987).

The neurology of emotion is not well understood; therefore, predictions of outcome involving psychosocial aspects are much more uncertain than outcome predictions for specific cognitive deficits (Lehr, 1990). However, psychosocial behavior is a key factor in reintegration into the community and often precludes successful outcome if not properly addressed.

Comprehensive evaluation of behavioral deficits through interview, observation, and counseling is an important factor of service planning. The client's behavior problems may require behavior modification techniques or psychotherapy.

Family Implications

Romano (1990) reports that families usually experience denial of the changes that the person with traumatic brain injury has experienced in personality, behavior, and ability, thus leading to the family's inability to advance beyond this

stage of adjustment to the loss. As the family realizes the extent of the cognitive, behavioral, and personality changes that occur, they may experience panic, which leads to hostility toward other family members as well as the person with the traumatic brain injury. Personality change in the person with a traumatic brain injury has been reported as the primary cause of stress within the family (Klonoff & Prigatano, 1987). The person with traumatic brain injury and his or her spouse may experience a variety of problems resulting from the residual deficits, including changes in sleep patterns, sexual dysfunction, and substance abuse problems.

Chemical use and dependency may be a result of a traumatic brain injury, or may have been a factor in the cause of the injury. Substance use is also a major factor in successful vocational outcome. It has been estimated that alcohol is involved in over 50% of all head injuries. Between 29% and 58% of persons with traumatic brain injury who have a positive blood alcohol level are legally intoxicated at the time of emergency room admittance (Sparadeo et al., 1990). This statistic implies a very close link between alcohol and traumatic brain injury. Likewise, persons with traumatic brain injury are very susceptible to alcohol use after leaving the rehabilitation facility.

A person with traumatic brain injury must learn to adjust to individual losses. Family and friends react to the person

with traumatic brain injury differently. Activity level drops off, and the person with the traumatic brain injury experiences boredom and extreme frustration (Sparadeo et al., 1990). Treatment for chemical dependency problems, therefore, needs to be integrated into the rehabilitation program. Employability requires sobriety.

In 1987, the National Head Injury Foundation administered a survey regarding substance abuse services offered to persons with traumatic brain injury as part of rehabilitation programs. Results showed that of 50 rehabilitation facilities that responded, none indicated specific treatment programs for substance abuse. However, it was agreed that traditional treatment methods for alcohol use, such as Alcoholics Anonymous, were not usually successful with the person with traumatic brain injury due to the cognitive deficits that are involved in a traumatic brain injury (Sparadeo et al., 1990).

The ineffectiveness of traditional treatment programs, along with a lack of alcohol treatment programs within rehabilitation facilities, would lead to surmise that a great need for substance abuse treatment programs exists in facilities. With a common goal of independence for the person with traumatic brain injury, it is imperative that facilities deal with the complete treatment needs of the person, including drug and alcohol use and dependency.

Physical Impairments

Residual physical impairments are often a product of traumatic brain injury. Physical deficits require integration of specialists such as psychiatrist, speech language pathologist, physical therapist, and neurosurgeon into the treatment process. Residual physical problems often have less impact for the client's ultimate functional outcome than cognitive deficits (Yvlisker & Gobble, 1987). However, physical disabilities must be recognized and effectively addressed for progress toward vocational stability.

Post-concussion syndrome (Corthell & Tooman, 1985) is one of the many disorders that can affect the person's physical abilities. It may involve dizziness, fatigue, headaches, insomnia, and alcohol intolerance. Chronic pain syndrome also can be a result of traumatic brain injury and may compound the effect of motor deficits, thereby decreasing activity, which in turn increases pain (Yvlisker & Gobble, 1987). Seizures are one of the most common physical impairments for the person with traumatic brain injury (Corthell & Tooman, 1985). Grand-mal-type motor seizures and/or psychomotor seizures may occur. Speech and motor coordination difficulties are also common deficit areas for the person with traumatic brain injury. Disrupted sleep patterns, slowed motor response time, loss of coordination, and inhibition of fine or gross motor manipulation abilities are other physical deficits resulting from a traumatic brain injury.

Proper assessment of needs and coordination of services are vital to achieving maximum outcome. Any or all of these physical deficits may be present and negatively impact employability of the person with traumatic brain injury. Employer and co-worker acceptability of physical problems and the willingness to make adjustments in work environment to compensate for the person's deficits are important factors in the success or failure of employability.

Vocational Implications

Vocational implications of traumatic brain injury are varied and complex. It has been noted that severe and moderate TBI can be expected to result in substantial vocational handicaps (Haffey & Lewis, 1987). These barriers to successful employment may be caused by several factors. The person with traumatic brain injury may suffer judgement and insight deficits from the injury that lead to the belief that discharge from a program can be equated with recovery. Therefore, the person may erroneously expect to re-enter previous employment with pre-injury capabilities. Residual deficits occurring from the brain injury are often complicated because many recovering persons with traumatic brain injury are young adults who are facing developmental adjustments that can be overwhelming. This may be the first attempt to enter vocational and social environments. Economic and psychologic

disincentives to job placement, along with poor stability of the person, also may negatively affect vocational outcome.

Haffey and Lewis (1987) suggest several primary barriers to occupational placement, including psychomotor and cognitive processing slowness, cognitive-communication disorders, emotional and social behavioral control problems, and lack of social and interpersonal skills. Within the non-disabled population, 75% of job loss could be attributed to poor interpersonal skills, as opposed to poor task performance (Crites, 1982).

In a study conducted by Brooks, McKinlay, Symington, Beattie, and Campsie (1987), it was reported that physical deficits were not related to return to work. However, the presence of cognitive, behavioral, and personality changes was significantly related to a failure to return to work. This study also found that 70% of 134 persons with traumatic brain injury were unemployed five years after their injury, with 86% being employed pre-injury (Brooks et al., 1987). Therefore, only 16% of persons with traumatic brain injury who were employed pre-injury were employed five years after the injury. These percentages demonstrate the ongoing impact traumatic brain injury has upon employment.

Several predictors of successful vocational outcome have been identified. Residual cognitive ability has been shown to be a major predictor of return to work, while behavioral/emotional functioning problems are a highly

significant predictor of failure to return to work (Brooks et al., 1987). With the cognitive and behavioral/emotional deficits involved in a traumatic brain injury, programs should offer comprehensive vocational rehabilitation planning that helps the person overcome these deficits and return to work successfully.

Treatment Programs

Overview

The components of a comprehensive rehabilitation plan are varied and complex. These components are vital in an overall rehabilitation program that moves the person toward eventual successful vocational placement. The following seven components have been identified by Dixon, Goll, & Stanton (1988) as important parts of an efficient treatment system.

1. An interdisciplinary team of rehabilitation specialists,
2. The setting of treatment goals based on proprietary needs,
3. The presence of a clinical team leader,
4. A process of evaluating treatment,
5. Inclusion of patient and family in the decisional process,

6. Continuity of care, and
7. Provision for long-term management and follow-up services.

These program components should be integrated into a system of care that offers an entire range of needed services. A rehabilitation program should move service recipients through efficiently, with maximum results at least cost toward expected outcomes and functional independence (Dixon et al., 1988).

A comprehensive continuum of care, including all aspects of treatment outlined by Uomoto and McLean (1989), contains a listing of needed services and the sequence in which services may be implemented. This comprehensive continuum of care integrates vocational rehabilitation services at the acute rehabilitation stage of recovery, which follows hospitalization and coma stimulation.

The need for a comprehensive service model was answered by the development of private head injury facilities, which may include all aspects of treatment listed in the Uomoto and McLean (1989) care continuum. These facilities provide a system of integrated care services (Rosenthal et al., 1990).

Rehabilitation facilities will have a varied array of disciplines on staff. These may include neurosurgeon, neurologist, neuropsychologist, psychiatrist, psychologist, physical therapist, recreational therapist, occupational

therapist, nurse, speech and language pathologist, vocational rehabilitation counselor, alcohol and drug counselor, and varied medical and psychological consultants (Corthell & Tooman, 1985). Each professional will conduct evaluations that will provide insight into forming a plan for the client's total rehabilitation. Input from each discipline will aid in formulating specific goals and objectives toward the client's recovery.

The team approach taken by professionals included in the rehabilitation process may vary and affect services rendered to the head injured person. Variations of team approaches include multidisciplinary, transdisciplinary, and interdisciplinary approaches.

Multidisciplinary and transdisciplinary methods have traditionally been used in treatment programs. However, these approaches have not led to much success with the client who has traumatic brain injury.

Interdisciplinary care refers to "activities performed toward a common goal by individuals from a group of different disciplines" (Melvin, 1980, p. 29). Individuals require not only the skill of their own discipline, but also must respond to the group effort on behalf of the activity or client involved (Wilson, 1984). Using the interdisciplinary team method will prove to transfer integrated group activities into a result which is greater than the simple sum of activities of each individual discipline. Using an interdisciplinary team

method has been compared to Japanese management concepts wherein the role of the key decision-maker is diffused, and a staff member's value depends on his or her ability to work as a member of the group (Wilson, 1984). The interdisciplinary team approach appears to be most effective with persons with traumatic brain injury, with the varied cognitive, physical, behavioral, and vocational problems and the continued effects of these deficits as compared to other disability groups (Dixon et al., 1988).

Cognition

Cognitive rehabilitation may be referred to as a systematic, goal-oriented intervention to remedy cognitive processing abilities (Corthell & Tooman, 1985). After thorough neuropsychological evaluation, Prigatano et al. (1984) states that reduction in overall or generalized cognitive confusion is the first major goal of cognitive rehabilitation. Secondly, cognitive retraining should enhance the patient's awareness of his or her residual strengths.

Many rehabilitation facilities have now implemented specific programs to deal with extensive cognitive problems. Cognitive remediation has become a part of most brain injury rehabilitation programs (Namerow, 1987). This technique refers to a set of strategies that targets for improvement the intellectual, psychomotor, perceptual, and behavioral skills (Kreutzer et al., 1989). Several models of cognitive

remediation have been suggested, including the environmental control model, stimulus-response conditioning model, skill training model, and the strategy substitution model (Kreutzer et al., 1989). Each of these models of cognitive remediation assumes a different underlying base for problems and takes a different treatment approach.

An extremely important component of cognitive remediation is the fact that the concept centers on the idea of generalizability (Kreutzer et al., 1989). Generalizability is a crucial aspect in the successful vocational rehabilitation of the person with traumatic brain injury. Often, skills learned within the treatment facility are not successfully carried over to the work environment. The person with traumatic brain injury is not able to transfer learned material or behavioral/ emotional adjustments into the outside environment. Three levels of generalizability have been described (Wehman & Kreutzer, 1990). Level I generalization consists of the most basic learning measured by improved performance of tasks. Learning should also be evident on alternate forms of the same tasks. Level II involves psychometric testing that focuses on elements similar to the training tasks. Level III generalization involves improved performance being evident in day-to-day activities resulting from improved performance of the training tasks.

Kreutzer et al. (1989) evaluated literature pertaining to employment outcomes after traumatic brain injury and examined

the traditional service delivery model for vocational rehabilitation. They found that failure of the model could be attributed to assumptions made about generalization of skills acquired during the job-training process that were incorrect. This speaks strongly for the importance of effective cognitive remediation that utilizes generalization training.

Behavior and Emotion

Resolving behavior and emotion problems is very important to successful vocational outcome. It has been recognized, however, that many behavioral syndromes are a reflection of cognitive impairment (Namerow, 1987). Confusion and impaired memory may be responsible for agitation and aggression.

Treatment programs should address both cognitive and behavioral/emotional deficits. With improved cognitive functioning, some behavior patterns will also improve. However, it has been shown that behavioral sequelae are also related to specific cortical areas that are injured (Namerow, 1987). Behavior modification techniques have been employed in alleviating these behavioral problems (Howard, 1988). Inappropriate behaviors should be targeted early in the recovery phase for improvement. Howard (1988) has suggested several guidelines for behavior management:

1. Establishing an interdisciplinary team structure,
2. Conducting a comprehensive assessment,
3. Setting long-term as well as short-term goals,

4. Building a caring environment around the patient,
5. Being outcome-oriented,
6. Making emotional behavior a priority, and
7. Being prevention-oriented.

Physical Rehabilitation

Physical rehabilitation is a very important aspect involved in community re-entry. Treatment and compensatory devices that allow the person to enter vocational training, independent living training, or return to work are vital to achieving maximum independence. Interrelatedness between cognitive, communicative, psychosocial, and physical recovery exists (Bray et al., 1987). Improvement in any one of these areas has an effect upon improvement in the other areas. However, specific treatment for physical deficits may be provided by a physical therapist, psychiatrist, or speech and language pathologist (Corthell & Tooman, 1985).

Several compensatory devices and techniques are available to the person with traumatic brain injury to help facilitate community and work re-entry. Mobility aids for the person who is unable to walk or self-propel, communication aids such as hearing enhancement, and alternative modes of expression, e.g., gestures, sign language, and environmental control systems that promote independence by giving the person control over his or her immediate surroundings (Bray et al., 1987),

are some of the alternatives available to promote physical rehabilitation.

Family Implications

Family involvement is a necessary, integral part of the rehabilitation process. Nature of injury, residual assets, treatment components, and available services should be presented to the family. If integrated into the treatment process, the family learns how to deal with emotional stressors and misunderstandings.

A guide for families with members who have traumatic brain injury should be given to the family to help them understand traumatic brain injury, its implications, and what they might expect from the person with traumatic brain injury. A comprehensive guide developed by the New Medico Head Injury System Staff (1990) includes a description of all aspects of traumatic brain injury symptoms and care in layman's terms and can be a very helpful tool for families in understanding brain injury.

The family should also be offered counseling services along with the client. Awareness of state and national organizations that sponsor informational meetings and support groups is an invaluable asset. If the family is educated and integrated into the treatment process, family members will most likely take an active part in helping the person recover. This involvement can provide long-term support for the injured

individual in terms of being able to retain employment. The person with traumatic brain injury needs support in terms of dealing with stressors that accompany employment. Coordination of services through the family is of utmost importance. As an integral part of the client's program, the family may better adjust to the person's post-injury strengths and deficits and the changes they have experienced themselves.

Vocational Implications

Vocational implications for the person with traumatic brain injury are sometimes severe and may seriously affect return to work. Cognitive, behavioral, physical, and social deficits caused by the brain injury are directly related to success or failure in return to work efforts. Vocational goals and expectations of the person with traumatic brain injury must be assessed. The person must recognize limitations imposed by the disability and be aware of remaining assets. Reintegration into the work force begins with a vocational evaluation.

Evaluation: Vocational evaluation of the person with traumatic brain injury often presents problems for a vocational evaluator. Traditional methods of assessment and proposed time frame for evaluation cannot be adhered to. Persons with traumatic brain injury may require use of nontraditional adjustment approaches. The time allotment for

vocational evaluation may need to be extended to fully evaluate the person's potential to achieve rehabilitation.

Musante (1983) identified several problem areas in vocational evaluation of persons with traumatic brain injury that need to be addressed: (1) difficulty in estimating functional abilities given inconsistencies in performance, (2) expression of anger as a natural reaction to the evaluation process and the incidence of impulsivity and emotional lability, (3) continued problems using standardized tests and work samples with the traumatic brain injured population, and (4) need for non-static evaluations over longer periods of time. It was suggested that a team approach, including support from a variety of disciplines, is essential in prediction of vocational potential.

A vocational evaluation should consist of measures for physical, aptitude, environmental, and psychosocial/behavioral capabilities. Also, a thorough vocational evaluation should include several components. Psychometric testing, job/work samples, job analysis and job simulation, situational assessment, and job matching should be a part of a vocational evaluation. (Wright, 1980).

A number of specialized evaluations will provide insight into forming a workable plan for the client's return to work. Medical information should be obtained from a neurosurgeon, neurologist, or a psychiatrist. Input from a speech pathologist, clinical psychologist, alcohol and drug

counselor, physical therapist, and occupational therapist will aid in formulating specific goals and objectives toward the client's recovery.

Another major issue is effective vocational rehabilitation of the person with traumatic brain injury, which is reliant upon an accurate vocational evaluation, involves a thorough neuropsychological evaluation. It has been noted that, most often, the neuropsychological evaluation does not provide the vocational rehabilitation personnel with specific useful information that can be used in formulation of goals. The goals of a neuropsychological evaluation should include the following: (1) determination of the presence of higher cortical impairments and the extent of impairments (i.e., functional limitations), (2) impairments of brain based on abilities that affect the person's adaptation, (3) remaining assets, and (4) determining rehabilitation possibilities and strategies to maximize recovery (Cripe, 1989). If utilized appropriately by the vocational rehabilitation specialist, the neuropsychological evaluation can be used as a functional tool in designing long-term goals and choosing vocational outcome. The neuropsychological data can provide an array of useful information. An understanding of premorbid intellectual functioning, an estimate of global impairment, and patterns of cognitive assets and liabilities can be used effectively in developing the vocational rehabilitation plan. The neuropsychological assessment may also provide suggestions as

to how to train or remediate specific deficits such as memory, visual-spatial disorders, language, perceptual problems, and conceptual reasoning difficulties. The vocational rehabilitation counselor should construct questions for the examining neuropsychologist that give insight into the information needed.

It must be realized also that because of the diversity of deficits, each patient may require completely different assessment methodologies. Suggested guidelines for clinical examination include: (1) adjusting assessments and interventions in accordance with the phase of recovery; (2) avoiding use of comprehensive fixed batteries in early phases; (3) using phase-specific tests and procedures that are appropriate; (4) focusing on assessment of orientation, arousal, attention, concentration, rate of information processing, and memory; and (5) avoiding making premature predictions of long-term outcome in early phases (Cripe, 1989).

Work Adjustment: Work adjustment is a technique that may be utilized to help move the client toward successful job placement. Work adjustment is a treatment or training process utilizing work-related activities to help the client better understand the meaning, value, and demands of work; to modify attitudes, personal characteristics, and behaviors; and to develop functional capacities to help the person reach his or her maximum vocational potential (Wright, 1980). This is a

very helpful technique for persons experiencing behavioral/ emotional or attitudinal problems related to the work environment, which are often deficits caused by traumatic brain injury.

Job Readiness Training: Job readiness training will ensure that the individual is prepared for placement and is familiar with all aspects of the potential job. Through job readiness training, the person may be acclimated physically, emotionally, and mentally to the job situation, making him or her better prepared and improving job performance (Wright, 1980).

Work sampling involves observing the client's performance in a defined work activity involving tasks, materials, and tools similar to those involved in the actual job. Job sampling involves bringing in, in its entirety, a sample of work from a particular job and bringing this into the evaluation center, where the person's interests and abilities on this particular job may be assessed (Wright, 1980). Both job sampling and work sampling will allow for evaluation of factors such as motivation, self-concepts, interpersonal relationships, initiative, ability to accept criticism, concentration, attention span, physical stamina, and emotional maturity (Wright, 1980). Persons with traumatic brain injury may experience problems in many of the above listed factors.

Job analysis is another valuable tool for vocational evaluators and consists of observing the client in the actual

job setting to collect as much detailed information about the person's performance and abilities in that particular job in order to make a placement decision (Wehman & Kreutzer, 1990). This situational assessment of a person with traumatic brain injury in this particular job can be very helpful in determining the person's readiness for permanent placement.

Job matching is a technique that is critical for successful placement. The vocational specialist, after locating a potential job, should analyze the characteristics and demands of the job and compare them to the abilities and characteristics of the person. Wehman and Kreutzer (1990) have suggested a consumer screening form that will give insight into specific aspects of the work environment that should be assessed. Specific aspects of the work environment that should be assessed are included. The design and delivery of services should be developed around critical components such as evaluation, job development and analysis, therapeutic placement, direct on-the-job training, and evaluation for referral for additional services (Wehman & Kreutzer, 1990).

Job Placement: Following completion of training, the client should be ready for placement into the appropriate vocational setting. Effective service delivery sometimes ends at the dismissal of the client from the inpatient program. The majority of persons with traumatic brain injury need long-term support to achieve successful vocational placement and independence. Job placement is a fundamental rehabilitation

service and involves assisting the person in seeking, obtaining, and retaining employment. There are several employment alternatives that should be considered, depending on individual functional ability.

Oftentimes, residual deficits are too severe to contemplate return to work within the competitive labor market. However, there are alternatives for these individuals. Sheltered employment and homebound employment are several options for persons whose disability is too severe to enter the competitive labor market. Sheltered employment gives individuals an opportunity to work in protected environments at their level of functioning (Wright, 1980). Homebound employment has been enhanced by increasing computer technology and allows persons who function best in their home environment to be productive.

Supported employment is a very valuable concept in helping the person with traumatic brain injury return to the work force. The concept was designed to provide paid employment in an integrated work setting with permanent follow-along supervision, and targets the severely disabled population. Supported employment is designed to provide services to individuals who, because of the severity of their handicap, are not eligible for competitive employment and are not appropriate for sheltered employment (Wehman & Moon, 1988). This concept provides an opportunity for the person with traumatic brain injury to experience a successful return to

work. Due to the myriad deficits usually occurring with traumatic brain injury, permanent follow-along services give the client the ongoing support necessary for success on the job.

A therapeutic model of service delivery, including the supported work model, has been suggested by Wehman and Kreutzer (1990) as an effective approach toward facilitation of successful work re-entry. A key to this model is the support services provided directly to the client at the work site by a job coach. This serves as a proactive position to recognize problems before they become detrimental. Emotional and interpersonal problems are often the root cause of on-the-job failure. Job coaching provides the necessary support to work through these problems before they reach that stage.

Work crews and enclaves, alternatives for those who need a supported working environment, have given clients the opportunity for an employment experience in a community-based setting. Work crews generally are comprised of four to six individuals with severe disabilities who work together to perform service jobs within the community. An enclave is an employment option wherein small groups of workers with disabilities are integrated into a non-handicapped working environment and are provided with long-term support (Wehman, Moon, Everson, Wood, & Barcus, 1988). Work crews, enclaves, and job coaching are viable employment opportunities for

persons who are not appropriate for the competitive labor market.

Placement into competitive employment involves helping the client become prepared for the selective hiring practices in the open labor market (Wright, 1980). Not all persons with traumatic brain injury will be able to return to or enter the competitive labor market because of the severity and myriad of residual deficits. However, in working with a potential employer, they may come to realize that with minimal or no modifications, persons with disabilities may become very beneficial employees.

Summary

Each aspect of the implications of traumatic brain injury, including cognition, behavior/emotion, psychosocial, physical, family, and vocational, must be recognized and incorporated into the services offered by facilities serving persons with traumatic brain injury. A thorough treatment program would include the varied professionals associated with each treatment specialty.

Vocational programs for persons with traumatic brain injury must also be thorough in offering a full range of vocational services which are needed to meet varied needs. Programs serving persons with traumatic brain injury should include thorough evaluation, varied re-training methods, placement alternatives, and follow-up services.

CHAPTER III

METHODS AND PROCEDURES

Methods and procedures are described in this chapter in the following order: subjects, instrumentation, procedure, and data analyses.

Subjects

Subjects for this study were the entire listing of facilities in the National Directory of Head Injury Rehabilitation Services (1988) that provided services to persons with traumatic brain injury. The listing included 65 rehabilitation facilities located in the Rehabilitation Services Administration Federal Region IV (i.e., the eight southeastern states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee). Seven rehabilitation facilities that were not listed in the National Directory of Head Injury Rehabilitation Services also were included in this research study. These facilities were identified while conducting literature review for this study. Five of these facilities are located in the state of Tennessee, one facility in North Carolina, and one facility in Kentucky. These seven facilities were established post-1988.

One facility listed in the National Directory of Head Injury Rehabilitation Services was omitted because that facility was known to have closed. Seventy-three facilities were mailed a questionnaire.

The rehabilitation facilities that were surveyed were of two major categories, private and public. Private facilities were of two types, for-profit and not-for-profit. Private for-profit facilities usually receive no Federal, State, or local government funding. However, private not-for-profit facilities may receive support from Federal, State, and local governments in direct monies or grants for specific programs. Public facilities are those that are funded primarily by monies received from Federal, State, or local governments.

Instrumentation

A 23-item questionnaire was developed for the purpose of this study to gather specific information about vocational services available to persons with traumatic brain injury in rehabilitation facilities (see Appendix A). The questionnaire included a space for the name of the organization, the person completing the survey and his/her title, and the phone number of the facility. The questions on the questionnaire were derived from a thorough review of the literature. Books on the subject of traumatic brain injury and vocational services

for persons with traumatic brain injury were reviewed. Concerns about vocational services were identified.

The review of the literature also included journal articles concerning traumatic brain injury. Recurrent themes and concerns about vocational services were identified. Also, the rehabilitation needs of persons with traumatic brain injury were identified in the review of literature. Identified recurrent themes and concerns were the bases for development of the questions on the questionnaire.

Information sought on the questionnaire included acceptance criteria, number of each discipline on staff, data concerning treatment plan development, type of client, evaluations conducted, the facility's basic model or goal, presence of vocational rehabilitation personnel on staff, requirement of identification of vocational objectives, placement alternatives offered, use of supported employment and job coaching, availability of independent living skills training, and availability of services such as substance abuse counseling, family counseling, and psychotherapy.

Procedure

Each of the 73 facilities was mailed a questionnaire. Along with the questionnaire, each facility received a cover letter (see Appendix B) explaining the purpose and nature of the study, and an addressed, stamped envelope for returning

the completed questionnaire. Ten working days after the first survey was mailed, those facilities not responding were mailed a second questionnaire with a cover letter restating the nature and purpose of the study and requesting participation (see Appendix C). Also included was an addressed, stamped envelope for returning the questionnaire. Ten working days after the second mailing, 10 facilities that had not returned the questionnaire were chosen randomly and telephoned to encourage completion and return of the questionnaire. Twelve of the 73 questionnaires were returned to sender, address unknown, by the postal service. These 12 facilities were contacted by telephone using the number listed in the National Directory of Head Injury Rehabilitation Services (1988). The telephone numbers for each of the 12 facilities had been disconnected, with no forwarding number.

For data analysis purposes, the 12 non-reachable facilities were excluded from the survey. Of the 61 rehabilitation facilities contacted, 33 (54%) returned the questionnaire.

Data Analyses

Results were tabulated by analyzing each of the 23 questions on the questionnaire and formulating the percentage of response to each item. Answers to the questions were presented in tabular form by each question. Also, results

were presented in tabular form by each facility. The two questions that asked for comments concerning the questionnaire and comments concerning vocational programs for persons with traumatic brain injury were analyzed using content analysis for recurrent themes. Identified recurrent themes were calculated according to frequency of occurrence.

CHAPTER IV

RESULTS AND DISCUSSION

Results of the study were analyzed by reviewing the 23 questions and calculating a frequency distribution using percentages for each item on the questionnaire. These results were presented in tabular form (see Table D, Appendix D), listing each question and responses received. Data was also presented in tabular form (see Table E, Appendix E) by each rehabilitation facility returning a questionnaire as to what services were offered by that facility. An alphabetical list of facilities returning the survey is included in Appendix E. The results listed in Table E are presented anonymously. Results for each question are reviewed below, followed by a discussion.

Question #1

Question #1 addressed the Rancho Los Amigos scale, which is commonly used as part of the criterion for admission. The scale ranges from level I, the lowest functioning level, to level VIII, the highest functioning level.

Results: Of the 33 facilities that returned a questionnaire, five (15%) facilities did not respond to this question. One (3%) of the facilities responded that this question was not applicable to their facility. Eight (24%) of the facilities used level II as an acceptance criteria level. Six (19%) of the facilities accepted persons with a traumatic brain injury at level I. Two (6%) of the facilities did not use the Rancho Los Amigos rating scale for admission criteria. The stated admission criteria for these two facilities was based upon individual assessment.

Discussion: The majority of the facilities responding to this question used level II ("the client exhibiting a generalized response to stimuli") (Corthell, 1990, p. 255) as an admission criterion. As revealed in the review of the literature, a concern was noted that facilities did not accept lower level clients (I-V). Also noted was the fact that the Department of Vocational Rehabilitation Services in the majority of the states in RSA Federal Region IV accepted persons with traumatic brain injury for services only when level VIII on the scale was achieved. However, 64% of the facilities that responded to this question accepted persons for treatment between levels I and V.

Question #2

Question #2 dealt with the type of team approach taken at the facilities. The three common types of team approaches were listed as interdisciplinary, multidisciplinary, and transdisciplinary.

Results: Five (14%) of the facilities did not respond to this question. Of the remaining facilities that responded to this question, 11 (34%) indicated that they used an interdisciplinary team approach to rehabilitation. The transdisciplinary team approach was used by three (9%) of the facilities. The multidisciplinary team approach was utilized by nine (26%) of the facilities. A combination of transdisciplinary and interdisciplinary approaches was used by two (6%) of the facilities.

Discussion: As noted in the review of the literature, an interdisciplinary team approach was suggested as being the most effective in the rehabilitation efforts of persons with traumatic brain injury.

Question #3

The third question concerned the rehabilitation professionals who were included as part of the treatment team.

Results: Three (9%) of the facilities did not respond to this question. The list of professionals included on the

questionnaire are listed below with the corresponding number of facilities that included each member. Multiple responses were possible.

Psychiatrist	48%	15
Neuropsychologist	76%	23
Neuropsychiatrist	30%	9
Medical Doctor	61%	18
Nurse	88%	26
VR Counselor	64%	19
Physical Therapist	79%	24
Case Manager	73%	22
Occupational Therapist	82%	25
Speech/Language Pathologist	76%	23
Family	27%	8
Recreation Therapist	39%	12

Discussion: As noted in the review of the literature, two important team members are the neuropsychiatrist, who was included by 30% of the facilities, and the vocational rehabilitation counselor, who was included by 64% of the facilities. The neuropsychiatrist plays an important role in the rehabilitation effort of the person with a traumatic brain injury. The vocational rehabilitation counselor may work with the client to develop appropriate vocational goals and facilitate return to work for the client if appropriate. As noted in review of the literature, family involvement is an important aspect of client success. Family members were included by eight (27%) of the facilities.

Question #4

Question #4 concerned the treatment plan and the varied components included in the treatment plan by each facility.

Results: The majority of the facilities (22) listed all treatment plan aspects. Three (9%) of the facilities did not respond to this question. The results are listed below with the designated component of the treatment plan and the percent of facilities that included that aspect. Multiple responses were possible.

Medical	79%	26
Behavior/Emotion	88%	29
Education	70%	23
Vocational	73%	24
Community Integration	85%	28
Cognitive Remediation	85%	28
Discharge Planning	3%	1

Discussion: The majority of the facilities included all of the listed components in the treatment plan. The lowest percentage was in education, wherein 23 of the 33 facilities included educational goals. Twenty-four of the 33 facilities included a vocational component in the treatment plan. Including vocational planning in the treatment program is a necessary step in beginning successful vocational rehabilitation efforts for the person with a traumatic brain injury.

Question #5

Question #5 addressed the development of the treatment plan and the professionals who were responsible for this development.

Results: Three (9%) of the facilities did not respond to this question. Listed below are the members of the treatment team who were included on the questionnaire and the number of facilities that included each individual member in the development of the treatment plan. Multiple responses were possible.

Client	77%	24
Neuropsychologist	67%	20
Psychologist	48%	15
Medical Doctor	67%	20
Nurse	70%	21
Speech/Language Pathologist	70%	21
Vocational Rehabilitation Counselor	60%	18
Family	54%	16
Psychiatrist	3%	1
Occupational Therapist	39%	12
Recreation Therapist	70%	21
Physical Therapist	27%	8

Discussion: A vocational rehabilitation counselor was included in the development of the treatment plan at 18 (60%) of the facilities. This is an important aspect in the successful vocational rehabilitation of the person with

traumatic brain injury. If a vocational rehabilitation counselor is included in the development of the treatment plan, vocational objectives and goals may be identified at the time of treatment plan development.

Question #6

The treatment plan was also addressed in question #6. The point in time whereby the treatment plan was reviewed routinely was the subject of this question.

Results: Of the 33 facilities responding to the questionnaire, four (12%) did not respond to this question. The majority of the facilities, 14 (49%), responded that the treatment plan was reviewed once every two weeks. Seven (24%) of the facilities responded that the treatment plan was reviewed once a week. One (3%) of the 33 facilities reviewed the treatment plan on an as-needed basis. One (3%) of the facilities responded that this question was not applicable to their facility.

Discussion: Review of the treatment plan on a weekly or bi-weekly basis should prove most effective in the rehabilitation effort. Goals and intermediate objectives that have been set may be reviewed and updated frequently. Frequent review of vocational goals outlined in the treatment plan is necessary in order to ascertain progress toward goals and recognize deficit areas that may need remedial attention.

Question #7

The age range served by each facility was targeted in question #7. The questionnaire asked each facility to indicate at what age persons with traumatic brain injury could be served at that facility.

Results: Two (6%) of the 33 facilities did not respond to this question. Of the facilities that responded to this question, the majority, 14 (45%), accepted persons with traumatic brain injury who were 13 years of age or older. Ten (33%) of the facilities accepted persons from birth. Two (6%) of the facilities responded that they accepted persons who were eight years of age or older, and two (6%) of the facilities indicated that they served persons 16 years of age and older.

Discussion: Because of the average age range of the person with a traumatic brain injury (15-24), it is essential that vocational rehabilitation services be available to people in this age bracket. Loss of productivity, lack of previous job or work experience, and limited training are very important factors that must be considered. The presence of these deficits enhance the need for vocational rehabilitation services for persons of all ages.

The Division of Rehabilitation Services in each State may provide services for persons of any age. However, persons younger than 16 years of age probably would receive services through some other resource.

Question #8

Question #8 addressed the various services that may be offered by a facility serving persons with traumatic brain injury.

Results: Two (6%) of the facilities did not respond to this question. Of those facilities responding, the particular service targeted and the number of facilities indicating that they offered the service are listed below. Multiple responses were possible.

Coma Intervention	52%	16
Acute Care	61%	19
Independent Living Training	54%	17
Community Re-Entry	67%	21
Day-Treatment/Outpatient	85%	26
Vocational Programming	70%	22

Discussion: Over 50% of the facilities responding to this question offered all of the listed services. Those facilities offering all of the listed services would be equipped to provide total care at any level of functioning, from coma intervention to vocational programming. Vocational programming is an essential part of service delivery. The availability of vocational services would ideally be a part of all service delivery systems in order to permit the individual to eventually become gainfully employed.

Question #9

Question #9 concerned each facility's basic model or goal.

Results: Two (6%) of the facilities did not respond to this question. Listed below are the basic model or goal addressed in the questionnaire, with the corresponding number of facilities that indicated each to be a part of their organization. Multiple responses were possible.

Community Re-Entry	64%	20
Medical Management	67%	21
Cognitive Remediation	74%	23
Behavior Intervention	61%	19
Vocational Outcome	55%	17

Two (6%) of the facilities indicated that physical restoration was included in their organization model.

Discussion: Over half of the facilities responding to this question indicated that all of the listed goals were included in their organization model. Vocational outcome was found to be the least included aspect of the organization model. While cognitive remediation was included most often (74%), vocational outcome was included by 55%. Vocational outcome should not be overlooked and should be provided as part of the overall service delivery system. Vocational outcome is an integral part of the overall service delivery system and should be included in organizational goals. If

included, vocational rehabilitation services may be integrated into the overall rehabilitation effort.

Question #10

Question #10 addressed the evaluations that were required by facilities serving persons with traumatic brain injury. Five evaluations were targeted.

Results: Two (6%) of the facilities did not respond to this question. One (3%) of the 33 facilities responded that this question was not applicable to their facility. Listed below are the evaluations and the number of facilities that indicated the evaluation was required. Multiple responses were possible.

Psychological	82%	25
Vocational	67%	21
Neuropsychological	82%	25
Physical	88%	27
Speech/Language	76%	24

Discussion: Of the facilities responding, over 75% required all of the evaluations except a vocational evaluation. Again, the results reveal that vocational services are not offered by the facilities responding to this question as often as some of the other listed services. A vocational evaluation is a beginning point for an effective

vocational rehabilitation plan and should be included in service delivery.

Question #11

Question #11 addressed neuropsychological evaluation and what was assessed by the evaluation.

Results: Of the 33 facilities returning a questionnaire, three (9%) did not respond to this question. One (3%) of the facilities indicated that this question was not applicable to their facility. Of the facilities responding to this question, the results are listed below. Multiple responses were possible.

Functional Limitations	85%	25
Remediation and Accommodations	88%	26
Remaining Assets	88%	26
Rehabilitation Potential	85%	25
Strategies for Effective Rehabilitation	70%	20

Discussion: Most of the facilities included all of the essential aspects of a neuropsychological evaluation. Important information would be provided by an assessment of rehabilitation potential, which would aid in developing an effective vocational rehabilitation plan. As noted in the review of related literature, a thorough neuropsychological

evaluation would provide insight into problem areas and strategies for developing effective treatment methods.

Question #12

Question #12 involved aspects of a physical capacity assessment. Important aspects of a physical capacity assessment were listed and responses recorded as to whether each of these measurements was routinely included by the facility.

Results: Four (12%) of the 33 facilities did not respond to this question. One (3%) facility designated that this question was not applicable to their facility. Of the remaining facilities, the results are listed below. A physical capacity assessment would measure the following capabilities. Multiple responses were possible.

Lift and Carry Capacity	79%	22
Manual and Fine Motor Dexterity	88%	25
Eye/Hand/Foot Coordination	88%	25
Visual/Spatial Acuity	82%	23
Balance/Climbing Ability	82%	23
Walk/Sit/Stand Abilities	85%	24

Discussion: A thorough physical capacity assessment is an integral part of the vocational rehabilitation process. It is essential that a client's physical capacities be assessed

in order to develop appropriate goals and ascertain a vocational objective within the person's physical limitations and abilities.

Question #13

Question #13 addressed whether or not the facility had a vocational rehabilitation counselor on staff.

Results: Five (15%) of the 33 facilities did not respond to this question. One (3%) responded that this question was not applicable to their facility. Of the remaining facilities, 21 (64%) did have a vocational rehabilitation counselor on staff. The remaining six (18%) facilities responded that their staff did not include a vocational rehabilitation counselor.

Discussion: The presence of a vocational rehabilitation counselor involved in the rehabilitation effort is a necessary part of a total service delivery system. A vocational rehabilitation counselor will possess the expertise necessary to assist the person with traumatic brain injury to reach his or her maximum potential and obtain appropriate employment. Ideally, 100% of the facilities would have responded that they did have a vocational rehabilitation counselor on staff.

Question #14

Question #14 concerned vocational evaluation and the components included in a thorough vocational evaluation.

Results: Five (15%) of the facilities did not respond to this question. Three (9%) of the facilities indicated that this question was not applicable to their program. Listed below are the areas of a vocational evaluation that the questionnaire targeted, with the corresponding percent and number of facilities that indicated the area was included. A thorough vocational evaluation would include the following assessments. Multiple responses were possible.

Situational Assessment	64%	21
Job/Work Samples	64%	21
Psychometrics	61%	20
Computerized Job Matching	36%	12

Discussion: Ideally, each facility would include each of these vocational evaluation methods in their evaluation process. Computerized job matching was used by 12 (37%) of the 33 facilities. Computerized job matching is an effective method for abilities analysis, transferrable skills analysis, and identification of appropriate vocational objectives within the client's limitation.

Question #15

A rehabilitation plan containing vocational goals was the topic of question #15. The question asked if vocational goals were included in the rehabilitation plan.

Results: Four (12%) of the facilities did not respond to this question. One (3%) of the facilities responded that this question was not applicable to their facility. Of the remaining facilities, 22 (66%) indicated that vocational rehabilitation goals were included in the rehabilitation plan, whereas six (19%) of the facilities indicated that vocational rehabilitation goals were not included.

Discussion: Vocational rehabilitation goals as part of the overall rehabilitation plan are necessary in order to begin working and ensuring complete service delivery. A vocational rehabilitation counselor can help develop appropriate goals that may range from competitive employment to sheltered workshop or training. If vocational rehabilitation goals are included as part of the rehabilitation plan, goals may be developed and updated or modified as the person with a traumatic brain injury progresses toward maximum potential.

Question #16

Question #16 addressed job readiness training. The questionnaire asked each facility to indicate whether job readiness training was a part of their program.

Results: One (3%) of the 33 facilities did not respond to this question. Two (6%) of the 33 facilities indicated that this question was not applicable to their facility. Of the remaining facilities, 15 (52%) indicated that they did offer job readiness training as part of the rehabilitation program. Ten (33%) of the facilities indicated that they did not offer job readiness training at their facility.

Discussion: Job readiness training is an effective approach to successful placement. Job readiness training allows a person with a traumatic brain injury the opportunity to become familiar with all aspects of job requirements. Job readiness training also allows generalizability of skills, which is sometimes more difficult for persons with traumatic brain injury than other disability types. This is due in part to the cognitive, behavioral, and emotional complications that occur with a traumatic brain injury.

Question #17

Vocational placements available to persons with traumatic brain injury are often limited due to few community resources.

Question #17 asked each facility to list types of employment or training situations where the majority of their clients were placed.

Results: Thirteen (39%) of the 33 facilities did not respond to this question. Nine (27%) of the facilities indicated that this question was not applicable to their program. Listed below are the placement alternatives and the corresponding percent and number of facilities that responded.

Competitive Employment	6%	2
Sheltered Workshop	3%	1
Supported Employment	6%	2
Not to be Employed	9%	3
Vocational Training	9%	3

Discussion: The results of this question revealed the need for more extensive placement alternatives within the community. A major goal of vocational rehabilitation is to facilitate client achievement and vocational success. The objective is gainful employment, and vocational training may be an essential service. The results were affected by the large number (39%) of the facilities that did not respond to this question, which may be due in part to the fact that their facility does not become involved in placement services. Indeed, the reluctance to respond to this question had an effect upon the results listed above. This question had the largest number of facilities (13) that did not respond.

However, the need for a broader base of placement services is evident. As stated previously, placement into gainful employment is one of the goals of vocational rehabilitation services. Placement services were not being utilized by the majority (22) of the facilities responding to this question.

Question #18

Supported employment has been suggested as a very effective model for persons with traumatic brain injury who pursue vocational rehabilitation. Question #18 addressed supported employment and whether this was included as part of the vocational rehabilitation program. Eight (24%) of the facilities indicated that this question was not applicable to their program. Fourteen (43%) of the facilities indicated that they did use the supported employment model, while four (12%) of the facilities indicated that they did not use the supported employment model.

Discussion: The use of supported employment programs is considered to be very effective with persons who have traumatic brain injury in helping to facilitate successful vocational rehabilitation. Ideally, facilities which offer vocational placement services for their clients would implement the supported employment model. However, funding problems often inhibit the long-term use of supported employment.

Question #19

Question #19 addressed the types of actual jobs that persons with traumatic brain injury were able to obtain through the rehabilitation program. Five (15%) of the facilities did not respond to this question. Seven (22%) of the facilities indicated that this question was not applicable to their program. Seven (22%) of the facilities indicated that the majority of their clients were placed in food service occupations. One (3%) of the facilities noted that most of their clients were placed in retail sales. The largest majority, seven (21%), of the facilities indicated that most of their clients were placed in janitorial occupations. The manufacturing industry was second among placement, with five (15%) of the facilities indicating that most of their clients were placed in manufacturing/assembly-type jobs.

Discussion: Jobs in manufacturing, food service, and janitorial are often low-paying jobs, indicating that placement alternatives for persons with traumatic brain injury are limited. Development of appropriate vocational alternatives for persons with traumatic brain injury should be addressed. Vocational training or job readiness training may be helpful in preparing a person with a traumatic brain injury for an appropriate vocational placement.

Question #20

Independent living skills training is an important service that helps a person with traumatic brain injury to become self-sufficient and reach maximum potential. Question #20 addressed whether independent living skills training was offered.

Results: Fourteen (43%) of the facilities did not respond to this question. Two (6%) of the facilities indicated that this question was not applicable to their program. Fifteen (45%) of the facilities indicated that independent living skills training was a part of their rehabilitation program. Two (6%) of the facilities indicated that independent living skills training was not a part of their rehabilitation program.

Discussion: Independent living skills training is an effective way to assist the person with traumatic brain injury to become more self-sufficient. While allowing the person to become more autonomous, independent living skills training should positively affect self-image and self-esteem. Several of the facilities indicated that an apartment model program was utilized wherein each client lived in a supervised apartment setting. The amount of assistance received depends upon the person's current ability to perform day-to-day activities. The amount of assistance is gradually decreased as the person progresses toward self-sufficiency.

Question #21

Follow-up services such as therapeutic counseling, family counseling, and substance abuse counseling are very important to continued success after the person has been released from the program. Question #21 asked if follow-up services were offered as part of the rehabilitation program.

Results: Twelve (37%) of the facilities did not respond to this question. Six (18%) of the facilities indicated that this question was not applicable to their program. Ten (30%) of the facilities indicated that follow-up services such as substance abuse counseling and family therapy were offered as part of the rehabilitation program. Five (15%) of the facilities indicated that they did not offer follow-up services.

Discussion: The presence of follow-up services as part of the rehabilitation program is helpful in ensuring the continued success of the rehabilitated person with traumatic brain injury. Rehabilitation often continues after release from the rehabilitation program. Continued services provide the support that the person may need. Follow-up services also assist the person in effectively dealing with job-related adjustments and any problems that may occur on the job.

Questions #22 and #23

Questions #22 and #23 were open-ended questions that were analyzed using content analysis. Recurrent themes identified in question #22 are listed below.

1.	In general, vocational activities are lacking.	3%	1
2.	There is a need for services available to the economically disadvantaged person with traumatic brain injury.	6%	2
3.	Funding problems exist for programs within the Division of Rehabilitation Services that were authorized by the Rehabilitation Act of 1973.	9%	3
4.	The Division of Rehabilitation Services is lacking in appropriate programs for persons with traumatic brain injury.	15%	5
5.	There is a need for placement alternatives, other than sheltered employment.	3%	1
6.	There is a need for community-based placement alternatives.	6%	2

7. Supported employment is a crucial factor in vocational rehabilitation for persons with traumatic brain injury. 3% 1

The results for question #22 revealed several concerns that were expressed by persons completing the survey. Comments concerning lack of services and need for funding sources were evidenced. These concerns provide suggestions for continued research and development of programs to meet the needs of persons with traumatic brain injury.

Question #23 revealed one significant result: Two (6%) of the facilities responded to this question, and both stated that they felt the questionnaire was too long.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

It was the purpose of this research to survey vocational services offered to persons with traumatic brain injury who were treated/served in rehabilitation facilities located in Rehabilitation Services Administration, Federal Region IV. Seventy-three facilities in Federal Region IV were sent questionnaires that requested information concerning vocational services offered.

Twelve of the 73 facilities could not be contacted. Thirty-three of the facilities (54%) returned the questionnaire.

Information from the questionnaires revealed several important components about vocational rehabilitation programs at facilities serving persons with traumatic brain injury. A summary of relevant findings is listed below.

1. Vocational programming was offered at 22 of the 33 facilities responding to the questionnaire.

2. Vocational outcome was included as part of the facility's basic model or goal in 18 of the 33 facilities.

3. A vocational evaluation was conducted as part of the evaluation process for development of the treatment plan at 22 of the 33 facilities responding to the questionnaire.

4. A vocational rehabilitation counselor was included as part of the rehabilitation staff at 21 of the 33 facilities.

5. The treatment plan or rehabilitation plan included vocational goals at 19 of the 33 facilities.

6. The supported employment model with job coaching was utilized at 14 of the 33 facilities.

7. Job readiness training was implemented at 19 of the 33 facilities completing the questionnaire.

8. Independent living skills training was offered to persons with traumatic brain injury at 15 of the 33 facilities.

9. A very small number of the facilities (10) offered follow-up services, including substance abuse counseling, family counseling, and counseling for the client.

Conclusions

There are several findings that lead to conclusions about vocational rehabilitation services offered to persons with traumatic brain injury in the Rehabilitation Services Administration, Federal Region IV. Listed below are conclusions drawn from the results of this study. A small number of facilities offered complete care, including coma intervention, medical management, cognitive remediation, behavior intervention, and vocational rehabilitation.

The majority of the facilities offered one or several aspects of the service delivery system. Over half (52%) of the facilities offered coma intervention, while 85% offered day treatment/outpatient services.

Most of the facilities surveyed recognize the need for vocational rehabilitation services, as evidenced by inclusion of a vocational rehabilitation counselor on staff (64%), development of vocational goals (56%), and vocational rehabilitation outcome as part of the organizational model (55%). However, the need for facilities offering comprehensive vocational rehabilitation services is evident.

The capability of a rehabilitation facility to provide effective vocational rehabilitation services is enhanced by the thoroughness of physical capacity assessments, neuropsychological assessments, and vocational evaluation assessments that are being conducted in these facilities. Information obtained through these assessments is essential to the treatment and rehabilitation team in both short-term and long-term planning.

Direct placement into training and/or employment is not a major role of rehabilitation facilities. One possible explanation for limited direct placement is that this function is more appropriate for the referral source or community-based rehabilitation personnel rather than the facility. Further, there is a strong indication that clients served by these facilities surveyed do not have marketable vocational skills. This is evidenced by the fact that computerized job matching, which is used to identify transferable skills, was utilized by only 36% of the facilities. Also, all of the jobs listed by the facilities in which clients were placed consisted of unskilled, entry-level positions.

Limited employment placement alternatives are utilized for persons with traumatic brain injury. This can be remedied with community integration and the community's becoming involved in placement efforts, which is largely achieved by utilizing the supported employment model. As noted, however, the supported employment model is utilized by only 42% of the

facilities. This leaves many other facilities that could utilize the supported employment model as part of placement services.

Results from question #22 revealed concerns about the scarcity of vocational rehabilitation services, especially for economically disadvantaged persons who have sustained a traumatic brain injury. Persons receiving treatment from a private for-profit facility are usually funded by an insurance carrier. If the person does not have insurance, a funding source may not be available. Also, the economically disadvantaged person may be served through Federal/State programs. However, these programs usually do not accept a person for services until they have reached level VIII on the Rancho Los Amigos scale.

Vocational rehabilitation should be included as part of the overall service delivery system for persons who have experienced traumatic brain injury. Overall, there are a number of facilities that do not include all aspects of vocational rehabilitation, including a thorough evaluation; independent living skills training; job readiness training; a vocational rehabilitation counselor on staff; and employment placement alternatives, including supported employment.

Recommendations

Listed below are ten recommendations that are made as a result of this study.

1. It is recommended that further study be conducted to evaluate the effectiveness of vocational rehabilitation efforts with persons with traumatic brain injury.

2. A more extensive evaluation of services offered by state versus private sector rehabilitation providers, including a method of coordination of services, is recommended.

3. It is recommended that the facilities surveyed become involved in direct placement activities.

4. It is recommended that the supported employment model be implemented by facilities serving persons with traumatic brain injury.

5. It is recommended that the ability of persons with traumatic brain injury to perform skilled occupations be investigated.

6. It is recommended that further study be conducted on the availability of employment placement alternatives, other than entry-level jobs, for persons with traumatic brain injury.

7. It is recommended that evaluation of services available to the economically disadvantaged person with traumatic brain injury be evaluated, along with identification of funding sources and regulations imposed by financial providers such as insurance companies.

8. Additionally, it is recommended that the type of vocational evaluation most effective with persons who have traumatic brain injury be investigated. Further, it is suggested that the use of computerized job matching be explored.

9. It is recommended that the family be included in the development of treatment objectives and rehabilitation efforts.

10. Finally, it is recommended that the importance of vocational rehabilitation be stressed. It is vital that the person with traumatic brain injury be given the opportunity to reach his or her individual maximum potential, which includes being vocationally productive.

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APPENDICES

APPENDIX A:

QUESTIONNAIRE

VOCATIONAL PROGRAMS FOR
TRAUMATIC BRAIN INJURED PERSONS

ORGANIZATION_____ PHONE NUMBER_____

PERSON COMPLETING SURVEY_____ TITLE_____

PLEASE ANSWER ALL QUESTIONS THAT APPLY TO YOUR PROGRAM.

AT WHAT LEVEL, (1-8) ON THE RANCHO LOS AMIGOS SCALE DO YOU ACCEPT A PERSON INTO YOUR PROGRAM._____

WHAT TEAM APPROACH DOES YOUR ORGANIZATION UTILIZE?
MULTIDISCIPLINARY _____
TRANSDISCIPLIANRY _____
INTERDISCIPLINARY _____
OTHER (PLEASE NAME)_____

MEMBERS OF THE TEAM INCLUDE: (check all that apply)
PHYSIATRIST _____
NEUROPSYCHOLOGIST_____
NEUROPSYCHIATRIST_____
MEDICAL DOCTOR _____
NURSE _____
VOCATIONAL REHABILITATION SPECIALIST_____
PHYSICAL THERAPIST_____
CASEMANAGER _____
OCCUPATIONAL THERAPIST_____
SPEECH/LANGUAGE PATHOLOGIST_____
FAMILY MEMBERS _____
OTHER_____ _____
_____ _____

THE TREATMENT PLAN DEVELOPED INCLUDES THESE ASPECTS:
(check all that apply)
MEDICAL _____
BEHAVIORAL/EMOTIONAL _____
EDUCATIONAL _____
VOCATIONAL _____
COMMUNITY INTEGRATION _____
COGNITIVE REMEDIATION _____
OTHER_____ _____
_____ _____

PROFESSIONALS RESPONSIBLE FOR DEVELOPMENT OF THE TREATMENT PLAN INCLUDE: (Check all that apply)

CLIENT _____ CLIENT'S FAMILY _____
NEUROPSYCHOLOGIST _____ NEUROSURGEON _____
PSYCHOLOGIST _____ PSYCHIATRIST _____
MEDICAL DOCTOR _____ OCCUPATIONAL THERAPIST____
NURSE _____ RECREATIONAL THERAPIST____
SPEECH/LANGUAGE PATHOLOGIST___ OTHER (please list)_____
VOCATIONAL REHABILITATION COUNSELOR _____

HOW OFTEN IS THE TREATMENT PLAN REVIEWED FOR CHANGES AND UPDATES THE THE TREATMENT TEAM OF PROFESSIONALS?

ONCE PER WEEK _____
EVERY TWO WEEKS_____
EVERY MONTH _____
OTHER_____
EVERY TWO MONTHS _____
EVERY THREE MONTHS_____
ON AN AS NEEDED BASIS_____
NOT APPLICABLE _____

WHAT AGE RANGE DOES YOUR PROGRAM SERVE? (Check all that apply)

0 - 12_____
13 - 19_____
20 - 35_____
35 - over____

DOES YOUR ORGANIZATION OFFER: (check all that apply)

COMA INTERVENTION _____
ACUTE CARE SERVICES _____
INDEPENDENT LIVING TRAINING_____
COMMUNITY RE-ENTRY SERVICES_____
DAY TREATMENT/OUTPATIENT SERVICES_____
VOCATIONAL PROGRAMMING _____

WHAT IS THE BASIC MODEL OR GOAL FOR YOUR ORGANIZATION? (check all that apply)

COMMUNITY RE-ENTRY _____
MEDICAL MANAGEMENT _____
COGNITIVE REMEDIATION _____
BEHAVIORAL INTERVENTION_____
VOCATIONAL REHABILITATION OUTCOME_____
OTHER_____

WHAT EVALUATIONS ARE REQUIRED AND WHERE ARE THESE CONDUCTED?
A=WITHIN THE FACILITY
B=BY THE REFERRING ORGANIZATION
C=THROUGH CONTRACTED

	SERVICES REQUIRED (Y/N)	LOCATION CONDUCTED(A,B OR C)
PSYCHOLOGICAL	_____	_____
VOCATIONAL	_____	_____
NEUROPSYCHOLOGICAL	_____	_____
PHYSICAL	_____	_____
SPEECH LANGUAGE	_____	_____

IF A NEUROPSYCHOLOGICAL EVALUATION IS UTILIZED, WHAT INFORMATION WOULD IT PROVIDE? (check all that apply)

FUNCTIONAL LIMITATIONS
REMEDTATION AND ACCOMODATION POSSIBILITIES _____
IDENTIFICATION OF REMAINING ASSETS _____
DETERMINATION OF REHABILITATION POTENTIAL _____, AND STRATEGIES_____
OTHER_____ _____
_____ _____

IF CONDUCTED, A PHYSICAL CAPACITIES ASSESSMENT WOULD EVALUATE: (check all that apply)
RESIDUAL LIFTING AND CARRYING CAPACITY_____
MANUAL AND FINE MOTOR DEXTERITY _____
EYE/HAND/FOOT COORDINATION _____
VISUAL/SPATIAL ACUITY _____
BALANCE/CLIMB/CRAWL/BEND/STOOP CAPACITY_____
WALK/SIT/STAND CAPACITY _____

DOES YOUR ORGANIZATION HAVE A VOCATIONAL REHABILITATION SPECIALIST ON STAFF? YES_____ NO_____
IF YES, SPECIFY CERTIFICATION REQUIREMENTS._____

IF A VOCATIONAL EVALUATION IS CONDUCTED, WHICH OF THE FOLLOWING TECHNIQUES ARE USED? (check all that apply)
SITUATIONAL ASSESSMENT_____
JOB/WORK SAMPLES_____
PSYCHOMETRICS_____
COMPUTERIZED JOB MATCHING_____
OTHER, (please list)_____ _____
_____ _____

DOES YOUR PROGRAM DEVELOP A REHABILITATION PLAN THAT IDENTIFIES SPECIFIC VOCATIONAL OBJECTIVES? Y_____ N____
BRIEFLY DESCRIBE._____
_____
_____
_____
_____

IS JOB READINESS TRAINING OFFERED WITHIN YOUR FACILITY?
Y_____ N_____ IF YES, WHAT APPROACH(S) ARE/IS USED?

_____
_____

WHAT PERCENTAGE OF YOUR CLIENTS ARE PLACED DIRECTLY INTO:
COMPETITIVE EMPLOYMENT_____
SHELTERED WORKSHOP_____
SUPPORTED EMPLOYMENT_____
NOT TO BE EMPLOYED_____
VOCATIONAL TRAINING AND/OR COLLEGE____
OTHER_____
NOT APPLICABLE_____

IF YOU USE SUPPORTED EMPLOYMENT AND JOB COACHING, WHAT IS THE AVERAGE LENGTH OF TIME A JOB COACH WILL SPEND WITH A CLIENT?_____

WHAT TYPES OF JOBS IN THE COMMUNITY ARE UTILIZED BY YOUR PROGRAM EITHER THROUGH SUPPORTED EMPLOYMENT, SHELTERED WORKSHOP OR COMPETITIVE EMPLOYMENT?

_____ _____
_____ _____
_____ _____
_____ NOT APPLICABLE_____

IF YOUR ORGANIZATION OFFERS TRAINING FOR INDEPENDENT LIVING SKILLS, BRIEFLY DESCRIBE._____

_____

AFTER JOB PLACEMENT, ARE SERVICES SUCH AS SUBSTANCE ABUSE COUNSELING, PSYCHOTHERAPY AND FAMILY COUNSELING PROVIDED?
Y_____ N_____ BRIEFLY DESCRIBE._____

_____

NOT APPLICABLE_____

COMMENTS CONCERNING VOCATIONAL PROGRAMS FOR TRAUMATIC BRAIN INJURED PERSONS.

COMMENTS ABOUT THIS SURVEY.

THANK YOU FOR YOUR SUPPORT AND COOPERATION. A COPY OF THE RESULTS WILL BE SENT TO YOU.

PLEASE RETURN THE COMPLETED SURVEY FORM IN THE ADDRESSED, STAMPED ENVELOPE. IF YOU HAVE QUESTIONS OR COMMENTS, PLEASE CALL OR WRITE:

Dr. JAMES H. MILLER/SANDY CARDWELL
THE UNIVERSITY OF TENNESSEE
DEPARTMENT OF SPECIAL SERVICES EDUCATION
337 CLAXTON EDUCATION ADDITION
KNOXVILLE, TN 37996
(704) 537-7450

APPENDIX B:

COVER LETTER 1

August 15, 1991

Agency 1
Agency 2
Name
Address
City, State Zip

Dear Director:

Traumatic brain injury has reached epidemic proportions in the United States. Facilities such as yours are providing a much needed service to the estimated 2 million persons who suffer from a traumatic brain injury each year.

As a graduate student at the University of Tennessee, pursuing a master's degree in rehabilitation counseling, I have chosen to study rehabilitation facility services offered to traumatic brain injured individuals and their families. This research project is limited to facilities located in the eight states in the Southeast region. The enclosed survey is designed to identify the vocational rehabilitation component of the treatment programs. I am surveying 65 facilities, including hospitals, Federal/State Rehabilitation Centers, and private facilities. A compilation of the results will include a listing of programs offered and the type and extent of vocational rehabilitation services, which are essential to an individual's functional independence and return to employment.

Please participate in this project by completing the enclosed survey form and returning it to me in the enclosed stamped, addressed envelope. Please return the survey, even if all items are not applicable. With your valuable input, we can develop a directory of services available in the Southeast for individuals who have sustained traumatic brain injury.

If you have any questions, please contact me at (704) 537-7450. Thank you for your support and cooperation. A copy of the results will be mailed to you.

With kindest regards,

Sandy Cardwell, Graduate Student
Rehabilitation Counseling
Univ. of Tennessee, Knoxville

James H. Miller, Ed.D., Dir.
Rehabilitation Counseling
Univ. of Tennessee, Knoxville

Enclosure

APPENDIX C:

COVER LETTER 2

September 10, 1991

Agency 1
Agency 2
Name
Address
City, State Zip

Dear Director:

Several weeks ago, I sent a survey form to you regarding rehabilitation services provided to individuals with traumatic brain injury. As stated in my previous letter, traumatic brain injury has reached epidemic proportions in this country, and it is most important that needed services be available and not a "well kept secret."

I am enclosing another copy of the survey form, along with a stamped and addressed return envelope. I know that you are busy, but you will be helping me and many others if you can take a few minutes to complete and return the survey form. This action is essential to completing my thesis research and compiling a directory of rehabilitation services available in the Southeast for individuals with traumatic brain injury.

I really do need your assistance, and I am grateful for your cooperation and support. Please phone me at (704) 537-7450 if you have any questions. As promised, a copy of the results will be mailed to you.

With kindest regards,

Sandy Cardwell, Graduate Student
Rehabilitation Counseling
Univ. of Tennessee, Knoxville

James H. Miller, Ed.D., Dir.
Rehabilitation Counseling
Univ. of Tennessee, Knoxville

Enclosure

APPENDIX D:

TABLE D

TABLE D: RESULTS OF QUESTIONNAIRE: VOCATIONAL PROGRAMS FOR TRAUMATIC BRAIN INJURED PERSONS

QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%
1. RLA LEVEL OF ACCEPTANCE		2. TEAM APPROACH		3. TEAM MEMBERS		4. TREATMENT PLAN		5. TREATMENT PLAN DEVELOPMENT	
I	18	Interdisciplinary	34	Psychiatrist	48	Medical	79	Client	79
II	24	Transdisciplinary	9	Neuropsychologist	30	Behavior/Emotion	70	Psychologist	48
III	9	Multidisciplinary	26	Neuropsychiatrist	30	Education	70	Psychologist	48
IV	6	Multidisciplinary & Interdisciplinary	6	Medical Doctor	61	Vocation	73	Medical Doctor	67
V	6	Transdisciplinary & Interdisciplinary	6	Nurse	88	Community Integration	85	Nurse	70
VI	6	Did Not Answer	14	Vocational Rehabilitation Counselor	64	Cognitive Remediation	85	Speech/Language Pathologist	70
VII	6	Not Applicable	0	Physical Therapist	79	Other: Discharge Planning	3	Vocational Rehabilitation Counselor	60
VIII	0			Case Manager	73	Did Not Answer	9	Family	54
Individual Assessment	6			Occupational Therapist	82	Not Applicable	0	Psychiatrist	2
Did Not Answer	15			Speech/Language Pathologist	76			Occupational Therapist	40
Not Applicable	3			Family	27			Recreational Therapist	70
				Other: Recreational Therapist	39			Other: Physical Therapist	27
				Did Not Answer	9			Did Not Answer	9
				Not Applicable	0			Not Applicable	0

Table D: Results of Questionnaire: Vocational Programs for Traumatic Brain Injured Persons...continued

QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%
6. TREATMENT PLAN REVIEW		**7. AGE RANGE SERVED**		**8. SERVICES OFFERED**		**9. ORGANIZATION MODEL**		**10. EVALUATIONS**	
Once a Week	24	0 ---->	33	Coma Intervention	51	Community Re-Entry	64	Psychological	82
Once Every Two Weeks	48	13 ---->	45	Acute Care	61	Medical Management	67	Vocational	67
Once a Month	6	20 ---->	3	Independent Living Training	54	Cognitive Remediation	74	Neuropsychological	82
Once Every Two Months	0	35 ---->	0	Community Re-Entry	67	Behavior Intervention	61	Physical	88
Once Every Three Months	3	Other: 8 ---->	6	Day-Treatment/ Outpatient	85	Vocational Rehabilitation Outcome	54	Speech/Language	76
As Needed	3	Other: 16 ---->	6	Vocational Programming	70	Other: Physical Restoration	6	Did Not Answer	6
Did Not Answer	12	Did Not Answer	6	Did Not Answer	6	Did Not Answer	6	Not Applicable	3
Not Applicable	3	Not Applicable	0	Not Applicable	0	Not Applicable	0		

Table D: Results of Questionnaire: Vocational Programs for Traumatic Brain Injured Persons...continued

QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%
11. NEUROPSYCHO-LOGICAL EVALUATION ASSESSES:		12. PHYSICAL CAPACITIES ASSESSMENT ASSESSES:		13. VOCATIONAL REHABILITATION SPECIALIST ON STAFF		14. VOCATIONAL EVALUATION		15. REHABILITATION PLAN WITH VOCATIONAL GOALS	
Functional Limitations	85	Lift & Carry	79	Yes	64	Situational Assessment	64	Yes	66
Remediation and Accommodation	88	Manual and Fine Motor	88	No	21	Job/Work Samples	64	No	24
Remaining Assets	88	Eye/Hand/Foot Coordination	88	Did Not Answer	15	Psychometrics	60	Did Not Answer	12
Rehabilitation Potential	85	Visual/Spatial Acuity	82	Not Applicable	3	Computerized Job Matching	36	Not Applicable	3
Strategies	70	Balance/Climbing	82			Did Not Answer	15		
Did Not Answer	9	Walk/Sit/Stand	85			Not Applicable	9		
Not Applicable	3	Did Not Answer	12						
		Not Applicable	3						

Table D: Results of Questionnaire: Vocational Programs for Traumatic Brain Injured Persons...continued

QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%	QUESTION	%
16. JOB READINESS TRAINING		17. PLACEMENT ALTERNATIVES		18. SUPPORTED EMPLOYMENT JOB COACHING		19. TYPES OF JOBS OBTAINED		20. INDEPENDENT LIVING TRAINING		21. FOLLOW-UP SERVICES	
Yes	51	Competitive Employment	6	Yes	42	Food Service	22	Yes	45	Yes	30
No	33	Sheltered Workshop	3	No	12	Retail Sales	3	No	6	No	15
Did Not Answer	3	Supported Employment	6	Did Not Answer	24	Self-Employment	3	Did Not Answer	42	Did Not Answer	36
Not Applicable	6	Not to be Employed	9	Not Applicable	21	Manufacturing	14	Not Applicable	6	Not Applicable	18
		Vocational Training	9			Janitorial	21				
		Did Not Answer	39			Did Not Answer	15				
		Not Applicable	27			Not Applicable	21				

APPENDIX E:

TABLE E

Listed below are the facilities that returned a questionnaire. Consent to present the results by each facility was not obtained. Therefore, the results in Table E are presented anonymously.

Alabama Division of Vocational Rehabilitation
Baptist Regional Rehabilitation Center
Cardinal Hill Hospital
Carl D. Perkins Comprehensive Rehabilitation Center
Georgia Traumatic Brain Injury Center
Head Injury Center of Charlotte
Healthsouth, Inc.
Healthsouth Miami Rehabilitaiton Institute
Healthsouth Rehabiliation Hospital
Kentucky Client Assistance Program
Lakeview Rehabilitation Hospital
Learning Services at Peachtree
North Carolina Division of Vocational Rehabilitation
Orlando Regional Medical Center
Patricia Neal Rehabilitation Center
Project Hires of Employment Opportunities
Rebound, Inc.
Rebound, Inc.
Rehabilitation Care Center, St. Mary's Medical Center
Rehabilitation Institute of West Florida
Roosevelt Warm Springs Institute
Sea Pines Rehabiliation Hospital
South Carolina Division of Rehabilitation
Southeastern Regional Vocational Rehabilitation Center
SRRC
Tampa General Rehabilitation Center
Tennessee Protection and Advocacy
Treasure Coast Rehabilitation Hospital

TABLE E: SUMMARY OF SERVICES OFFERED BY FACILITY

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	1	2	3	4	5	6	7
LEVEL OF ACCEPTANCE	VI to VIII	III to VIII	IV to VIII	VI to VIII	I to VIII	II to VIII	II to VIII
TEAM APPROACH	Multi-disciplinary . Inter-disciplinary	Multi-disciplinary	Multi-disciplinary	Multi-disciplinary	Trans-disciplinary Multi-disciplinary	Inter-disciplinary	Inter-disciplinary
AGE RANGE SERVED	16 Years & Up	13 Years & Up	20 Years & Up	13 Years & Up	0 Years & Up	13 Years & Up	13 Years & Up
COMA INTERVENTION	N	N	N	N	Y	Y	Y
ACUTE CARE	N	Y	N	N	Y	Y	Y
INDEPENDENT LIVING TRAINING	Y	N	Y	N	Y	Y	N
COMMUNITY RE-ENTRY	Y	Y	Y	N	Y	Y	Y
DAY-TREATMENT/ OUTPATIENT	Y	Y	Y	Y	Y	Y	Y
VOCATIONAL PROGRAMMING	Y	Y	Y	N	Y	Y	Y
VOCATIONAL COUNSELOR ON STAFF	N	N	Y	N	Y	Y	N
SUPPORTED EMPLOYMENT	N	N	Y	NA	Y	Y	NA
JOB READINESS TRAINING	N	N	Y	N	Y	Y	N
CONTINUED SERVICES (FOLLOW-UP)	NA	Y	Y	Y	Y	Y	N

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	1	2	3	4	5	6	7
VOCATIONAL EVALUATION CONDUCTED	Y	Y	Y	Y	Y	Y	N
NEURO-PSYCHOLOGICAL EVALUATION CONDUCTED	Y	Y	Y	Y	Y	Y	N
PHYSICAL CAPACITIES CONDUCTED	Y	Y	Y	Y	Y	Y	Y
REHABILITATION PLAN WITH VOCATIONAL OBJECTIVES	Y	Y	Y	Y	Y	Y	N
TREATMENT PLAN DEVELOPED, INCLUDING:							
MEDICAL	N	Y	Y	N	Y	Y	Y
BEHAVIORAL/ EMOTIONAL	Y	Y	Y	Y	Y	Y	Y
EDUCATIONAL	Y	Y	Y	Y	Y	Y	Y
VOCATIONAL	Y	Y	Y	N	Y	Y	N
COMMUNITY REINTEGRATION	Y	Y	Y	Y	Y	Y	Y
COGNITIVE REMEDIATION	Y	Y	Y	Y	Y	Y	Y

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	8	9	10	11	12	13	14
LEVEL OF ACCEPTANCE	I to VI	II ---->	I ---->	II to VII	I ---->	I ---->	III ---->
TEAM APPROACH	Inter-disciplinary	Multi-disciplinary Inter-disciplinary	Inter-disciplinary	Inter-disciplinary	Trans-disciplinary	Inter-disciplinary	Inter-disciplinary
AGE RANGE SERVED	13 ---->	0 ---->	0 ---->	13 ---->	8 ---->	0 ---->	13 ---->
COMA INTERVENTION	Y	N	Y	Y	Y	Y	N
ACUTE CARE	Y	Y	Y	Y	Y	Y	N
INDEPENDENT LIVING TRAINING	N	Y	N	N	Y	Y	Y
COMMUNITY RE-ENTRY	N	N	Y	Y	Y	Y	Y
DAY-TREATMENT/ OUTPATIENT	Y	N	Y	Y	Y	Y	N
VOCATIONAL PROGRAMMING	N	Y	Y	Y	Y	Y	N
VOCATIONAL COUNSELOR ON STAFF	N	N	Y	Y	Y	Y	N
SUPPORTED EMPLOYMENT	NA	N	Y	N	Y	Y	N
JOB READINESS TRAINING	Y	Y	Y	Y	Y	Y	Y
CONTINUED SERVICES (FOLLOW-UP)	N	N	Y	N	Y	Y	N

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	8	9	10	11	12	13	14
VOCATIONAL EVALUATION CONDUCTED	N	Y	Y	Y	Y	N	N
NEURO-PSYCHOLOGICAL EVALUATION CONDUCTED	Y	Y	Y	Y	Y	N	N
PHYSICAL CAPACITIES CONDUCTED	Y	Y	Y	Y	Y	Y	N
REHABILITATION PLAN WITH VOCATIONAL OBJECTIVES	Y	Y	Y	Y	Y	Y	N
TREATMENT PLAN DEVELOPED, INCLUDING:							
MEDICAL	Y	Y	Y	Y	Y	Y	Y
BEHAVIORAL/ EMOTIONAL	Y	Y	Y	Y	Y	Y	Y
EDUCATIONAL	Y	Y	Y	Y	N	Y	Y
VOCATIONAL	Y	Y	Y	Y	Y	Y	N
COMMUNITY REINTEGRATION	Y	Y	Y	Y	Y	Y	Y
COGNITIVE REMEDIATION	Y	Y	Y	Y	Y	Y	Y

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	15	16	17	18	19	20	21
LEVEL OF ACCEPTANCE	VI ---->	II ---->	VII ---->	I ---->	----	Any	II ---->
TEAM APPROACH	Multi-disciplinary	Inter-disciplinary	Inter-disciplinary	Inter-disciplinary	Inter-disciplinary	Advocacy Team	Multi-disciplinary
AGE RANGE SERVED	13 ---->	0 ---->	13 ---->	8 ---->	0 ---->	16 ---->	0 ---->
COMA INTERVENTION	N	N	N	Y	N	NA	Y
ACUTE CARE	N	Y	N	Y	Y	NA	Y
INDEPENDENT LIVING TRAINING	Y	Y	Y	N	Y	NA	N
COMMUNITY RE-ENTRY	Y	Y	Y	Y	Y	NA	N
DAY-TREATMENT/ OUTPATIENT	Y	Y	Y	Y	Y	NA	Y
VOCATIONAL PROGRAMMING	Y	Y	Y	Y	Y	NA	Y
VOCATIONAL COUNSELOR ON STAFF	Y	Y	Y	N	Y	N	Y
SUPPORTED EMPLOYMENT	Y	Y	Y	NA	Y	NA	NA
JOB READINESS TRAINING	Y	Y	Y	Y	Y	NA	Y
CONTINUED SERVICES (FOLLOW-UP)	Y	Y	Y	DNA	Y	NA	NA

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	15	16	17	18	19	20	21
VOCATIONAL EVALUATION CONDUCTED	Y	N	Y	Y	Y	NA	Y
NEURO-PSYCHOLOGICAL EVALUATION CONDUCTED	Y	Y	Y	Y	Y	NA	Y
PHYSICAL CAPACITIES CONDUCTED	N	Y	Y	Y	Y	NA	N
REHABILITATION PLAN WITH VOCATIONAL OBJECTIVES	Y	Y	Y	Y	Y	NA	Y
TREATMENT PLAN DEVELOPED, INCLUDING:							
MEDICAL	N	Y	Y	Y	Y	NA	Y
BEHAVIORAL/ EMOTIONAL	Y	Y	Y	Y	Y	NA	Y
EDUCATIONAL	Y	Y	Y	Y	Y	NA	Y
VOCATIONAL	Y	Y	Y	Y	Y	NA	Y
COMMUNITY REINTEGRATION	Y	Y	Y	Y	Y	NA	Y
COGNITIVE REMEDIATION	Y	Y	Y	Y	Y	NA	Y

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	22	23	24	25	26	27	28
LEVEL OF ACCEPTANCE	I ---->	VII ---->	NA	V ---->	DNA	Individual Assessment	I ---->
TEAM APPROACH	DNA	DNA	Multi-disciplinary	Trans-disciplinary	DNA	Multi-Disciplinary	Multi-disciplinary
AGE RANGE SERVED	0 ---->	16 ---->	16 ---->	13 ---->	DNA	13 ---->	0 ---->
COMA INTERVENTION	Y	DNA	N	N	DNA	N	N
ACUTE CARE	Y	DNA	N	N	DNA	N	N
INDEPENDENT LIVING TRAINING	N	DNA	N	Y	DNA	Y	N
COMMUNITY RE-ENTRY	N	Y	N	Y	DNA	Y	N
DAY-TREATMENT/ OUTPATIENT	Y	Y	N	Y	DNA	Y	Y
VOCATIONAL PROGRAMMING	N	Y	Y	Y	DNA	Y	N
VOCATIONAL COUNSELOR ON STAFF	Y	DNA	Y	Y	DNA	Y	Y
SUPPORTED EMPLOYMENT	DNA	Y	NA	Y	DNA	Y	DNA
JOB READINESS TRAINING	N	DNA	N	Y	DNA	Y	N
CONTINUED SERVICES (FOLLOW-UP)	DNA	N	NA	Y	DNA	Y	DNA

Table E: Summary of Services Offered by Facility...continued

Legend: Y = Yes
N = No
DNA = Did Not Answer
NA = Not Applicable

SERVICES	FACILITY						
	22	23	24	25	26	27	28
VOCATIONAL EVALUATION CONDUCTED	Y	Y	Y	Y	DNA	Y	DNA
NEURO-PSYCHOLOGICAL EVALUATION CONDUCTED	Y	Y	Y	Y	DNA	Y	DNA
PHYSICAL CAPACITIES CONDUCTED	Y	Y	Y	Y	DNA	Y	Y
REHABILITATION PLAN WITH VOCATIONAL OBJECTIVES	N	Y	Y	Y	DNA	Y	Y
TREATMENT PLAN DEVELOPED, INCLUDING:							
MEDICAL	Y	DNA	N	Y	DNA	Y	Y
BEHAVIORAL/ EMOTIONAL	Y	DNA	N	Y	DNA	Y	Y
EDUCATIONAL	Y	DNA	N	Y	DNA	Y	N
VOCATIONAL	N	DNA	Y	Y	DNA	Y	Y
COMMUNITY REINTEGRATION	Y	DNA	N	Y	DNA	Y	N
COGNITIVE REMEDIATION	Y	DNA	N	Y	DNA	Y	N

VITA

Sandra Kaye Cardwell was born in Oak Ridge, Tennessee, on September 17, 1964. She graduated from Norris High School, Norris, Tennessee, in May 1982. She received an associate of science degree in Business Administration from Roane State Community College in May, 1984. While doing volunteer work for Big Brothers/Big Sisters and Special Olympics, she decided to make a career change and entered The University of Tennessee, receiving a bachelor of arts degree in psychology in May 1990.

From September, 1989 to May, 1991, she worked for Child and Family Services in several case manager positions, assisting homeless, battered, and mentally ill women and their children. In June of 1990, she entered the graduate school at The University of Tennessee while working as a case manager for Child and Family Services. She received a Master of Science Degree with a major in Rehabilitation Counseling in December, 1991.