THE RELATIONSHIP BETWEEN VOCATIONAL
REHABILITATION SERVICES, DEMOGRAPHIC
VARIABLES AND OUTCOMES AMONG
INDIVIDUALS WITH PSYCHIATRIC DISABILITIES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

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ABSTRACT

The purpose of this study was to evaluate the types of vocational rehabilitation services provided to individuals with psychiatric disabilities through the federal-state vocational rehabilitation program and the relationship of these services to employment outcome. With the cooperation and support of the Rehabilitation Services Administration (RSA), the data for this study consisted of consumers with psychiatric disabilities who received services during federal fiscal year 2002 (n = 79,967). In addition, this study evaluated and described the demographic variables that were involved in successful employment outcome such as gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits. To ensure that the regression model had both generalizability and transferability to the population and situations for which it was intended, model validation was accomplished by splitting the sample approximately in half, resulting in a top (n = 40,000) and bottom sample (n = 39,967). Correlational analyses and chi-square analyses were used to assess the bivariate relationship between the dependent variables (program closure status) and each of the predictor variables to identify high intercorrelations and assist in determining which variables were entered into the logistic regression model. The best fit model was identified and interpreted based on the top and bottom halves of data. Neither race/ethnicity nor gender were predictors of employment outcome and after being force entered into the initial logistic regression model, race/ethnicity was dropped in the final model. However, job placement services,
on-the-job services, job search assistance and other support services were somewhat predictive of a positive employment outcome for individuals with psychiatric disabilities. This may be due in part to the use of these services as a conduit toward achieving competitive employment, thus consumers receiving such services would be closer to achieving employment. In contrast, recipients of disability benefits, most especially individuals receiving SSI and SSDI, were the least likely to have an employment outcome after receiving services. Likewise, significant disability was also associated with fewer closures with employment outcomes. Many of the results of this study mirrored the existing literature on individuals with psychiatric disabilities, suggesting that additional research is needed to clarify the conflicting results of many studies. Model limitations and recommendations for further research are suggested.
This dissertation is dedicated to my husband,

and best friend, Dave, who has encouraged me and

supported me along each journey that we have been on together.
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PUBLICATIONS

Research Publication


FIELDS OF STUDY

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CHAPTER 1

INTRODUCTION

Introduction

In recent years, rehabilitation researchers and practitioners have agreed that work plays a pivotal role for most individuals, promoting self-confidence and higher self-esteem, status in the community, economic stability, and quality of life. Likewise, most individuals with psychiatric disabilities view work as an important part of life, providing a source of identity, income and contributing to physiological and psychological well-being (Dawis, 1987; Mowbray, Bybee, Harris, & McCrohan, 1995). Unfortunately, with employment rates for individuals with psychiatric disabilities ranging from 0% to 30% (Anthony & Blanch, 1987; Anthony, Cohen, & Danley, 1988; Anthony, Cohen, & Farkas, 1990; Anthony, Howell, & Danley, 1984; Noble, 1998; Rogers, Anthony, & Jansen, 1988), individuals with severe mental illness frequently are unable to experience the benefits of regular employment despite their skills or desire to work (Bevilacqua, 1999; Noble, 1998).

According to the National Institute of Mental Health, approximately 22.1% of American adults suffer from one or more diagnosable mental disorders, which diminish the ability to perform living and working tasks effectively. Other estimates suggest that of American adults; upwards of 5.4% have a serious mental disorder in any given year
(Kessler, Zhao, Katz, Kouzis, Frank, Edlund, & Leaf, 1999). Further, individuals with severe mental illnesses are the fastest growing population within both the Social Security Disability Insurance and Supplemental Security Income programs.

Individuals with severe mental illness within the federal and state vocational rehabilitation population have averaged fewer successful employment closures than other disability groups (Rutman, 1994). Specifically, an extensive analysis of federal-state vocational rehabilitation closures for 1984-1988 of persons with psychiatric disabilities revealed that when compared with consumers with hearing impairments, mental retardation, or circulatory problems, the mentally ill group had an average 57 percent successful closures, while the other groups averaged 76 percent, 63 percent, and 61 percent respectively (Rutman, 1992). Compounding the problem, Marshak, Bostic and Turton (1990) reported that successful closures were achieved at more than a 2:1 ratio for physically disabled over psychiatrically disabled consumers. There is a clear consensus between consumers, researchers and practitioners that strategies must be developed to expand opportunities to enable individuals with psychiatric disabilities to participate and assume more productive roles in the workforce and society as a whole.

In the past, within the realm of psychiatric rehabilitation, vocational performance has been the primary outcome measure (Anthony & Liberman, 1992). Based on extensive reviews of the literature, Anthony, Cohen, and Vitalo (1978) found that the traditional outcome criteria of recidivism and employment provide useful data for practitioners, although they also call for the development of additional criteria for future research. The vast multitude of programming models and techniques developed for use in vocational rehabilitation has had varying levels of success. However, valuation studies remain too
incomplete to establish firm conclusions about effectiveness across methods, locations and client groups (McGurrin, 1994). Additionally, there is a dearth of research examining the relationship between specific rehabilitation services and vocational outcome (Bond & Boyer, 1988). However, there is significant evidence to suggest that specific components of the psychiatric rehabilitation approach can significantly affect vocational outcome for individuals with psychiatric disabilities (Anthony et al., 1984; Anthony & Dion, 1986). In turn, studies which have highlighted the lack of successful employment outcome and level of recidivism for individuals with psychiatric disabilities have fueled the Federal Government’s increased interest in improving service delivery and providing more incentives to work.

Vocational rehabilitation programs for individuals with severe mental illness typically include transitional employment, supported employment, job clubs, and the federal-state vocational rehabilitation service system. Transitional employment (TE) is a popular model of vocational rehabilitation developed in the 1950’s by the Fountain House to reverse the “train and place” method. Specifically, TE is a time-limited placement at entry-level jobs, in which the number of hours of work gradually increases, along with training and ongoing support from a job coach (McGurrin, 1994). TE has been an important forerunner to supported employment (SE), another major alternative to the “train and place” approach. Originally designed for people with severe developmental disabilities, SE emerged in the early 1980’s as a reaction to unsatisfactory employment opportunities (Anthony & Blanch, 1987; Bond, Drake, Mueser, Becker, 1997). In the SE model, the individual receives services for the duration of time required to achieve placement and, most importantly, competitive employment (McGurrin, 1994;
Pratt, Gill, Barrett, & Roberts, 1999; Wehman & Moon, 1988). The job club model was
developed as yet another alternative to the traditional “train and place” approach, with the
onus on the client to find employment with the assistance of the rehabilitation staff (Azrin
& Besalel, 1980).

The federal-state vocational rehabilitation program is the vocational rehabilitation
model with the longest history having served the greatest number of persons with severe
mental illness. Although the program was established in 1920 targeting individuals with
physical disabilities, it was not until the Barden-La Follette Amendments of 1943 that
services were provided to individuals with SMI. Regardless, services were not readily
available to individuals with psychiatric disabilities until the 1973 Rehabilitation Act
emphasized services to individuals with the most severe handicaps, which made services
more accessible to individuals with mental illness (McGurrin, 1994; Pratt et al., 1999).
Although there are presumed variations between state vocational services, a standard
process decreed by federal regulations defines the overall system, and all state programs
follow the same basic service processes.

Within the federal-state vocational rehabilitation (VR) system, all service
providers deliver individualized services to eligible participants based on an
individualized plan for employment (IPE). The IPE identifies the vocational goals and
services to be provided by the agency or an outside entity. Such service provision is
inclusive of, but not limited to, training, restoration, counseling and guidance,
transportation, and maintenance. Within the federal-state VR model, a consumer is
considered to be successfully rehabilitated, if he or she has maintained vocational
placement for 90 days or more. Although there are variations between state agencies,
possible vocational settings include competitive employment, sheltered employment, supported employment, and self-employment (McGurrin, 1994).

Purpose of the Study

The purpose of this study was to evaluate the types of vocational rehabilitation services provided to individuals with psychiatric disabilities through the federal-state vocational rehabilitation program and the relationship of these services to employment outcome. In addition, this study evaluates and describes the demographic variables that are involved in successful outcome such as gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits. With the cooperation and support of the Rehabilitation Services Administration (RSA), the data for this study consisted of consumers who received services during federal fiscal year 2002. Ultimately, information gleaned from the results of this study may be used to improve program development and overall vocational rehabilitation service effectiveness.

The following sections address the significance of the problem, the problem statement, the variables considered, the need for the study, and the research objectives and questions. In addition, the basic assumptions of the study, the limitations and a definition of terms will be discussed.

Significance of the Problem

Mental disorders are prevalent internationally and in the United States, an estimated 22.1 percent of adult Americans have a diagnosable mental illness in a given year (Regier, Narrow, Rae, Manderscheid, Locke, & Goodwin, 1993). The Surgeon General’s Report on Mental Health (U.S. Department of Health and Human Services, 1999) consolidated data from three nationwide survey studies to estimate the prevalence
of mental disorders in the U.S. and found that one in five Americans experiences a mental disorder in a given year, representing approximately 44 million people, with an equal distribution across all age groups. Within the U.S. and other developed countries, mental disorders represent 4 of the 10 leading causes of disability (Murray & Lopez, 1996), with many individuals having more than one mental disorder at a time. According to the National Mental Health Association (1999), more than 40 million Americans are affected by one or more forms of mental illness during any given year, while 6.5 million are considered disabled by severe mental illnesses. Other estimates state that more than two-thirds of people with mental disorders have a disability (Jans, Stoddard, & Kraus, 2004). Further, depression and other mental disorders represent the leading cause of disability worldwide (Murray & Lopez, 1996; WHO, 2001).

Currently, the primary public vocational rehabilitation program serving individuals with disabilities is the Rehabilitation Services Administration (RSA), an arm of the U.S. Department of Education. The RSA was originally established in the 1920’s to provide services for the physically disabled and expanded service provision to include individuals with psychiatric disabilities in 1954 (Rutman, 1994). Presently, the RSA programs are comprised of a partnership between state and federal governments, serving upwards of 900,000 individuals annually, with approximately two-thirds of the served population classified as severely disabled (Rutman, 1994). Within recent years, RSA has reported that the rate of successful closures for individuals with psychiatric disabilities has slightly declined, while the rates for individuals with physical disabilities has increased (Rutman, 1994). As a result, it is paramount that researchers and service providers come together to develop strategies to expand work opportunities and enable
individuals with psychiatric disabilities to assume more productive roles in the workforce.

In recent years, there has been a strong interest in reforming and improving the current practice of the Social Security Administration’s (SSA) disability programs through proposed legislation which would provide extended health coverage to SSI and SSDI beneficiaries who want to enter the workforce. For individuals receiving benefits through the SSA, including SSI or SSDI, the policy regarding the effect of earned income on benefits often is viewed as a barrier to employment for consumers who wish to return to work but maintain their benefits (Pratt et al., 1999). Specifically, individuals with psychiatric disabilities are often aware that despite being successfully employed, psychiatric symptoms can resurface at anytime, impairing their ability to sustain employment. Thus, the combined fear of losing benefits and subsequently being unable to maintain employment increases the risk of attempting employment and ultimately becomes a disincentive (Berkowitz, 1981; Rutman, 1994). With unemployment of individuals with psychiatric disabilities at an all-time high (Rutman, 1994) it is increasingly imperative that research investigations become directed toward identifying what specific factors contribute to the successful employment outcome of individuals with psychiatric disabilities (Buell & Anthony, 1975).

Although it is essential that we continue to evaluate what services promote vocational success, it is equally paramount that researchers gain an understanding of what personal characteristics contribute to successful entry into the vocational rehabilitation process and to subsequent vocational outcome (Anthony, 1994). Through an improved understanding of these characteristics, rehabilitation practitioners will be more aware of
possible problems and strategies for achieving vocational rehabilitation with individuals who might possess differing needs within the scope of rehabilitative services. In addition, rehabilitation administrators and practitioners could identify individuals most likely to benefit from services and could design programs targeted for a full range of needs (Anthony, 1994).

Need for the Study

The need of this study can be established in the following three areas: (a) there exists a need to further define and clarify the patterns of vocational services to individuals with severe mental illness; (b) a need exists to ascertain accurate and valid information regarding what combination of services are most useful to specific groups of individuals; and (c) there is a need for data on which to base the development of programs which will directly fulfill the needs of individuals with psychiatric disabilities.

In a 1984 research review by Anthony and Jansen, nine major findings toward the predictability of individuals with severe psychiatric disabilities were discussed. To begin, the authors stress three key elements, namely, that both psychiatric symptomotology and diagnostic categories are poor predictors of future work performance, as are intelligence, aptitude, and personality tests. In contrast, Anthony, Rogers, Cohen, and Davies (1995) found that demographic characteristics such as past work experience, race, gender, number and length of hospitalizations, and previous occupational levels were correlated to employment outcome. In addition, work adjustment skills such as work readiness; attitudes toward work and interpersonal skills were correlated to vocational outcome. Additionally, there is no correlation between an individual’s symptomotology and functional skills. This finding is further supported in an
article by Anthony, Kennard, O’Brien, and Forbess (1986), stating, “the psychiatric diagnostic system was developed to categorize symptom patterns, not to provide information about a psychiatrically disabled persons’ rehabilitation prospects” (p. 257). Specifically, the study found that the ability to function in one environment (i.e. community setting) is not indicative of an individual’s ability to function in another (i.e. work setting). In contrast, the data suggested that the best predictors of future work performance are an individual’s ability to function socially with others, and a prior employment history. Finally, Anthony and Jansen (1984) stress that the best assessment predictors of future vocational performance are those that measure an individual’s ego strength and self-concept in the role of a worker. Although factors such as specific rehabilitation services are important measures to evaluate, it is also paramount that the research begins to assess what characteristics individuals bring to the rehabilitation process that may contribute to success or failure. Thus, the specific characteristics, or demographics of the individual, become as important as the service provision in predicting employment outcome (Buell & Anthony, 1975). By assisting individuals in identifying their strengths and values toward the world of work before pursuing traditional vocational programming, rehabilitation practitioners are more likely to ensure future vocational success.

Research Questions and Variables

This study addresses the following research questions:

1. Can a model be developed identifying the variables and co-variates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?
The patterns of services are independent variables. Specific services were
dichotomously coded as received or not received. The independent variables were the
types of vocational rehabilitation services provided. These services were operationally
defined as the coded vocational rehabilitation services denoted in the standard RSC form
provided to the RSA by individual state VR agencies.

The dependent variables were the rehabilitation outcomes, categorical variables
with two levels representing closure with an employment outcome and closure without
employment. Individuals that were able to maintain employment for 90 days or more
after receiving services were compared with individuals who had not obtained
employment after services were received.

2. Is this model stable?
The independent variable was demographic patterns, including categorical and
continuous variables (e.g., gender, race/ethnicity, age, diagnosis, significant disability,
years of education, and disability benefits). The dependent variables are the
rehabilitation outcomes, categorical variables with two levels.

Hypotheses

The following hypotheses were employed for this study:

H\textsubscript{0}: Vocational rehabilitation services and successful rehabilitation outcome are
independent for individuals with psychiatric disabilities.

H\textsubscript{1}: Vocational rehabilitation services and successful rehabilitation outcome are
not independent for individuals with psychiatric disabilities.
H$_0$: Demographics and successful rehabilitation outcome are independent for individuals with psychiatric disabilities.

H$_1$: Demographics and successful rehabilitation outcome are not independent for individuals with psychiatric disabilities.

Basic Assumptions

For the purposes of data analysis, it was assumed that state RSC counselors correctly completed the RSA-911 data sheets and that the subsequent assemblage by the RSA allowed for a valid and reliable aggregate result. In addition, it was assumed that individuals who met the criteria for psychiatric disability status by the Rehabilitation Services Administration standards were eligible. Finally, this study attempted only to describe relationships between specific variables and made no assumptions towards causality.

Limitations of the Study

Most studies suffer from limitations to some extent, and this study has several areas that could be improved upon in future research. First, this study utilized an ex post facto analysis of previously existing data. As a result, manipulation of the independent variables, or the assignment of subjects to different treatments was not feasible. Thus, the participants in the study were a self-selected sample of individuals who voluntarily sought vocational rehabilitation services through the Federal Rehabilitation Services Administration. Consequently, this study was limited in that a direct causal link between variables was not tenable.

Secondly, because of the ex post facto method of analysis, this study incorporated the broad definitions of mental illness used by the Rehabilitation Services Administration
(RSA) instead of the more precise diagnostic terms set forth in the DSM-IV (American Psychiatric Association, 1994). Ideally, the use of standardized, precise terms would allow for a better analysis of the role of symptomatology and diagnosis on outcome.

Thirdly, there are numerous factors involved in vocational outcome, beyond simple demographic variables and vocational rehabilitation services, which may not be accounted for in this particular study. Specifically, factors such as (a) the quality of interaction between the consumer and the counselor, (b) consumer readiness, and (c) the duration and intensity of services must also be measured to provide a more comprehensive view of factors involving consumer characteristics. For the purposes of this study, none of these factors was measured.

Finally, additional measures of vocational outcome and success, such as client satisfaction with employment, fringe benefits, and career advancement opportunities, will not be included in the analysis. In future studies, these factors may provide additional information about the quality and duration of successful closures. Regardless of these limitations, this study supports the hypothesis that specific vocational rehabilitation services and demographic factors have an influence on employment outcome for individuals with psychiatric disabilities. From a methodological perspective, the study is lacking a control group and the conclusions drawn from the study will be tentative explanations and will not attempt to assign cause and effect or causality.

Definition of Terms

The following terms were determined to need further clarification. These terms are defined theoretically and then operationally with regard to this study.
Individuals with severe mental illness (SMI): The term severe mental illness refers to individuals who have met the criteria for a DSM disorder during a 12-month period (excluding substance use disorders and developmental disorders) causing functional impairment. The term “severe” mental illness is a subset of “serious” mental illness (Arons & Schauer, 1995) and for the purposes of this study will be differentiated. The broader term of serious mental illness has been defined as an individual having any DSM mental disorder that leads to “substantial interference with one or more life activities” (Jans et al., 2004). Severe considers the duration of the disability (1 year or longer) and entails a higher severity of symptom threshold for the disability itself.

Functional impairment: A functional impairment is used to describe substantial interference with one or more major life activities including basic daily living skills (e.g. self-care), instrumental living skills (e.g. maintaining a household and managing finances), and functioning in social, family, vocational and educational contexts.

Individuals with psychiatric disabilities: Individuals who have become disabled by severe mental illness (SMI). Persons with severe psychiatric disability have diagnosed mental illnesses that inhibit their ability to perform specific daily functions (e.g. learning, thinking, communicating, and sleeping), and their ability to perform in certain roles (e.g. employee, student). The terminology for “psychiatric disabilities” is variable in the literature and is used interchangeably with “severe mental disabilities” (SMD). Within the RSA definition, an individual with mental illness is considered severely handicapped if he or she meets the following criteria: the individual’s disability seriously limits one or more functional capabilities in terms of employability (e.g. communication, interpersonal skills, mobility, self-care, self-direction, work skills or
work tolerance); the individual is expected to need multiple VR services over an extended period of time; and the individual has one or more disabilities that cause substantial functional limitations resulting from any condition including mental illness (Ohio Rehabilitation Services Commission, 1995). The federal-state system divides individuals with mental illness into three categories based on diagnosis: cognitive impairments, psychosocial impairments, and other mental impairments (Rehabilitation Services Administration, 2000).

**Type of closure:** When a consumer has received at least one service and has successfully completed a minimum of 60 days of competitive employment after the completion of all necessary rehabilitation services, his or her case may be closed by the state RSC and is considered “rehabilitated” or “with employment outcome” (Jans, Stoddard, Kraus, 2004). When a consumer has developed a vocational plan, but was unable to complete vocational rehabilitation services, achieve employment, or maintain employment successfully for 60 days the case is closed by the state RSC and is considered “not rehabilitated” or “without an employment outcome”. Previously, the RSA had termed successful closures as “status 26” and unsuccessful closures as “status 28” (RSA, 1998).

**Vocational rehabilitation services:** Within the federal-state rehabilitation program there are several categories of vocational rehabilitation services provided by the RSA including: diagnosis, restoration, college, business/vocational training, on the job training, miscellaneous training, counseling, job referrals, job placement, transportation, income maintenance, and other.
Demographic factors: The demographic factors in this study will consist of gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits.

Summary

This chapter gives a brief overview of the frequency of unemployment among individuals with psychiatric disabilities along with a discussion of the variety of VR programs that have developed to initiate employment for individuals with psychiatric disabilities.

At approximately 31%, individuals with psychiatric disabilities represent the largest percentage group of any disabled individuals receiving benefits such as SSI and SSDI payments (Social Security Administration, 1997). This population is frequently overlooked and underserved as a group and represents a large group of beneficiaries who are not receiving adequate rehabilitative services. As we approach inevitable reforms in current rehabilitation practices, it is vital that we identify what variables contribute to successful rehabilitative outcome.

Although there is some evidence indicating that programs within the vocational rehabilitation system are effective, there is a dearth of data and research on specific rehabilitation program efficacy. Successful closure rates for individuals with psychiatric disabilities continue to be low while expenditures on services are high, signifying that further research evaluating the relationship between VR outcomes, services and demographic data is essential.
CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The purpose of this study was to evaluate the types of vocational rehabilitation services provided to individuals with psychiatric disabilities through the federal-state vocational rehabilitation program and the relationship of these services to employment outcome. In addition, this study evaluates and describes the demographic variables that are involved in successful outcome such as gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits. Ultimately, information gleaned from the results of this study may be used to improve program development and overall vocational rehabilitation service effectiveness.

This chapter presents a review of the literature in three key areas: (a) literature delineating the prevalence, and characteristics of individuals with severe mental illness and the role of employment; (b) literature regarding barriers to employment for individuals with severe mental illness; and (c) literature pertaining to the role and efficacy of services provided to individuals with severe mental illness by the federal-state vocational rehabilitation system.
Individuals With Severe Mental Illness

According to the National Institute of Mental Health (1999), approximately 40 million individuals, have psychiatric impairments that limit one or more major areas of functioning, of which approximately 6.5 million are severely mentally ill. Within this group, 80% to 90% of individuals with severe mental illness are unemployed, representing one of the largest disability groups within the state and federal rehabilitation system (Noble, Honberg, Hall, & Flynn, 2001; Rogers, et al., 1988; Rutman, 1994). Other prevalence estimations extrapolate that more than 20 percent of the U. S. population is affected by mental disorders in any given year, many of whom have more than one mental disorder at a time (National Institute of Mental Health, 1999). Other approximations state that 2.1 to 2.6 % of the population in the United States suffer from severe mental illness, which diminishes the ability to perform living and working tasks effectively (International Association of Psychosocial Rehabilitation Services, 1994).

Regardless of these numbers, the results of many studies suggest that when individuals with severe mental illness receive treatment and support, they can establish and maintain employment (Harding, Brooks, Ashikaga, & Strauss, 1984; Tessler, & Goldman, 1982).

Within the therapeutic milieu, conflicting definitions and nomenclature regarding psychiatric rehabilitation and treatment may interfere with successful intervention and outcome. As a result, significant difficulties may evolve in assessing clients’ work skills, readiness factors, and predicting vocational outcomes. These factors often contribute to incongruencies between the major service systems that work with individuals with psychiatric disabilities (Rutman, 1994). As a result, a unique challenge is present in the vocational rehabilitation of individuals with psychiatric disabilities.
To have a clear understanding of psychiatric rehabilitation it is essential that the conceptual connections among mental illness, work disability, and pertinent terminology be clarified. To begin, not all individuals with mental illness have a “disability” under the mandates of the American with Disabilities Act (ADA) as many do not have a significant limitation in the ability to work or complete daily tasks. Alternatively, individuals with mental illness who do have significant functional limitations may not have sufficient impairment of job-related abilities or may be amended by workplace accommodations. Conversely, among individuals with the most severe mental illnesses, functional limitations to work may be so pronounced as to prohibit competitive employment thus deeming the individual eligible for disability benefits through the federally based SSI/SSDI programs. As such, individuals who are eligible for federal SSI/SSDI benefits are a subset of those with a disability, who are a subset of individuals with diagnosable mental illness (Milazzo-Sayre, Henderson, & Manderscheid, 1997).

Within the realm of vocational rehabilitation, the objective of psychiatric rehabilitation is to assist individuals with chronic psychiatric disabilities to increase their functioning so that they can be satisfied and successful in the environments of their choice with minimal assistance (Anthony, 1994). An essential feature of rehabilitation lies in the “belief in the potential productivity of the most severely psychiatrically disabled client” (Beard, Propst, & Malamud, 1994, p. 47). The common method of facilitating these goals is by teaching individuals specific skills required to function effectively and by developing the community and supports necessary to strengthen levels of daily functioning (Anthony, Cohen, & Cohen, 1983; Livneh, 1984). Ultimately, the tasks of psychiatric rehabilitation are to assist in reintegrating psychiatrically disabled
persons into their communities, and help them attain the ability to function independently, thus providing the tools to prevent the recurrence of disability.

The Rehabilitation Act Amendments of 1992 mandated that state and federal vocational rehabilitation programs put emphasis on working with individuals with the most severe disabilities (Rubin & Roessler, 1995). Within this group of individuals with severe disabilities, are individuals with psychiatric disabilities that impair their abilities to find and maintain employment. The eligibility criteria for services from the federal-state rehabilitation programs require that an individual have: (a) a medical disability or psychiatric disabilities, (b) a resulting handicap to employment, and (c) reasonable potential for vocational rehabilitation with the provision of rehabilitative services (Rehabilitation Services Administration, 1998). In a 1988 study, Bond & Boyer stress that there is a lack of adequate research that examines the relationship between specific rehabilitation services and vocational success. Regardless, there is increasing evidence to suggest that various components of the psychiatric rehabilitation approach can significantly affect vocational outcome for the psychiatrically disabled (Anthony & Dion, 1986; Anthony, Howell, & Danley, 1984).

As psychiatric disorders are increasingly being associated with severe and persisting disability, the term “psychiatric rehabilitation” is becoming routinely used in the mental health field. The concept of psychiatric rehabilitation has been evolving for more than a century, beginning with the 19th century moral reformists who advocated for more humane treatment of the mentally ill (Anthony & Lieberman, 1992). Although the idea of a psychiatric rehabilitation approach originated in the nineteenth century, it has
only been in recent decades that it has been regarded as a viable and legitimate form of intervention (Anthony et al., 1990).

In more recent years, the mental health field has been affected by changes such as deinstitutionalization and a concurrent evolution of community mental health centers to assist in the training and support of the resettlement of patients in communities. At the core of these changes, the governmental view of rehabilitation has shifted from strictly a vocational role to additional arenas of social and community functioning, however, vocational factors has remained the focal component in current rehabilitation practices (Beard, 1982). As the role of community functioning has become clearer, a basic assumption has evolved in the mental health community, namely that individuals with psychiatric disabilities should be supported and encouraged to maintain themselves within their communities. The community mental health philosophy entails accessibility and comprehensiveness of services, continuity of care, and an emphasis on providing services in the communities of individuals with psychiatric disabilities (Anthony & Liberman, 1992)

According to Lamb (1982), “work therapy geared to the capability of the individual patient should be a cornerstone of community treatment of the long-term patient” (p.176). Clearly, an individual’s capacity to work is an essential factor influencing participation in community life (McGurrin, 1994). At present, the goal of psychiatric rehabilitation is to ensure that an individual with a psychiatric disability can accomplish the physical, emotional, social, and intellectual skills necessary to live, learn, and work in a community (Anthony & Lieberman, 1986).
Definitions of Mental Illness and Psychiatric Disability

Historically, an approximation of the number of individuals with severe mental disorders has been difficult due to definitional discrepancies. Prior to the era of deinstitutionalization, this population was viewed as tantamount to individuals within state mental institutions. As a result, the concept served as a definitional orientation until after deinstitutionalization at which time it became increasingly difficult to enumerate and evaluate individuals spread across a wide variety of community and institutional settings as well as the many who were difficult to locate or homeless. Consequently, many practitioners contend that arriving at a consensual definition of the population continues to be difficult because definitions vary according to combinations of medical and social diagnostic criteria.

The Diagnostic and Statistical Manual of Mental Disorders, fourth edition, (DSM-IV), of the American Psychiatric Association (APA, 1994) distinguishes recurring depressive disorders, bipolar disorders, schizoaffective disorder, and organic brain syndromes as mental illnesses that may become chronic, and contribute to psychiatric disability. According to Rehabilitation Services Administration (RSA) disability determination criteria, mental illness includes persons with psychotic disorders, neurotic disorders, and other affective disorders (RSA, 1995). In the recent revision of the case management codebook by the RSA, mental impairments were categorized according to cognitive impairments, psychosocial impairments, or other mental impairments (RSA, 2000). In sum, psychiatric impairments are determined based on DSM-IV (APA, 1994) guidelines and may include any thought disorder, delusional thought processes, hallucinations, depression, loss of concentration and memory, or anxiety.
Defining psychiatric disability is complex, and many definitions exist. To begin, Goldman, Gattozi, and Taube (1981) describe individuals with psychiatric disabilities in terms of diagnosis, disability, and duration of symptomatology. More specifically, they define chronic mental illness as the following:

The chronically mentally ill population encompasses persons who suffer certain mental or emotional disorders (organic brain syndrome, schizophrenia, recurrent depressive and manic-depressive disorders, and paranoid and other psychoses, plus other disorders that may become chronic) that erode or prevent the development of their functional capacities in relation to three or more primary aspects of daily life- personal hygiene and self-care, self-direction, interpersonal relationships, social transactions, learning, and recreation- and that erode or prevent the development of their economic self-sufficiency (p.23).

Alternatively, the Social Security Administration (1997) defines chronic mental illness as a condition that has lasted or can be expected to last for at least 12 months and prevents the individual from engaging in “substantial gainful activity” (Rogers et al., 1988). Severe mental illness only refers to one portion of the broader ADA term “mental impairment” and is differentiated from other mental impairments such as mental retardation, organic brain damage, and learning disabilities. The term “psychiatric disability” is used when mental illness significantly interferes with the performance of major life activities, such as learning, thinking, communicating.

The conceptual framework for psychiatric rehabilitation stems from the underlying philosophy of rehabilitation and is focused on the delineation of three core principles, namely, impairment, disability and handicap (Anthony & Lieberman, 1992).
In order to define and contrast the conceptual differences between physical and psychological disabilities, Anthony and Lieberman (1992) created a Rehabilitation Model specifically for individuals with psychiatric disabilities.

Impairment refers to any loss or abnormality of psychological or physical structure or function as the result of underlying pathology (Anthony & Liberman, 1992). Psychiatric impairments can include thought disorder, delusional thought processes, hallucinations, depression, loss of concentration and memory, and anxiety.

The theory of disability is an important medical and social notion. The Americans with Disabilities Act of 1990 defines disability as a substantial limitation in any major life activity (Liberman, 1992). Disability alludes to any inability or limitation to perform tasks expected of an individual within a social environment. Mental illnesses become disabling when they interfere significantly with a person’s ability to work, learn, think, care for oneself, or interact with others. For example, among persons with schizophrenia, disabilities may include poor self-care skills, social withdrawal, isolation, and abandonment of family responsibilities. As may be expected, the importance of many of these disabilities has been magnified, as they have become criteria for many diagnosable conditions.

The final element of the model is a handicap, which occurs when disabilities place the individual at a disadvantage relative to others in society (Wright, 1983). Handicaps may occur through discrimination or social stigma by employers who are unwilling to hire individuals with mental disabilities. In addition, handicap occurs when society does not provide settings in which persons with mental illness can easily make accommodations for their impairments and disabilities. Unemployment serves as an
important measure of handicap, due to the demands and expectations of employment, which often accentuate the deficits and stigma of individuals with mental illness (Anthony & Liberman, 1992).

Employment

There is a profound lack of employment opportunities available for individuals with severe mental illness (Bevilacqua, 1999). For individuals with psychiatric disabilities, aggregate employment rates range as low as 0% to 30% (Anthony & Blanch, 1987; Anthony, Cohen, & Farkas, 1990; National Institute on Disability and Rehabilitation Research (NIDRR), 1992; Rogers et al., 1988). Other results suggest that when persons with mental illness did find employment, they were often entry-level, low-paying jobs with few career opportunities (Finch & Wheaton, 1999). Approximately one-third of the nation's estimated 600,000 homeless individuals are believed to be severely mentally ill adults (National Mental Health Association (NMHA), 1999). Many researchers maintain that the current rates of unemployment and homelessness among the psychiatrically disabled population are a reflection of the inability of society to compensate and make accommodations for the impairments of psychiatric disability in the community and workplace (Anthony et al., 1978).

In regard to psychiatric disabilities, difficulties in work tolerance, following directions, cooperating with co-workers and supervisors, problem solving abilities, stamina, coping with stress, expressing need for assistance, inability to stay focused on work, and task orientation are all disabilities that are the result of symptomatic impairments that can easily lead to substantial handicaps in a work environment (Anthony & Lieberman, 1992). Variability in the symptomotology of psychiatric
disabilities is a prominent feature and can be evaluated most effectively through the interaction of factors such as vulnerability, stress, coping, and competency (Anthony & Liberman, 1992). Finally, researchers and clinicians emphasize that there is not always a consistent pattern of outcome with symptoms of disorders. For example, while an individual’s social functioning may be sufficient (Anthony, 1994), vocational functioning may be lacking, whereas in others, symptoms may persist, yet the individual is capable of performing successfully in the workplace (Anthony & Buell, 1974; Anthony & Jansen, 1984). Thus, the vocational rehabilitation of individuals with psychiatric disabilities challenges practitioners to facilitate growth through structured work activities that match the individual’s skill and development levels. Consequently, it is essential that practitioners are responsive to all aspects of the vocational process, including the elements of assessment, plan development, and placement.

Anthony and Jansen (1984) discuss nine significant research findings that are critical to the accurate determination of vocational functioning for adults with persistent mental illness. These conclusions, listed below, are pertinent to the conceptualization and definition of individuals with chronic mental illness and are based on an exhaustive review of related literature:

1. Psychiatric symptomatology is a poor predictor of future work performance.
2. Diagnostic category is a poor predictor of future work performance.
3. Intelligence, aptitude and personality tests are poor predictors of future work performance.
4. A person's ability to function in one environment (e.g., a community setting) is not predictive of a person's ability to function in a different type of environment (e.g., a work setting).

5. There is little or no correlation between a person's symptomatology and most measures of functional skills.

6. The best clinical predictors of future work performance are ratings of a person's work adjustment skills made in a workshop setting or sheltered job site.

7. The best demographic predictor of future work performance is the person's prior employment history.

8. A significant predictor of future work performance is an individual's ability to get along or function socially with others.

9. Tests, which measure a person's ego strength or self-concept in the role of a worker, are the best paper and pencil tests in predicting outcome. (pp. 538-542)

Many studies have suggested that low employment rates are linked to vocational immaturity, limited vocational success, and an inadequate social support network (Jansen, 1988). Moreover, a prevalent issue in psychiatric vocational rehabilitation is the lack of job opportunities for individuals whose career goals, abilities and educational levels surpass entry-level positions and consequently result in a poor employment match (Finch & Wheaton, 1999).

Barriers to Employment

There are innumerable barriers to employment for individuals with severe mental disorders (SMD) encompassing cognitive, perceptual, affective, and interpersonal deficits related to mental disability (Rutman, 1994). Early proponents of psychiatric rehabilitation
stressed that severe mental illness not only results in symptoms and mental impairments, but also causes the individual to have functional limitations, disabilities, and handicaps (Anthony, 1982; Anthony, Cohen & Farkas, 1990; Anthony & Liberman, 1986). In seeking vocational rehabilitation, individuals with SMD often must contend with societal stigma; possible medication side-effects; attitudes of employers, family members, consumers and employers; economic disincentives stemming from SSI, SSDI, and medical benefits; lack of awareness or access to vocational services; unrealistic vocational goals; and services which stress evaluation and prevocational goals rather than imminent placement in competitive employment with continuous follow-along supports (Bond & McDonel 1991; Noble et al., 2001; Rutman, 1994). During testimony to the Subcommittee on Ways and Means regarding the Work Incentives Improvement Act of 1999, Jim McNulty, a board member for the National Alliance for the Mentally Ill (NAMI), summarized the major barriers to individuals with SMI who are SSI or SSDI beneficiaries. They included (a) loss of health benefits, (b) complexity of work incentives, (c) financial penalties of working, (d) lack of choice in employment services and providers, and (e) inadequate work opportunities (McNulty, 1999).

Similarly, Rutman (1994) enumerated several barriers that persons with SMI are challenged by when seeking vocational rehabilitation:

1. Individuals with psychiatric disabilities often display cognitive, perceptual, affective and interpersonal deficits intrinsic to or resulting from the mental illness. As a result, when compared with persons with other disabilities, individuals with psychiatric disabilities who are interested in employment frequently need increased services and supports.
2. Most types of mental illness are episodic and predictable in nature. Most mental illnesses do not follow a predictable path of onset, course and outcome. Conversely, most mental disorders feature symptoms that fluctuate, along with periods of recurrences, which affect personal and social relationships and work capabilities.

3. Various treatment interventions can produce iatrogenic effects on persons with severe psychiatric disabilities. Within this realm, both pharmacological and psychological interventions may be used for treating the symptoms of severe mental illness, both of which can serve important roles, but may also generate harmful side effects.

4. The symptoms of psychiatric disabilities may create inappropriate values, attitudes and objectives regarding work within the individual. Anthony and Blanch (1987) highlight that many individuals with psychiatric disabilities experience a “vocational immaturity” due to a lack of typical work experience and social roles. Thus self-knowledge, including an awareness of skills, interests and work values may be limited amongst individuals with SMI.

5. Contradictory definitions and taxonomies regarding psychiatric rehabilitation interfere with successful outcomes. There are differences between psychiatric (i.e. medical) versus rehabilitatory diagnostic and categorization systems. The medical classification system emphasizes symptoms and pathologies, and subsequent diagnosis and treatment. In contrast, the vocational classification addresses functional capacities and skill enhancement.

6. There are significant discontinuities between the major service systems that work with individuals with psychiatric disabilities. While there is a consensus
among service providers that diverse treatment is essential among health, vocational and welfare agencies is essential, the task of developing symbiotic relationships has been difficult. The resulting effect of conflicting goals and lack of coordinating often impedes the provision of appropriate services.

7. Work disincentives are created by the Social Security Administration (SSA) provisions governing financial support and medical insurance. Recipients of Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) benefits often resist planning for employment due to a dearth of information relating to work incentive programs developed by the SSA. Many individuals are concerned that full-time employment will lead to a cessation of benefits, although recent legislation has allowed for extended periods of trial work and savings of funds for work related expenditures.

8. Significant difficulties exist in assessing clients’ work readiness and predicting vocational outcomes. Although there is a lack of agreement on the most effective methods for vocational rehabilitation (VR) success, Anthony and Jansen (1984) suggest that the best predictors for success include an individual’s ability to function with others, paper-pencil tests on self-concept in the role of the worker, and the person’s preceding work experience.

9. Stigma towards persons with mental illness is present at many levels in our society and adversely affects opportunities for employment for individuals with mental illness. For instance, according to Berven and Driscoll (1981) employer bias against individuals with psychiatric disabilities is stronger than for any other disability group. Despite legislation barring prejudice and discrimination, continued stigma toward mental illness by employers negatively impacts employment opportunities. (pp. 17-27)
By far, stigma and social isolation is one of the greatest barriers for individuals with psychiatric disabilities (Corrigan & Penn, 1999). Extensive research studies have documented the presence of stigma and its negative effects for people with severe mental illness (Albrecht, Walker, & Levy, 1982; Lamy, 1966; Tringo, 1970; Link, 1982, 1987; Link & Cullen, 1983; Link, Cullen, Frank, & Wozniak, 1987; Link, Cullen, Struening, Shrout, & Dohrenwend, 1989; Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001; Penn, Guynan, Daily, Spaulding, Garbin, & Sullivan, 1994). Further, stigmas toward individuals with mental illness are widely endorsed by most cultures. Studies have demonstrated that much of the populace in the U. S. (Link, 1987; Roman & Floyd, 1981) maintains stigmatizing attitudes about mental illness. Although stigmatizing attitudes are not restricted to mental disabilities, persons with physical disabilities, such as Alzheimer’s disease, blindness or paraplegia (Socall & Holtgraves, 1992; Weiner, Perry, & Magnusson, 1988) tend to be stigmatized to a lesser degree. Frequently, individuals with psychiatric disabilities are regarded as perpetuating their mental illness and thus able to control it, seemingly demonstrating poor lifestyle choices or lack of character and self-control (National Mental Health Association, 1999b; Murphy, 1998; Socall & Holtgraves, 1992; Weiner et al., 1988; Zola, 1991). In a survey regarding public perceptions toward the causes of mental illness, 71 percent believed that mental illness is caused by emotional weakness, 65 percent assumed it was associated with bad parenting, 35 percent believed it was caused by sinful and immoral behavior, and 43 percent felt that the individual with mental illness was responsible for its inception (National Mental Health Association, 1999).
These uninformed impressions are often reflected in the attitudes of employers regarding the ability of individuals with psychiatric disabilities to perform tasks in the job place. McGurrin (1994) reported that employer bias toward individuals with psychiatric disabilities was stronger than for any other disability group, demonstrating that employers ranked persons with psychiatric disabilities at or below ex-convicts on their willingness to hire. This source of stigma is reflected in the limited vocational services available for people with chronic mental illness.

Pratt et al. (1999) suggest that the most dangerous source of stigma emerges from individuals with chronic mental illness themselves. Specifically, individuals with psychiatric disabilities often display cognitive, perceptual, affective or interpersonal traits intrinsic to or resulting from the symptoms of mental illness. Due to fear of discrimination, many individuals choose not to disclose mental illness, thus anxiety often accompanies the effort to hide an illness and mask its symptoms. Additionally, most types of serious mental disorders are manifested episodically, and while they are sometimes cyclical, they are frequently unpredictable in nature, resulting in periods of normalcy interspersed with periods of acute symptoms of illness (Rutman, 1994; Tashjian, Hayward, Stoddard, & Kraus, 1989). As a result, symptomatology may come and go, intermittently fostering periods of stability or recurrence, and ultimately creating feelings of frustration and despondency that can affect personal relationships and work capacity (Rutman, 1994).

Staff members at community mental health centers often demonstrate low expectations for employment of consumers with SMI, (Braitman, Counts, Davenport, Zurlinden, Rogers, Clauss, Kulkarni, Kymla, & Montgomery, 1995) thus resulting in
lower competitive employment rates. There is a growing consensus that the impact of stigma can be as destructive as the direct effects of the disease. As a result, advocacy groups such as the National Alliance for the Mentally Ill (NAMI) and the National Mental Health Association have identified an emergent need for anti-stigma strategies as a necessary adjunct to traditional clinical services for individuals with mental illness and their families (Phelan, Bromet, Link, 1998; Sommer, 1990).

Symptoms of psychiatric disabilities often have a profound impact on the thoughts and affect of individuals, frequently causing difficulties in memory, concentration, staying on task, and social interactions (Rutman, 1994). Additionally, the random reoccurrence of psychiatric symptoms including hallucinations or delusional beliefs and general difficulty in self-monitoring are features that may inhibit employment potential (Dunham, 1982; Ruffner, 1986). Other factors may include low self-esteem (Link et al., 2001), lack of self-confidence, fear of failure, anxiety and difficulty in collaborating with others (Jansen, 1988). Merely coping with symptoms of the psychiatric disability may foster inappropriate values, attitudes and aspirations regarding work within the individual (Rutman, 1994). Such inappropriate values and attitudes may be closely related to maladaptive fears of both failure and success and can strongly affect the course of the vocational rehabilitation process (Farrell, 1991).

For individuals receiving benefits through the Social Security Administration (SSA), including Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI), the policy regarding the effect of earned income on benefits often is viewed as a barrier to employment for consumers who which to return to work but also maintain their benefits (Pratt et al., 1999). Specifically, individuals with psychiatric
disabilities are often aware that despite being successfully employed, psychiatric
symptoms can resurface at anytime, impairing their ability to sustain employment. Thus,
the combined fear of losing benefits and subsequently being unable to maintain
employment increases the risk of attempting employment and ultimately becomes a
disincentive.

Another variable, which has been researched infrequently, is the effect of
medication on vocational achievement. In a 1992 literature review, Mintz, Mintz, and
Phipps surmised that a number of research findings indicate that neuroleptic drugs have a
negative impact on vocational performance. Specifically, various medical treatments can
produce iatrogenic (i.e. medication side-effects) effects on individuals with psychiatric
disabilities (Diamond, 1983; Rutman, 1994). In particular, Mintz et al., (1992) assert that,
“neuroleptic drugs clearly attenuate the symptoms and reduce relapse risk, but there is a
striking consistency of findings that suggest that they may impair work capacity” (p.
312). The side effects of psychotropic medication range from fairly minor to very
serious, including apathy, tremors, shuffling gait, drooling, restlessness, low blood
pressure, facial twitches and grimacing, loss of coordination, drowsiness, dizziness,
nervousness, shakiness, and confusion (Cook, 1992; Rutman, 1994). Clearly, such
effects often serve to detract from an individual’s presentation, affect, and
competitiveness as a job candidate (Cook, 1992; Rutman, 1994).

Frequently, individuals with severe mental illnesses must contend with a
multitude of challenges. Symptoms of mental illness resulting from physical and
psychosocial factors may contribute to additional symptoms or maladaptive behaviors,
subsequently affecting social functioning, and depleting support networks (Corrigan &
Length of time off work can impact individuals by compromising confidence in ability to work, skill maintenance, and physical work tolerances and stamina (Berven & Driscoll, 1981). The interplay of various elements such as motivation, unrealistic vocational goals, limited transferable skills, dissatisfaction with previous employment, and resistance to change can all serve as barriers to employment (Berven & Driscoll, 1981; Weinhouse, 1989). In addition, individuals must frequently contend with the societal stigma of mental illness leading to prejudice, loss of opportunity and discrimination (Corrigan, River, Lundin, Wasowski, Campion, Mathisen, Goldstein, Bergman, Gagnon, & Kubiak, 2000; Farina, 1998).

Vocational Rehabilitation and Individuals with Psychiatric Disabilities

For the majority of individuals with SMI, competitive employment is a fundamental objective. Within this population, approximately three fourths desire competitive employment, including roughly two thirds of those without any employment (Rogers, Walsh, Masotta, & Danley, 1991). Work is important for persons with severe mental disorders for purposes beyond the financial incentive it provides. For individuals with psychiatric disabilities, work may assist in recovery by providing structure and the potential for social contacts (Noble et al., 2001). Employment may also prevent decompensation and recurring hospitalizations, and end dependence on federal income support programs such as SSI and SSDI (Noble, 1998).

A study by Marshak, et al (1990), found that the success rate for individuals with psychiatric disabilities who seek vocational rehabilitation services is one of the lowest of any disability population served. Specifically, the study cites a 14% successful closure rate after 18 months of services for individuals with psychiatric disabilities in comparison...
to a 32% closure rate for individuals with other types of disability (Marshak et al., 1990). Likewise, surveys on employment rates of individuals discharged from psychiatric hospitals demonstrate that consumers reported full-time competitive employment rates ranging from 20 to 30 percent (Anthony & Jansen, 1984; Dion & Anthony, 1987), while rates for individuals who are severely mentally ill decrease to a meager 15% (Unger & Anthony, 1984).

In recent years, there has been an emergence of literature addressing the relationship between employment outcomes of individuals with psychiatric disabilities and significant predictors of success (Anthony & Jansen, 1984; Anthony, Rogers, Cohen, & Davies, 1995; Buell & Anthony, 1975; Fabian, 1992). Based on a thorough review of the literature since the 1980’s, Tsang, Lam, Ng, & Leung (2000) suggest that due to inconsistent results of multiple research studies, researchers are still irresolute on what clinical and demographic variables are consistent and reliable predictors of vocational functioning of individuals with psychiatric disabilities. The review does propose however, that consistent predictors include level of functioning before the onset of mental illness, work history, and social skills (Tsang et al., 2000).

Research supports the notion that psychiatric symptomatology and diagnostic categories are poor predictors of future work performance, as are intelligence, aptitude, and personality tests (Anthony & Jansen, 1984). Further, there is no correlation between an individual’s symptomatology and functional skills. This finding is supported in an article by Anthony, Kennard, O’Brien, and Forbess (1986), stating, “the psychiatric diagnostic system was developed to categorize symptom patterns, not to provide information about a psychiatrically disabled persons’ rehabilitation prospects” (p. 257).
In contrast, research suggests that good predictors of future work performance are an individual’s ability to function socially with others, and a prior employment history (Cook & Rosenberg, 1994). Finally, Anthony & Jansen (1984) suggest that by assisting individuals in identifying their strengths and values toward the world of work before pursuing traditional vocational programming, counselors are more likely to ensure future vocational success.

**Sex, Race, and Age**

In two distinct studies, Cook and her colleagues identified gender, race, age, and employment history as related to vocational outcome (Cook & Roussel, 1989; Cook & Trowbridge, 1993). Similar to Anthony (1979) the authors suggest that the characteristics that relate to outcome for individuals with SMI parallel the labor force participation in the US in general. Likewise, Rogers, Anthony, Cohen & Davies (1997) found that race and living arrangement were the demographic characteristics most related to vocational outcome with marital status and months of prior employment accounting for a smaller percentage of the variance.

Men and women have similar lifetime prevalence rates of mental disorders, although the rates differ for the types of disorders and men are more likely than women to experience limitations due to their symptoms of mental illness (National Center for Health Statistics, 1996).

Although age is not usually considered a variable with much significance in relation to vocational outcome, studies show that older people and young adults tend to receive less mental health treatment for their mental disorders and older individuals frequently have more than one disability (McNeil, 2001).
In recent years, numerous studies have examined the significance of race in relationship to vocational rehabilitation service delivery and subsequent outcomes (Corrigan, Reedy, Thadani, & Ganet, 1995; Rogers, Anthony, Cohen & Davies 1997; Rogers, Anthony, Toole, & Brown, 1991; Wheaton, Finch, Wilson, & Granello, 1997; Wheaton, Wilson, & Brown, 1996; Wilson, 2000). In 1980, Atkins and Wright completed one of the first studies examining the relationship between race and vocational rehabilitation outcome, by compiling data from ten regional RSA sites and comparing vocational rehabilitation services and the outcome of African Americans and European Americans. The researchers staunchly maintained that there were huge inequalities between services provided for African Americans and European Americans. However, in a similar study, which controlled for many of the same conflicting variables, Bolton and Cooper (1980) found that race was not a significant contributor to outcome, and challenged the assumption by Atkins and Wright (1980) that African Americans were treated unjustly by the vocational rehabilitation system.

In a 1997 study, Wheaton and colleagues used state-level RSA-911 data to examine whether the number and type of services differed based on a consumer’s sex, race or closure status. They found that while race, closure status, and their interaction influenced service provision, the sex of the consumer did not. Likewise, in a recent review of federal RSA data, age, education level and significant disability were examined for differences in outcome for racial minorities and women (Capella, 2002). The authors found that employment outcomes favored European Americans over both African Americans and Native Americans and the quality of closures favored men over women, with age acting as an effect modifier.
Diagnosis and Significant disability

The effect of severe mental illness on vocational performance has been the focus of extensive debate in recent years yielding opposing views amongst researchers. In their landmark 1984 review of the literature, Anthony and Jansen enumerated a multitude of studies, which suggested that psychiatric symptomatology and diagnosis were poor predictors of future work performance. However, in a more recent literature review, psychiatric symptomatology and diagnosis were found to be significant predictors of employment outcome in 10 of 35 studies (Tsang et al., 2000). In studies in which diagnosis was looked at separately from the effects of symptomatology, the results were mixed. Specifically, three related studies examined the demographic and clinical correlates of diagnosis, work skills and vocational outcome and found that diagnostic category was not predictive of work outcome (Anthony et al., 1995; Rogers et al., 1991, 1997). Similarly, in a 1990 study, Massel and colleagues examined the relationship between psychiatric symptomatology and the capacity to work in 143 clients and found no significant difference in the ability to work between non-psychotic and psychotic consumers (Massel, Liberman, Mintz, Jacobs, Rush, Gianni, & Zarate, 1990). Conversely, two studies that are more recent suggested that a diagnosis of schizophrenia or other psychosis was related to poorer vocational outcomes (Fabian, 1992; Jacobs, Wissusik, Collier, Stackman, & Burkman, 1992). Specifically, Jacobs and colleagues (1992) explored the relationship between psychiatric disabilities and vocational outcome of 89 clients enrolled in a job club program and found that individuals with non-psychotic diagnoses found employment more often.
Based on the proliferation of contradictory results in the literature, it is still not clear whether psychiatric diagnosis is a significant and reliable predictor of vocational outcome for individuals with severe mental illness. Bell and Lysaker (1995) suggest that the ongoing disparity in research results has vast implications on management of clients and should continue to be addressed. Tsang et al. (2000) comment that many of the studies that they reviewed shared common limitations. First, psychiatric diagnosis was never the main predictor variable and was typically examined along with other variables such as symptomatology. Second, the diagnostic criteria were not consistently defined in the literature (Massel et al., 1990). Third, the range of diagnoses did not encompass all areas of mental illness. Finally, Tsang and colleagues stressed that the sample size of the diagnoses being compared were not equal with psychotic disorders outweighing other types of mental illness.

Education

Rogers et al. (1997) conducted an investigation into the demographic predictors of work skills using the demographic predictors of gender, educational level, race, marital status, living status, social security benefits, total months of employment, and baseline work skills. In this and previous studies, Rogers and associates concluded that overall work skills, living arrangements, race and marital status were all found to be significant predictors of vocational outcome (Rogers et al., 1991). However, educational level has not been found to be significant in most studies (Corrigan et al., 1995; Rogers et al., 1997; Rogers et al., 1991).
Services Provided

There has been a dearth of research in the literature addressing the interaction between specific services provided through the federal-state rehabilitation program and employment outcome for individuals with psychiatric disabilities. A 1989 study prepared for the Rehabilitation Services Administration by the Policy Studies Association, addressed most effective VR programs in providing services to individuals with severe mental illness (Tashjian et al., 1989). The survey determined that over seventy-three percent of the interviewed counselors identified situational assessment, vocational evaluation, psychiatric evaluation, and personal interviews as the most useful sources of information on developing client services. Forty-one percent of sampled consumers had work adjustment training and fifty-seven percent were closed with employment. While eighty-nine percent of the consumers were independently employed in competitive employment, only five percent reported post-employment services. The report concluded with a recommendation for the extension of services by the job coach for clients with SMI, expansions of psychosocial rehabilitation programs, greater emphasis on post-employment services, and expansion of VR and community mental health networks.

Finch and Wheaton (1999) investigated the types of rehabilitation services provided through the federal-state vocational rehabilitation system to individuals with serious mental illness and the relationship of these services to subsequent employment outcomes. Using a cluster analysis, they identified five service patterns for individuals who were successfully employed: (a) counseling, (b) diagnostic services, (c) direct placement, (d) total job assistance, and (e) comprehensive services. A further chi-square
analysis demonstrated a moderate relationship between service provision and employment outcomes.

**Benefits**

Competitive employment is a primary objective for approximately three fourths of individuals with SMI including more than two-thirds of those without employment (Rogers et al., 1991). However, for individuals receiving benefits through the SSA, including SSI or SSDI, the policy regarding the effect of earned income on benefits often is viewed as a barrier to employment for consumers who which to return to work but maintain their benefits (Pratt et al., 1999). Specifically, individuals with psychiatric disabilities are often aware that despite being successfully employed, psychiatric symptoms can resurface at anytime, impairing their ability to sustain employment. Thus, the combined fear of losing benefits and subsequently being unable to maintain employment decreases the risk of attempting employment and ultimately may become a disincentive (Berkowitz, 1981; Rutman, 1994).

In an early study of the Social Security Disability program, Leonard (1979) found that disability benefits fostered departure from employment despite the ability to work. Likewise, Nichols (1989) found evidence that resistance to seeking competitive employment was higher among individuals who were receiving disability benefits. In another study, participants receiving disability benefits were significantly different from those who were not receiving benefits and concluded that disability compensation programs, especially those that carry disincentives for earned income, are associated with lower rates of participation and success in vocational rehabilitation (Drew, Drebing, Van Ormer, Losardo, Krebs, Penk, & Rosenheck, 2001).
Jacobs and associates (1992) were able to differentiate between specific benefits provided consumers finding that individuals receiving SSDI tended to have more positive outcomes than their counterparts receiving SSI, some of this difference may be attributable to prior work history.

Major Vocational Rehabilitation Models

This section examines the effectiveness of various types of vocational programs in assisting individuals with psychiatric disabilities in achieving employment. Vocational outcomes tend to be a measure of the relative effectiveness of vocational programs in assisting individuals with psychiatric disabilities in obtaining employment. Further, studies tend to focus on outcome as the achievement of paid employment, consisting of competitive, transitional, supported, and sometimes sheltered employment (Anthony, 1994). Regardless, it is essential that researchers and rehabilitation practitioners recognize that quality of life, self-esteem, and various other aspects of community support are of equal importance to the strength of programming.

The principle of “gradualism” motivates many of the approaches to vocational rehabilitation of individuals with SMI. According to Dincin (1995), within the realm of vocational rehabilitation, gradualism assumes that consumers can improve their work abilities and job performance through the process of meeting expectations in progressively more demanding work environments beginning with low demand environments. Often vocational rehabilitation providers withhold access to services until the consumer has demonstrated consistent participation in prevocational programming, despite the results of numerous studies which indicate that successful functioning in one environment is not indicative of future success in another setting (Anthony & Jansen,
The importance of prevocational planning and evaluation is also an important component in the psychiatric rehabilitation model developed by Anthony and his colleagues in both theory (Anthony, 1993; Anthony & Blanch, 1987; Anthony, Cohen, & Farkas, 1999) and practice (Trotter, Minkoff, Harrison, & Hoops, 1988). Likewise, within the traditional model of the federal-state vocational rehabilitation system, consumers characteristically receive assessment and training before placement in competitive jobs.

In typical vocational rehabilitation settings, consumers are relegated to extended periods of prevocational evaluation and assessment, with a paucity of job placements. To illustrate the futility of such a strategy, Conley (1999) reviewed 1996 national RSA-911 data. The data demonstrated that 82% of the closures with SMI received diagnostic and evaluative services, while only 34% and 12% respectively, received job placement services (Conley, 1999). The SE paradigm has countered this approach with the proposition that individuals with the most severe disabilities might benefit the most if training and assessment were completed after the individual has been placed in competitive employment (Rusch, 1990; Wehman & Moon, 1988). In support of this notion, researchers have found that accelerated entry into community employment actually contributed to higher rates of long-term, full-time competitive employment (Bond, Dietzen, McGrew, & Miller, 1995; Bond & Dincin, 1986). Torrey, Becker and Mowbry, (1995) suggest that direct entry into competitive employment often results in increased exposure to community activities and support and ultimately provides greater independence for consumers. Additionally, Bond et al. (1995) found that delaying employment due to participation in sheltered work and other prevocational programs actually lowered the likelihood of ever entering competitive employment. Individuals
entering vocational programs after long periods of not working and struggling with symptoms of psychiatric disabilities tend to have less knowledge of their skills, abilities, interests, and preferences toward work than could be expected from others in their general peer group.

Although the most typical rehabilitation objective is employment in the competitive labor market, other objectives, depending on the disability and circumstances of the consumer, include: (a) supported employment, (b) sheltered employment, and (c) self-employment.

History

Early literature on psychiatric vocational programs stemmed from hospital-based programs which suggested that work activities in the hospital could increase self-esteem and functioning and could ultimately accelerate discharge (Bond & Boyer, 1988). In contrast, a randomized study by Barbee, Berry & Micek (1969) found that patients in hospital work programs actually remained hospitalized significantly longer and had a higher rate of recidivism, possibly suggesting that such work programs fostered institutional dependency. Barbee and colleagues (1969) additionally noted that the most likely sources of gain for patients in hospital-based programs were wages, supportive supervisors, and socialization with co-workers.

The era of deinstitutionalization began in the 1950’s at a time when vocational programs first began to implement hospital-based, sheltered workshops and outpatient halfway houses geared toward vocational training and rehabilitation (Black, 1988). Despite these early efforts, most programs were overshadowed by cynicism about the employment potential of patients with psychiatric disabilities (Bond, 1992). In the
1970’s and 1980’s, vocational rehabilitation for individuals with psychiatric disabilities was not offered in the realm of community mental health centers (CMHC) or rehabilitation centers (Bond, 1992). Instead, psychosocial rehabilitation centers such as the Fountain House in New York (Bond & Boyer, 1988) developed transitional employment (TE) programs. At the time, these vocational programs were unique and often isolated within the mental health networks. Since that time, TE has evolved and become a routine part of services rendered in community support programs.

In the 1980’s, the supported employment (SE) movement signified a paradigm shift in vocational programming. SE advocates began directly placing clients in community employment regardless of their level of prevocational training. In addition, SE provided support to the individual for an unlimited period, thus allowing for increased opportunities for employment success for persons with psychiatric disabilities.

Bond & Boyer (1988) evaluated the reported success of vocational rehabilitation programs in returning individuals with chronic mental illness to paid employment. Specifically, they presented results from 21 programs and classified results by types of programs. The types of programs included hospital-based vocational programs, sheltered work, assertive case management, psychosocial rehabilitation, supported employment, rehabilitation counseling, job clubs, remedial education, occupational training, and post-employment services (Bond & Boyer, 1988). Based on this review, Bond & Boyer (1988) concluded that of the 21 programs, no singular program helped clients sustain competitive employment on a long-term basis. Although there is a growing consensus among both rehabilitation researchers and practitioners that consumers with chronic mental illness are more challenging to place than individuals with other types of
disabilities (Dunn, 1981), it is also paramount that rehabilitation professionals continue to establish methods and programs to increase success rates.

Currently there is a lack of research into the effectiveness of specific vocational models currently utilized in the rehabilitation of individuals with psychiatric disabilities. Specifically, research is needed to discriminate what programs are most beneficial based on differences in diagnostic information, age group, disability status, treatment history and other work variables. However, McGurrin (1994) stresses that while research is required to evaluate the differential effectiveness of vocational programs, there is sufficient data to suggest that the major vocational rehabilitation models provide at least some level of benefit for clients.

**Hospital Based Programs**

Some inpatient psychiatric hospitals have developed comprehensive on-site vocational prospects that give patients the opportunity of being paid for work during hospitalization. Hospital-based programs include those with inpatients participating in some form of vocational programming in either community or in-hospital setting. On the contrary, there is evidence that hospital-based programs foster dependency in some patients. Additional studies have concluded that hospital-based employment programs do not subject patients to the same demands as the competitive workforce (Davies, 1972) and may not foster work opportunities that could allow for transition to a competitive work setting. Although not a uniform phenomenon across all studies, some element of institutional dependency may extend to community settings as well and is often documented in supported employment programs. According to Bond & Boyer (1988),
“Most reviewers have concluded that there is no relationship between successful
adjustment to work programs within the hospital and post hospital employment” (p.235).

**Transitional Employment**

Established in the 1950’s, the Fountain House in New York City represented one
of the first psychosocial rehabilitation clubhouses. Fountain House provided an
environment in which consumers worked in conjunction with staff members to manage
and maintain the clubhouse. In doing so, the members had the opportunity to build
confidence and self-esteem as well as develop work relationships and attitudes (Beard et
al., 1994).

Transitional employment (TE) emerged as an attempt to reverse the conventional
“train and place” approach. Transitional employment consists of temporary community
placements, commensurate with consumers’ stamina and stress tolerance. Typically
consisting of six months in length at entry-level competitive employment, these jobs are
intended to acclimate consumers to work and increase self-confidence. As hours increase,
job coaching gradually decreases according to consumer need. At the end of a placement
period, a consumer often will seek another TE, return to the clubhouse setting, or will
seek permanent competitive employment. In sum, TE jobs provide consumers with the
opportunity to develop work skills while working, gain regular work experience, and earn
competitive wages within a supportive setting (Bond & Boyer, 1988).

Laird and Krown (1991) assessed the effectiveness of a TE program in
comparison with a day treatment program, and concluded that TE participants achieved a
20% competitive employment rate over a 22-month period after receiving services,
received higher wages than day program clients, and received favorable employer
responses. However, client subjective well-being ratings were not significantly different between groups, with clients feeling most positive about spare time and transportation issues and least positive about getting a job, finances, and their work (Laird & Krown, 1991).

Supported Employment

Initially, supported employment (SE) emerged in the 1980’s as a reaction to substandard employment opportunities for individuals with severe disabilities (Anthony & Blanch, 1987; Bond et al., 1997). There were four important influences on the evolution of supported employment that include the job coach model, transitional employment, the assertive community treatment model, and the “choose-get-keep” model (Bond et al., 1997). The place-train approach of supported employment quickly reversed the train-place strategy by which consumers would attend segregated work settings to train and prepare for employment (Anthony & Blanch, 1987). The development of SE indicated an important change in the approach to vocational rehabilitation for people with SMI. Within the realm of vocational rehabilitation of individuals with psychiatric disabilities, Bond and colleagues (1997) described features of SE that appear to be among most programs. These include:

“a goal of permanent competitive employment, minimal screening for employability, avoidance of prevocational training, individualized placement instead of placement in enclaves or mobile work crews, time-unlimited support, and consideration of client preferences. “(p. 336)

In 1987, Mellon & Danley introduced the concept of supported employment as a viable option for individuals with psychiatric disabilities. Although it was originally
devised for people with developmental disabilities, SE has been advocated for individuals with SMI (Anthony & Blanch, 1987; Crowther, Marshall, Bond, & Huxley, 2001; Drake, McHugo, Becker, Anthony, & Clark, 1996; Fabian & Wiedefield, 1989) and is increasingly used in vocational rehabilitation. Although programs had traditionally focused on vocational preparedness and obtaining employment, the SE movement offered a divergent approach which stressed the importance of not only obtaining employment but maintaining it, a challenge for many individuals with psychiatric disabilities (Anthony & Blanch, 1987; Black, 1988; Bond & McDonel, 1991; General Accounting Office, 1993). Unlike other vocational approaches (Bond, Drake, Becker, & Mueser, 1999), SE programs do not screen or evaluate consumers for work readiness, or provide intermediate job experience. Instead, SE programs facilitate job acquisition, and furnish ongoing support for the consumer during employment at the job site, rather than treatment-centered support at a community mental health center or elsewhere (Bond, Becker, Drake, Rapp, Meisler, Lehman, Bell, & Blyler, 2001).

Supported employment is intended for persons who would not traditionally be considered eligible for vocational rehabilitation services due to the severity of their handicaps (Wehman & Moon, 1988). The Rehabilitation Act clearly defines supported employment as “competitive work in an integrated work setting, with ongoing support services, for individuals with severe handicaps for whom competitive employment has not traditionally occurred or has been interrupted or intermittent as a result of severe handicaps” (Federal Register, 1992, p. 28438). As a model, supported employment (SE) assists consumers in finding private-sector employment and provides high levels of support to both the client and employer for an unlimited period. The primary goal of SE
is to place consumers in permanent competitive employment (Wehman & Moon, 1988). In recent years, studies of consumers served by SE and TE suggest increased rates of positive outcome for individuals with psychiatric disabilities. A study by Fabian & Wiedefield (1989) found a 47 percent job retention rate in an SE program over a six-month period.

A vast majority of work support literature has concentrated on the job coach, or individual placement model of supported employment, an approach first discussed by Wehman (1981) and later built upon and developed further by Bond (1998) and Drake (1998) to focus on individuals with psychiatric disabilities. There is a plethora of support of the job coach/individual placement approach in the literature (Bond, Dietzen, McGrew, & Miller, 1995; Kregel, Wehman & Banks, 1989; MacDonald-Wilson, Revell, Nguyen, & Peterson, 1991). As job coaching emerges as the predominant practice of vocational service agencies, researchers emphasize that individuals with different disabilities will require varying approaches or emphases to be stressed by the job coach (Fabian, Waterworth, Ripke, 1993). While individuals with a psychiatric disability may require less skills instruction or supervision time than workers with a cognitive disability, they may in turn require more advocacy and encounter increased stigma and social isolation (Danley, Rogers, MacDonald-Wilson, & Anthony, 1994; Drake, Becker, Xie, & Anthony, 1995).

In recent years, empirical support of the Individual Placement and Support (IPS) model of supported employment have emerged for people with severe mental illness (Becker & Drake, 1993, 1994; Drake & Becker, 1996). According to researchers (Becker
& Drake, 1993; Bond, 1998; Bond, Becker, Drake, & Vogler, 1997), the majority of research about IPS has focused on six core principles:

1. Competitive employment is the goal in integrated community settings.
2. A rapid job search without lengthy prevocational assessments and training.
3. Rehabilitation serves as a fundamental component of mental health treatment planning rather than a separate service.
4. Services and IPEs are based on the consumer’s preferences.
5. Assessment is ongoing and based in real work experiences.
6. Follow-along supports continue indefinitely according to individualized consumer needs (Bond, 1998, p. 12).

The proliferation of supported employment has been rapid, with levels of participation in the U.S increasing from 9,800 to over 140,000 in the past decade (Wehman, Revell, Kregel, 1998). Supported employment has the strongest empirical support of any of the vocational rehabilitation approaches currently available to individuals with SMI (Bond, 1998; Bond, Dietzen, McGrew, & Miller, 1995). Research has indicated that individuals with SMI who are in supported employment programs attain competitive employment three times faster than consumers in traditional programs (Bond, Drake, Mueser, & Becker, 1997). In the quest for empirical support for specific aspects of supported employment, reviewers (Bond, 1998; Cook & Razzano, 2000) have come to a consensus on the components evident in successful vocational programs (Bond et al., 2001). The components include: (a) the agency providing SE features competitive employment as its focal point for rehabilitation services (Gervey & Bedell, 1994), (b) SE programs use a rapid job search approach, instead of prevocational work assessments,
training and counseling (Bond et al., 1995; Bond & Dincin, 1993), and (c) rehabilitation counselors and consumers collaborate to find job placements based on individualized consumer preferences, strengths, skills, and work experiences (Becker, Drake, Farabaugh, & Bond, 1996; Mueser, Becker, & Wolfe, 2001).

Although supported employment appears to have many advantages for successful employment, long-term outcomes of supported employment programs have not been favorable in the long term (Danley et al., 1994; General Accounting Office, 1993) or have not been evaluated conclusively (Bond et al, 1997). However, some studies have demonstrated (Bond et al., 1995; McHugo, Drake, & Becker, 1998) that when vocational supports continued indefinitely, employment was maintained for at least two years.

**Job Clubs**

Job clubs, originally developed by Azrin (Azrin, Beselele, Wisotzek, McMorrow, & Bechtel, 1982), have been ubiquitous for approximately 25 years. Job clubs provide the training, resources, peer support, and organization necessary for consumers to perform their own job searches through a process of structured group meetings led by a counselor. This may include targeted instruction in job seeking skills, goal setting, clerical support, and computer assistance. Ultimately, this model places the responsibility for finding employment on the client with the support of rehabilitation staff (McGurrin, 1994). The Job Club approach featured behaviorally based programs geared toward assisting individuals within a group setting to acquire and use the necessary skills to obtain employment.

In a comparative outcome study by Azrin & Phillip (1980), Job club members started work on average 14 days after starting the program, while individuals randomly
assigned to conventional, counselor managed placement programs took an average of 53 days to find employment. Further, Job Club members received a starting salary 36% greater than their non-club peers. These data coincide with other Job Club studies in which 65% to 85% of participants entered employment after participating in Job Clubs, proving to be far superior to the 10% to 30% average placement rates reported for conventional psychiatric work restoration programs (McGurrin, 1994).

According to Bond and McDonel (1991) the limitations of the Job Club Model include (a) a lack of emphasis on job maintenance over time, (b) undue pressure on individual consumers, and (c) employment retention rates have not been shown to be long-standing. While this approach to job development can be extremely effective to many consumers, it is often less beneficial for individuals with chronic mental illness who may need a more intensive and individualized level of support in job seeking tasks (Bond et al., 1997).

Sheltered Workshop Programs

Sheltered workshops provide support and supervision to individuals with disabilities in a factory-based setting operated by the vocational rehabilitation agency. Typically, consumers are paid wages based on their productivity over a given period of time. For most, sheltered work is regarded as a graded step toward competitive employment, although some agency workers view it as a permanent option (Bond & Boyer, 1988). Often, even when viewed as temporary placement, there is an inclination for consumers to continue for an indefinite period. Additionally, research indicates that individuals with psychiatric disabilities tend to have poorer outcomes than individuals with other disabilities within traditional sheltered workshops (Ciardello, 1981;
Olshansky, 1973). As a caveat, traditional sheltered workshops are usually in a segregated setting and tend to focus on factory-like contract work, which offers little opportunity for individual preferences about work settings or tasks. Additionally, wages tend to range below the minimum-wage level. In sum, research continues to support the notion that there are significant problems with this model, which does not focus on community job placement and ultimately reinforces low pay levels (Whitehead, 1977).

**PACT Vocational Model**

Stein & Test’s (1980) Program for Assertive Community Treatment (PACT) operates on the assumption that consumers must be assisted on an individual and concrete basis in the tasks of everyday living, including competitive employment. Originally called training in community living (TCL), the PACT evolved as an innovative approach to keeping consumers out of the hospital by way of a comprehensive support network (Pratt et al., 1999). The PACT approach features a comprehensive community based program integrating clinical and rehabilitative services within a continuous treatment approach for persons with mental illness. The PACT model was designed as an innovative approach for reducing the effects of deinstitutionalization while assisting consumers to live within the community of their choosing (Allness & Knoedler, 1998; Test, 1992). The PACT model, and its numerous variations, are also termed assertive community treatment (ACT), and embrace the notion that employment is both an outcome and a treatment (Pratt et al., 1999).

Although many features are traditional in community-based mental health settings, Herdelin & Scott (1999) enumerate several key factors that differentiate PACT from other approaches: (a) all treatment (e.g. medication, psychotherapy, life skills
training, social skills training, family psychoeducation, hospitalizations) is provided by an interdisciplinary team (nurses, psychiatrists, counselors); (b) treatment occurs “in vivo”, or in the consumer’s environment (e.g. in the home or community of the patient)(Pratt et al., 1999); (c) team members make every effort to help keep the individual in the community; (d) treatment and follow-up care are initiated by staff members as well as by the consumer; and (e) the treatment team is available to the consumer at all times allowing for individualized treatment (Allness & Knoedler, 1998).

In contrast to previous hospital-based programs that presumed that transition to work would logically occur when the consumer was returned to the community, PACT staff assists consumers to find jobs, get to them, and maintain them over time. Further, the PACT program operates under the assumption that full-time competitive employment is not always the ultimate goal for all individuals with psychiatric disabilities, thus a variety of alternatives are available to individual consumers. Within the PACT model, the services provided are tailored to the individual to maximize the likelihood that each consumer will locate employment that meets his or her own preferences and aptitudes. Specifically, clients may tailor services to their particular needs choosing competitive, supportive or prevocational, and work adjustment activities with support provided at all levels. The PACT model provides a framework to combine treatment, social support, and employment as fundamental parts of a comprehensive support system (Bevilacqua, 1999).

A clear disadvantage of the PACT program is that it brokers services instead of providing them directly, and as a result, must rely on the availability, accessibility and collaboration of community resources in providing vocational placements (Bond &
Regardless, the use of PACT has been related to fewer hospitalizations, shorter lengths of stay, higher levels of social functioning, reductions in symptomatology, greater consumer satisfaction, and lower overall cost (Herdelin & Scott, 1999). Further, research has demonstrated that the PACT consumers are employed at a much higher rate than the national average with approximately 40% to 50% of individuals employed and 80% involved in vocational interventions (Test, Knoedler, & Allness, 1985).

**Psychosocial Rehabilitation Programs**

Similar to PACT, psychosocial rehabilitation (PSR) programs offer active outreach and concrete help to individuals, yet differ in the way that vocational programming is provided. Specifically, psychosocial rehabilitation programs have evolved over several decades to represent comprehensive programming that places responsibility under one management entity to provide the multifarious and long-term services needed by many individuals with serious disabilities (Conley, 1999). Psychosocial rehabilitation (PSR) programs evolved from the clubhouse model and focused on providing an accepting peer-oriented clubhouse environment. PSR programs also traditionally provide vocational opportunities such as prevocational work-crews and transitional employment.

The PSR philosophy emphasizes the prevention of repeat hospitalization, and encourages community employment and independent living. Vocational programs highlight the teaching of proper work skills for specific occupations. As a result, most consumers are initially placed in entry-level jobs regardless of previous employment history to establish successful work experiences and develop positive work attitudes.
(Bond & Boyer, 1988). This approach embraces a gradual introduction of consumers into the world of work.

Although PSR programs tend to decrease rates of rehospitalization (Bond, Dincin, Setze, & Witheridge, 1984; Dincin & Witheridge, 1982), they do not appear to effectively contribute to an increase in competitive employment, regardless of their vocational emphasis. While several studies suggest that the longer that mentally ill consumers attend a PSR program the better their vocational outcomes (Barry, 1982; Bond et al., 1984; Dincin & Witheridge, 1982; Roomy, 1984), interpretation of these results is difficult due to the correlational approaches used. An alternate explanation might be that individuals who are more vocationally prepared and better motivated are more likely to complete such programs. However, the effects of vocational rehabilitation may simply be gradual and cumulative (Bond et al., 1984; Harding et al., 1984).

**Rehabilitation Counseling**

Anthony (1980) has extensively examined his skills training model in the context of training rehabilitation counselors in working with disability populations. In turn, Anthony (1980) concluded that counselors could not assist consumers in achieving a higher skill level than the counselors themselves accomplish.

Many rehabilitation models are based on theories of rehabilitation developed for other disability populations. Although Anthony (1980) postulates that the assumption that rehabilitation approaches developed for the physically disabled can be adapted to the psychiatrically disabled (Anthony et al., 1988) has not been empirically validated and is an erroneous belief (Anthony et al., 1988).
Choose-Get-Keep Model

Danley and Anthony first presented the choose-get-keep model of SE in 1987 as a targeted strategy for people with severe disabilities (Pratt et al., 1999). Apart from being placed in employment, Danley & Anthony maintained that individuals with psychiatric disabilities needed to be involved in the process of achieving employment by participating in the job quest and choosing a job based on their specific interests, preferences and skills (Pratt et al., 1999). During the “choose” phase, rehabilitative staff and consumers collaborate to select job and career interests and an employment goal. The “get” phase emphasizes job search strategies, job-seeking skills, and the development of individualized training needs. The final “keeping” phase emphasizes the delineation of individual supports, environmental accommodations, and service coordination to assist the consumer in maintaining the job (Danley, Schiarappa, & MacDonald-Wilson, 1992).

Summary-Major Vocational Rehabilitation Models

In addition to the aforementioned factors involved in the choose-get-keep model, Danley (1995) states that skill development interventions must encompass those needed to enable the consumer to acquire sufficient skills. Danley (1995) posits that an effective vocational rehabilitation program using this model must include the following elements: (a) an ability to focus the resources of the program on increasing client involvement in the preferred vocational setting, while decreasing the amount of ongoing professional support; (b) opportunities for improving self-esteem along with opportunities for developing vocational maturity; (c) programming which actively involves consumers in the processes of rehabilitation diagnosis, planning and interventions; (d) a network of
environments which allow the individual to select work and training activities which are congruent with interests and preferences; and (e) the option for increased and ongoing support during phases of increased stress or transition. In support of this notion, Bond et al. (1997) found through a review of SE studies, that consumers placed in jobs that matched their preferences stayed employed twice as long as when jobs did not match their interests or preferences. In a review of the research on the effectiveness of vocational services in psychiatric rehabilitation programs, Bond (1992) demonstrated that clients with more work experience benefited more than individuals with less or no work experience (Bond & Dincin, 1986). Regardless of the vocational training provided, Bond (1992) found that clients with little or no work experience performed poorly in vocational programs.

As new vocational programs such as supported employment have emerged, sheltered workshops have increasingly come under criticism. Supported employment has demonstrated that even people with the most severe disabilities can be successful in community employment. With paid employment, individuals are more likely to earn competitive wages, have increased community support, increased independence, and sustain employment for longer periods of time (Bond et al., 1997).

On a related note, Ciardello (1981) established that as group, schizophrenic clients were significantly less successful than the general working population on tasks involving fine motor coordination. Although not documented, it is likely that psychiatric rehabilitation programs have a tendency to avoid assigning tasks requiring high levels of motor coordination and social skills. As a result, popular placements for the mentally ill population include janitorial services and stock work, which are in turn, low-status
positions (Bond & Boyer, 1988). Again, these predilections on the part of rehabilitation service providers often serve to limit the choices and available opportunities for consumers.

Federal-State Vocational Rehabilitation Model

The federal-state vocational rehabilitation (VR) system is the model which has had the most substantial history and impact having served the largest number of consumers and being the longest running model. The federal-state vocational rehabilitation system was designed to be a public program with the sole purpose of providing services to peoples with disabilities, including people with severe mental illnesses, with the services and supports required to obtain and maintain employment.

The federal-state vocational rehabilitation system was developed for civilian individuals with physical disabilities in 1920 with the passage of the Smith-Fess Act, and was broadened in 1943 to include services to people with mental retardation and mental illness (Neff, 1988). Over the years, subsequent changes in federal laws and regulations have directed the focus toward individuals with the most severe disabilities. In 1973, the Rehabilitation Act was passed, establishing the Rehabilitation Services Administration (RSA) and authorizing it to provide vocational rehabilitation services to people with the most severe disabilities and also emphasizing program evaluation and research. The Rehabilitation Act allocated funding to states to provide vocational rehabilitation services, through state agencies corresponding to the federal RSA (Pratt et al., 1999).

Based on testimony from people with disabilities and mental health advocates, the Rehabilitation Act amendments of 1992 modified the definition of supported
employment, highlighted the emphasis on consumer choice and participation, and sanctioned a mission of employability for all people (Pratt et al, 1999).

Presently, the RSA programs are comprised of a partnership between state and federal governments, serving upwards of 900,000 individuals annually, with approximately two-thirds of the served population classified as severely disabled (Rutman, 1994). Direct services are provided to consumers through state field offices, which are ultimately governed by federal regulations. State level functions involve administration, research, evaluation, and the provision and management of funds. In turn, rehabilitation counselors are responsible for rendering direct services through a combination of clinical skills and case management (McGurkin, 1994).

Additional services, including evaluations, diagnosis and job evaluations, are arranged by the counselors from other agencies and contractors. According to the federal regulations, eligibility for vocational rehabilitation services requires that an individual must (a) have a physical or mental impairment which results in a substantial impediment to employment; (b) be able to benefit from VR services in terms of employment outcome; and (c) require VR services to prepare, enter, engage in, or retain gainful employment (Ohio Rehabilitation Services Commission, 1995). According to the RSA (1995), an individual is considered “rehabilitated” if he or she has maintained a vocational placement for at least 90 days. The ratio of successful closures to unsuccessful closures on an annual basis serves as an important measure of program performance.

Despite the changes in legislation in past years, it appears the vocational rehabilitation services for people with psychiatric disabilities frequently continue to be elusive and inadequate. Individuals with severe mental illness within the federal and state
vocational rehabilitation population have averaged fewer successful employment closures than other disability groups (Rutman, 1994) with the aggregate employment rate fluctuating between 10 and 15 percent (Noble et al., 2001; NIDRR, 1992). The Matrix Research Institute analyzed a nationwide review of federal-state services between the years of 1984 to 1988. Specifically, the study evaluated the provision of services to consumers with physical and mental disabilities. The results demonstrate that approximately 53% of the consumers with psychiatric disabilities were successfully rehabilitated at closure in comparison to 61% of successfully rehabilitated consumers with physical disabilities (Matrix Research Institute, 1992).

With unemployment rates of more than 85% (Noble et al., 2001) amongst individuals with SMI, current conditions contradict the research suggesting that vocational rehabilitation interventions can improve outcomes for competitive employment. In 1997, Noble and colleagues published a report based on a set of national surveys of employment programs and practices for people with SMI conducted by the National Alliance of the Mentally Ill (NAMI). Based on these data, Noble et al. (2001) concluded that the current federal-state vocational rehabilitation system has been unable to appropriately serve individuals with SMI based on seven key factors:

1. State vocational rehabilitation services are frequently time-limited and based on the notion that services and supports end when employment is obtained. Many psychiatric disabilities are episodic and recur intermittently with varying levels of severity and impact. Programs including models of supported employment (Bond et al., 2001), assertive community treatment (Allness & Knoedler, 1998), and psychiatric
rehabilitation may assist in producing on-going supportive services and subsequently, outcomes that are more productive.

2. Many state vocational rehabilitation agencies endorse a system that encourages and rewards counselors for achieving as many “successful” closures as possible in the shortest period of time. As a result, the majority of time and resources are expended on consumers who are most likely to achieve and retain employment after placement.

3. State vocational rehabilitation agencies invest a disproportionate amount of resources into disability and eligibility determination practices, and prevocational assessments that are frequently inappropriate for individuals with SMI and are poor predictors of employability. In addition, agencies frequently demonstrate a concomitant lack of focus on community job placement and ongoing support for consumers once they are employed (Cook, 1999). Further, many researchers have stressed that direct entry into competitive employment contributes to increased rates of successful, full-time employment (Bond & Dincin, 1986; Bond et al., 1995; Cook, 1999; Torrey et al., 1995).

4. Many state vocational rehabilitation professionals lack the prerequisite knowledge about severe mental illnesses and the complex needs of consumers in this population.

5. The diagnostic terminology used by the federal Rehabilitation Services Administration and the state vocational rehabilitation agencies such as “psychotic disorders”, “psychoneurotic disorders”, and “other personality and character disorders” are outdated and based on the American Psychiatric Association’s DSM-II codes from the early 1970’s and generally do not differentiate or specify many of the symptoms contributing to the specific psychiatric disabilities. As such, it is essential that the federal-
state vocational rehabilitation system move toward adapting practice to include current
nomenclature and classification criteria (Noble, 1998).

6. The coordination efforts between state vocational rehabilitation agencies,
mental health agencies and other involved systems have been lacking (Cook, 1999).

7. Although states are encouraged to purchase services from psychiatric
rehabilitation providers, state vocational rehabilitation agencies frequently have time-
limited funding and durational limitations which ultimately serve as disincentives for
community-based providers to contract with agencies, resulting in a dearth of vendors
able to provide services (Noble, 1998).

Likewise, the RSA has reported that the rate of successful closures for individuals
with psychiatric disabilities have slightly declined, while the rates for individuals with
physical disabilities have increased (Rutman, 1994). A report prepared for the RSA by
the Policy Studies Association, focused on the practice of vocational rehabilitation in the
provision of services to individuals with psychiatric disabilities (Tashjian et al., 1989).
The survey findings concluded that 37 state agencies served individuals with psychiatric
disabilities through specialized caseloads. Approximately 73% of VR counselors
surveyed categorized situational assessment, vocational evaluation, psychiatric
assessment and evaluation, and personal interviews as the most helpful sources of
information in providing client services. At 41%, work adjustment training was the most
frequently used service. Approximately half of the consumers surveyed who obtained
employment received no placement services from the vocational rehabilitation system.
Of the sampled clients, 57% were successfully closed, and 89% of those successfully
closed cases maintained independent competitive employment, 6% were employed in
sheltered workshop programs, and 3% were closed in supported or transitional employment. Finally, only 5% of consumers closed successfully received post-employment services (Tashjian et al., 1989), which may in turn contribute to consistently disappointing rates of job retention in the federal-state system (Solberg & Raschmann, 1980). This survey study demonstrated a large discrepancy between the percentage of clients believed by practitioners to have access to SE and TE programs (70%) and the percentage of clients (11%) actually receiving such services (Tashjian et al., 1989). Clearly, additional research is required to more effectively evaluate the provision of services to consumers and to assess the needs of the population and the VR system.

Despite these figures, there is a consensus on the part of rehabilitation professionals and consumers that there is a strong desire on the part of people with disabling mental illnesses to maintain meaningful, gainful employment (Rutman, 1994). Individuals with severe mental illnesses are the fastest growing population within both the SSI and SSDI programs. More significantly, SSA figures reveal that people with mental illnesses are receiving disability benefits at an earlier age than their counterparts with other disabilities (Social Security Administration, 1997).

Currently, the federal-state VR program is in transition and recent legislation and revisions have been enacted initiating opportunities for individuals with disabilities who are seeking employment. Specifically, a breakthrough piece of legislation was passed in November 1999 titled The Work Incentives Improvement Act (WIIA). As set forth by the House of Representatives Committee on Ways and Means (1999), this landmark legislation removes limits on the Medicaid buy-in option for workers with disabilities. It also allows states to remove the upper income limit allowing them to set higher limits on
income, unearned income, and resources and will also provide health care infrastructure
grants to individual states to assist individuals with disabilities who choose to return to
work. Another vital feature of the WIIA is the extension of Medicare coverage for
individuals with disabilities who return to work. This act extends Medicare premium
coverage for people on SSDI (individuals who have worked in the past, have paid into
social security for a number of years, and are now receiving benefits) who return to work
for another four and a half years.

Finally, the WIIA enhances the employment services system by fostering the
Ticket-to-Work Program. This program enables SSI or SSDI beneficiaries to obtain
vocational rehabilitation and employment services based on their preference of
participating public or private providers. In turn, if the individual (beneficiary) returns to
work successfully and achieves substantial earnings, providers receive a share of the
benefits saved over a period of subsequent years.

Clearly, these changes in benefits will greatly affect all beneficiaries, although
individuals with psychiatric disabilities may have the most to gain. For years, work
disincentives created by the Social Security Administration provisions regulating
financial support and medical insurance has been omnipresent for individuals with
psychiatric disabilities (Rutman, 1994). More recently, assisting individuals with
psychiatric disabilities to return to employment has been significantly impacted by the
reluctance to risk losing benefits that are essential to survival (Berkowitz, 1981; Rutman,
1994). As revolutionary legislation and change occur within the system of rehabilitation,
it becomes increasingly imperative that research investigations become directed toward
identifying what specific factors contribute to the successful employment outcome of individuals with psychiatric disabilities.

Summary

Regardless of ongoing support and other service provisions, individuals with SMI tend to experience abbreviated tenureship due to multiple elements. Several factors may account for work difficulties, including deficient work experience (Anthony & Jansen, 1984), lack of work readiness (Bond & Dietzen, 1993), poor social skills (Anthony & Jansen, 1984), recurring psychopathology (Fabian, 1992), inadequate family and community support (Cook, 1992), and demanding or stressful work environments (Bond, 1998). Despite extensive changes made in the vocational rehabilitation system, services that are available are not always effective for individuals with severe mental disabilities. Even supported employment and PACT, two of the most efficacious approaches to working with individuals with SMI, rely on the premise that the individuals will improve and then maintain the ability to work over time. However, frequently the symptoms and characteristics of SMI are episodic (Rutman, 1994) and behavioral symptoms may severely compromise the ability to maintain employment (Conley, 1999).

A study by Bond & McDonel (1991) alludes to the lack of research in vocational rehabilitation for people with psychiatric disabilities and suggests that their findings mirror the dearth of attention that vocational rehabilitation receives in mental health programs. To amend these issues, they recommend research efforts to identify what approaches and services work with specific kinds of clients. Clearly, there is a paucity of information about the vocational rehabilitation outcomes of individuals with psychiatric disabilities and the correlates to these outcomes. There is currently a need to examine
and evaluate the relationships between consumer readiness and vocational outcome to better serve individual mental health consumers.

The implications for this study are numerous. Program evaluations using various vocational rehabilitation models and general research on the vocational rehabilitation of individuals with SMI suggest that programming, employment history, illness history, and client demographic factors are essential to understanding and predicting employment outcomes. This study examines all of these variables in a condensed model, and partials out significant variables and clarifies the relationships between them. Thus, the impact of vocational programming is assessed in relation to the importance of individual demographics and services received in predicting employment outcomes.
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to examine the various types of vocational rehabilitation (VR) services provided through the federal-state vocational rehabilitation system to individuals with psychiatric disabilities and the relationship of these services to employment outcome. In addition, this study evaluates and describes the demographic variables that were involved in successful outcome such as gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits. With the cooperation and support of the Rehabilitation Services Administration, data were obtained from consumers who received services during federal fiscal year (FY) 2002. Due to the large sample size, and for the purposes of model validation, the sample was split approximately in half and compared. This step ensured representativeness, predictive accuracy, and generalizability.

Research questions related to vocational rehabilitation services were:

1. Can a model be developed identifying the variables and co-variates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?

2. Is this model stable?
Participants and Sample

The target population for this study is persons with psychiatric disabilities who have participated in rehabilitative services through the federal-state vocational rehabilitation system. The data for this study was obtained from the national Rehabilitation Services Administration (RSA-911) database for federal fiscal year 2002. The RSA-911 was compiled from data submitted by state agencies and included only cases that were closed during that federal fiscal year. Because this study sought to answer specific questions about services and outcome, participants were required to meet the inclusion criteria of: (a) being between 16 and 65 years of age; (b) having a psychiatric disability status; (c) eligible/referred for vocational rehabilitation; (d) receiving at least one rehabilitation service, and (e) closure as either “achieving employment outcome”, or “without achieving employment outcome”.

According to RSA, mental illness includes persons with psychotic disorders, neurotic disorders, and other affective disorders. In sum, psychiatric impairments are determined based on the DSM-IV (1994) and may include any thought disorder, delusional thought processes, hallucinations, depression, loss of concentration and memory, or anxiety. Permission to use data for this study was granted by the Rehabilitation Services Administration.

Justification for Variables Studied

In periodic reviews of the literature published over the past several decades, it appears that due to conflicting results of studies, researchers do not agree on what clinical and demographic variables are consistent predictors of vocational performance of individuals with severe mental illness (Anthony, 1979; Anthony, Cohen, & Danley, 1988;
Anthony, Cohen & Vitalo, 1978; Buell & Anthony, 1976; Anthony & Jansen, 1984; Tsang, Lam, Ng, & Leung, 2000). Tsang and colleagues (2000) suggest that the contradictory findings among such a wide array of studies may be due in part to significant methodological flaws. For example, Massel and colleagues (1990) reported that in a comprehensive review of studies, they found that psychiatric diagnosis and psychopathology were often unreliably recorded and vocational outcome was inconsistently determined. The following section identifies and justifies the use of the variables in this study.

**Sex, Race, and Age**

In two distinct studies, Cook and her colleagues identified gender, race, age, and employment history as related to vocational outcome (Cook & Razzano, 2000; Cook & Roussel, 1989; Cook & Trowbridge, 1993). Likewise, Rogers et al. (1997) found that race and living arrangement were the demographic characteristics most related to vocational outcome with marital status and months of prior employment accounting for a smaller percentage of the variance.

In recent years, numerous studies have examined the significance of race in relationship to vocational rehabilitation service delivery and subsequent outcomes (Corrigan et al., 1995; Rogers et al., 1997; Rogers et al., 1991; Wheaton et al., 1997; Wheaton, Wilson, & Brown, 1996; Wilson, 2000). Atkins and Wright (1980) completed one of the first studies examining the relationship between race and vocational rehabilitation outcome, by compiling data from ten regional RSA sites and comparing vocational rehabilitation services and the outcome of African Americans and European Americans. The researchers staunchly maintained that there were huge inequalities
between services provided for African Americans and European Americans. However, in a similar study, which controlled for many conflicting variables, Bolton and Cooper (1980) found that race was not a significant contributor to outcome, and challenged the conclusion by Atkins and Wright (1980) that African Americans were not treated equally by the vocational rehabilitation system.

In a 1997 study, Wheaton et al. used state-level RSA-911 data to examine whether the number and type of services differed based on a consumer’s sex, race or closure status. While the sex of the consumer did not influence service provision, the study demonstrated that race, closure status, and their interaction did have an effect. Likewise, in a recent review of federal RSA data, age, education level and significant disability were examined for differences in outcome for racial minorities and women (Capella, 2002). The authors found that employment outcomes favored European Americans over both African Americans and Native Americans and the quality of closures favored men over women, with age acting as an effect modifier.

Diagnosis and Significant Disability

The effect of severe mental illness on vocational performance has been the focus of extensive debate in recent years yielding opposing views amongst researchers. In their landmark 1984 review of the literature, Anthony and Jansen enumerated a multitude of studies which suggested that psychiatric symptomatology and diagnosis were poor predictors of future work performance. However, in a more recent literature review, psychiatric symptomatology and diagnosis were found to be significant predictors of employment outcome in 10 of 35 studies (Tsang et al., 2000). In studies in which diagnosis was looked at separately from the effects of symptomatology, the results were
mixed. Specifically, three related studies examined the demographic and clinical correlates of diagnosis, work skills and vocational outcome and found that diagnostic category was not predictive of work outcome (Anthony et al., 1995; Rogers et al., 1991, 1997). Similarly, in a 1990 study, Massel and colleagues examined the relationship between psychiatric symptomatology and the capacity to work in 143 clients and found no significant difference in the ability to work between non-psychotic and psychotic consumers. Conversely, two recent studies of vocational rehabilitation with individuals with SMI suggested that a diagnosis of schizophrenia or other psychosis was related to poorer vocational outcomes (Fabian, 1992; Jacobs et al., 1992). Jacobs and colleagues (1992) explored the relationship between psychiatric disabilities and vocational outcome of 89 clients enrolled in a job club program and found that individuals with non-psychotic diagnoses found employment more often.

Based on the abundance of contradictory results in the literature, it is still not clear whether psychiatric diagnosis is a significant and reliable predictor of vocational outcome for individuals with severe mental illness. Bell and Lysaker (1995) suggest that the ongoing disparity in research results has vast implications on management of clients and should continue to be addressed.

**Education**

Rogers et al. (1997) conducted an investigation into the demographic predictors of work skills using the demographic predictors of gender, educational level, race, marital status, living status, social security benefits, total months of employment, and baseline work skills. In this and previous studies, Rogers and associates concluded that overall work skills, living arrangements, race and marital status were all found to be significant
predictors of vocational outcome (Rogers et al., 1991). However, educational level has not been found to be significant in most studies (Corrigan et al., 1995; Rogers et al., 1997; Rogers et al., 1991).

**Services Provided**

There has been a dearth of research in the literature addressing the interaction between specific services provided through the federal-state rehabilitation program and employment outcome for individuals with psychiatric disabilities. A 1989 study prepared for the Rehabilitation Services Administration by the Policy Studies Association, addressed most effective VR programs in providing services to individuals with severe mental illness (Tashjian et al., 1989). The survey determined that over seventy-three percent of the interviewed counselors identified situational assessment, vocational evaluation, psychiatric evaluation, and personal interviews as the most useful sources of information on developing client services. Forty-one percent of sampled consumers had work adjustment training and fifty-seven percent were closed with employment. While eighty-nine percent of the consumers were independently employed in competitive employment, only five percent reported post-employment services.

Finch and Wheaton (1999) investigated the types of rehabilitation services provided through the federal-state vocational rehabilitation system to individuals with serious mental illness and the relationship of these services to subsequent employment outcomes. Using a cluster analysis, they identified five service patterns for individuals who were successfully employed: (a) counseling, (b) diagnostic services, (c) direct placement, (d) total job assistance, and (e) comprehensive services. A further chi-square
analysis demonstrated a moderate relationship between service provision and employment outcomes.

**Benefits**

Although competitive employment is a primary objective for approximately three fourths of individuals with SMI including more than two-thirds of those without employment (Rogers et al., 1991) for individuals receiving benefits through the SSA, the policy regarding the effect of earned income on benefits often is viewed as a barrier to employment for consumers who which to return to work but maintain their benefits (Pratt et al., 1999). Frequently, individuals with psychiatric disabilities fear that despite being successfully employed, psychiatric symptoms will impair their ability to sustain employment. Thus, the combined fear of losing benefits and subsequently being unable to maintain employment increases the risk of attempting employment and ultimately may become a disincentive (Berkowitz, 1981; Rutman, 1994).

In an early study of the Social Security Disability program, Leonard (1979) found that disability benefits fostered departure from employment despite the ability to work. Likewise, Nichols (1989) found evidence that resistance to seeking competitive employment was higher among individuals who were receiving disability benefits. Drew and colleagues (2001) found that study participants receiving disability benefits were significantly different from those who were not receiving benefits and concluded that disability compensation programs, especially those that carry disincentives for earned income, are associated with lower rates of participation and success in vocational rehabilitation.
Jacobs and associates (1992) were able to differentiate between specific benefits provided consumers finding that individuals receiving SSDI tended to have more positive outcomes than their counterparts receiving SSI, some of this difference may be attributable to prior work history. While there is a suggestion in the literature that there may be a relationship between Social Security benefits and participation in vocational rehabilitation and subsequent outcome, much of the support for the notion is anecdotal. This study reexamined the impact of benefits on participation and outcome for individuals involved in vocational rehabilitation.

The Outcome Variable: Case Outcome

The criterion or dependent variable for this study is the vocational rehabilitation outcome, a categorical variable with two levels. The variable was limited to only those cases that were eligible for services and for which an Individualized Plan for Employment (IPE) had been produced. The existence of an IPE indicates that (a) an appropriate vocational goal has been established, (b) an approach to achieving that goal has been established, and (c) the consumer has participated in the development of the plan. Within this definition, case outcome is a nominal, dichotomous categorical variable.

Individuals who have developed a vocational plan, received one or more services, and have maintained employment for 60 days or more, are considered “rehabilitated”. These individuals have their cases closed after they have achieved a (successful) employment outcome. In turn, individuals for whom a vocational plan was developed and subsequently received services but did not maintain employment or complete their plan objectives are considered “not rehabilitated”. Therefore, these individuals were closed as “unsuccessful” or without an employment outcome.
Predictor Variables

The predictors, or independent variables, are the demographic variables, and the specific services received.

Demographic Variables

The demographic variables were a combination of categorical and continuous variables and consisted of gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits.

Gender

As a dichotomous nominal variable, gender was coded 1 for males and 2 for females.

Race/Ethnicity

The RSA-911 uses the term race to refer to the geographic area from which an individual or individual’s family originated. Race/Ethnicity was a nominal variable with six levels. Specifically, these definitions of the categories were represented as:

1. White/European American: “A person having origins in any of the original peoples of Europe, North Africa, or the Middle East;”

2. Black/African American: “A person having origins in any of the black racial groups of Africa”;

3. American Indian or Alaskan Native: “A person having origins in any of the original peoples of North America, and who maintains cultural identification through affiliation or community recognition;”
4. Asian: "A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa;”

5. Native Hawaiian or other Pacific Islander

6. Hispanic or Latino Origin: “A person is considered to be Hispanic if he or she is of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin.” (Rehabilitation Services Administration, 1998, p. 5; Rehabilitation Services Administration, 2000)

**Age**

Age is a continuous variable measured in years.

**Primary Disabling Condition**

The Rehabilitation Services Administration codes severe mental illness into three categories on the RSA-911, thus yielding a nominal variable. They are first defined as mental impairments and then by source of impairment according to DSM-IV guidelines as follows:

1. Cognitive Impairments: Impairments involving learning, thinking, processing information and concentration.

2. Psychosocial Impairments: Interpersonal and behavioral impairments, difficulty coping.

3. Other Mental Impairments

   **Source of Impairment.**

For the purposes of this study, the sources of impairments were restricted to Anxiety Disorders, Attention-Deficit Hyperactivity Disorder (ADHD), Depressive and
other Mood Disorders, Mental Illness (not listed elsewhere), Personality Disorders, and Schizophrenia and other Psychotic Disorders.

**Significant Disability**

As delineated by the RSA (1998), an individual has a severe, or significant disability if he or she has a physical or mental disability, or combination thereof, that (a) seriously limits one or more functional capacities (e.g., mobility, self-care, work skills) related to employment, (b) is expected to require multiple rehabilitation services, and (c) causes substantial functional limitations (RSA, 2000). This variable is a dichotomous, nominal variable.

**Years of Education**

An ordered variable denoting the highest grade completed or total years of education.

**Disability Benefits**

Disability benefits can be wide in scope, including cash payments made by Federal, State and local governments for a variety of reasons such as the individual's disability, age, poverty status, retirement and survivor status. For the purposes of this study, public support was a nominal variable with the following levels, Supplemental Security Income (SSI)-Disabled, Social Security Disability Insurance (SSDI), Temporary Assistance for Needy Families (TANF), General Assistance, Veterans’ Disability Benefits, Workers’ Compensation, and other disability benefits.

**Services received**

The types of vocational services are represented as a categorical variable with 23 levels, identified below. Each of these services was dichotomously coded as either
received or not received. As delineated by the RSA Reporting Manual (RSA, 1998, 2000) these services are as follows:

**Assessment.** Assessment attempts to determine the applicant's eligibility for vocational rehabilitation services, and/or to determine the nature and scope of services to be provided. Typically, it involves diagnosis and evaluation and can be medical, psychological, social or vocational in scope.

**Diagnosis and Treatment of Impairments.** Consists of any type of therapeutic or diagnostic treatment including mental health services and treatment by state licensed personnel.

**Vocational Rehabilitation Counseling and Guidance.** Entails therapeutic counseling and guidance services that are necessary for an individual to achieve an employment outcome. These may include personal adjustment counseling, counseling which addresses medical, family, or social issues, vocational counseling and any other form of counseling and guidance that is necessary for an individual with a disability to achieve an employment outcome. This service is distinct from the general counseling and guidance relationship that exists between the counselor and the individual during the rehabilitation process.

**College/University Training.** Consists of any academic training beyond secondary schooling, including individuals attending full- or part-time or evening courses conducted by a university, college, junior college, or a college-level extension school.

**Occupation and Vocational Training.** This encompasses non-collegiate post-secondary education, including training in (a) a business/commercial school or college and (b) a vocational/trade school not leading to an academic degree or certification.
On-the-Job Training. Training in a specific job by a prospective employer in which the individual works for wages while learning the skills of a job, typically if the training is successful, the person will remain on the same or a similar job. Also may include apprenticeship training programs sponsored by an employer or group of employers.

Basic Academic Remedial or Literacy Training. Training provided to remediate basic academic skills that are needed to function in the competitive labor market.

Job Readiness Training. Training to prepare an individual for the work environment. Addresses appropriate work behaviors, getting to work on time, appropriate dress and grooming, and skills directed toward improving organization and increasing productivity.

Disability Related Augmentative Skills Training. This specialized training may include rehabilitation teaching and cognitive training.

Miscellaneous Training. This category encompasses types of training that do not fit into the other groupings.

Job Search Assistance. Information provided to the consumer that would include instruction in how to find sources of employment opportunities, prepare job resumes, write cover letters, and prepare for job interviews. A job-finding service is also provided when the State agency directly refers or arranges for the direct referral of the individual to a prospective employer.

Job Placement Assistance. Involves a referral to a specific job resulting in an interview, whether or not the individual obtained the job.
**On-the-job Supports.** Support services provided to an individual who has been placed in employment to stabilize and enhance job retention. These services may include job coaching, follow-up and follow along.

**Transportation Services.** Any service provided or arranged for by the State agency to enable the individual to arrive at appointments for any rehabilitation service, as well as to permit the individual to get to work.

**Maintenance.** Includes all services provided to cover the additional costs incurred by the individual while he or she is undergoing rehabilitation services.

**Rehabilitation Technology.** The systematic application of technologies, engineering methodologies, or scientific principles necessary to address the barriers confronted by individuals with disabilities in areas that include education, rehabilitation, employment, transportation, independent living, and recreation. Specifically these may include Assistive Technology Devices, Assistive Technology Services, or Personal Assistance Services.

**Reader Services.** Reader services are generally for individuals who are blind or deaf-blind, but may also include individuals unable to read because of serious neurological disorders, specific learning disabilities, or other physical or mental impairments.

**Interpreter Services.** Interpreter services are sign language or oral interpretation services for individuals who are deaf or hard of hearing and tactile interpretation services for individuals who are deaf-blind. Language interpretation is not included in this category, but in "other services".
**Personal Attendant Services.** Include personal services that an attendant performs for an individual with a disability such as bathing, feeding, dressing, providing mobility and transportation, etc.

**Technical Assistance Services.** Technical assistance includes consultation services to conduct market analyses, the development of business plans, and to provide resources to individuals in the pursuit of self-employment, small business and telecommunication outcomes.

**Information and Referral Services.** Information and referral services are provided to individuals who need services from other agencies (through cooperative agreements) not available through the VR program.

**Other Services.** This category allows classification of rehabilitation services that cannot be recorded elsewhere.

**Data Collection Procedure**

The study used archival data collected by the RSA for federal fiscal year 2002 (RSA, 2002; data covers October 1 through September 30 of the following year for which it is named). The data was recorded by VR staff, compiled by the statewide VR agencies, and sent to RSA for compilation of the national database, the RSA-911. Specifically, three types of information are necessary to conduct this study: (a) demographic information on all subjects, such as gender, race/ethnicity, age, diagnosis, significant disability, years of education, and disability benefits; (b) vocational rehabilitation services provided; and (c) final closure and employment status.
Analysis of Data

Each objective and research hypothesis was analyzed using the Statistical Package of the Social Sciences (SPSS; SPSS 12.0 for Windows, 2003). Specifically, SPSS has the ability to calculate and process both descriptive and inferential statistics (Norusis, 2000). Logistic regression, correlational analysis, and basic parametric descriptive statistics including frequencies, percentages, standard deviations, variances, and means were generated on all variables and used to summarize the data. A detailed description for the statistical procedures that were used to accomplish each objective and test each of the research hypotheses discussed below.

Research Question 1: Can a model be developed identifying the variables and covariates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?

Research Question 2: Is this model stable?

The methodology used to answer these research questions used the following three-step procedure:

Step 1—Correlational and Chi-Square Analyses

Correlation represents a bivariate measure of association of the relationship between two variables. There are several assumptions regarding correlation. There must be linear relationships, homoscedasticity is assumed, equal variances must be present, minimal measurement error, unrestricted variance, bivariate normality, and normally distributed error terms (Cohen & Cohen, 1983).

The Pearson product-moment correlation or Pearson $r$ is used to examine the association between two continuous variables. As the standardized regression coefficient,
or beta between two variables, the Pearson $r$ measures the extent to which one variable covaries with another (Cohen & Cohen, 1983; Vogt, 1999). Within Pearsonian correlation, there are a multitude of methods for dealing with dichotomous and multichotomous variables, including point-biserial correlation, phi, and Cramer’s $V$.

For the purposes of this analysis, the relationship between the criterion variable (employment outcome) and the predictor variables (demographic variables and services received) helped identify high intercorrelations and assisted in determining which variables were entered into the logistic regression model. Correlational analyses and chi-square analyses were used to assess the bivariate relationship between the dependent variables (program closure status) and each of the predictor variables. Specifically, this intercorrelation between the variables was evaluated by computing the appropriate correlation coefficient. For example, the point-biserial was used to evaluate continuous variables such as age and education that were being compared to the dichotomous outcome variable. A non-parametric, chi-square analysis was used to compare dichotomous variables such as gender, and significant disability to outcome as well as multichotomous variables such as race, diagnosis, and benefits to the outcome variable. Specifically, the phi coefficient was used to gauge the association or strength of relationship between coefficients. Phi is a symmetric, chi-square based measure of association used when two variables are categorical and one or both are dichotomous. While the size of the chi-square coefficient depends on both the strength of the relationship and sample size, phi divides chi-square by the sample size, and takes the square root of the result, thus eliminating the effect of the sample size (Garson, 2004). To measure association between nominal variables, both the phi coefficient and Cramer’s $V$
may be used to adjust chi-square significance by factoring out sample size; however, the phi is the preferred measure when tables have less than four cells.

**Step 2-Logistic Regression Analysis**

A wide array of statistical techniques have emerged for analyzing data with categorical dependent variables, including discriminant analysis, log-linear regression, probit analysis, and logistic regression (Trochim, 1999). The choice of the model depends on the characteristics of explanatory variables. When the response variable is categorical data and the explanatory variables are categorical and/or continuous data, typically either the logistic regression model or discriminant analysis is used (Hair, Anderson, Tatham, & Black, 1998; Hosmer & Lemeshow, 1989; Menard, 1995). However, while both statistical procedures can be used to predict group membership, discriminant analysis requires assumptions about the data that are more restrictive than logistic regression (Grimm & Yarnold, 1995; Hair et al, 1998). For example, discriminate analysis requires that predictors have multivariate normality for each category of the grouping variable and that each category have the same variance and covariances for the predictors. As a result, it is suggested that discriminant analysis not be used with categorical predictors.

Logistical regression is a multivariate statistical technique used to predict a dichotomous dependent variable from a set of independent variables. In other words, logistic regression estimates the probability of a certain event occurring (Menard, 1995) and to identify the variables that are useful in making the prediction. Because the dependent measure is dichotomous, ranging from 0 to 1, it’s slope, relative to the independent measures, is non-linear (Hair et al., 1998). Logistic regression analysis adjusts for the binary nature of the dependent variable and its non-linear relationship with
the independent values (Aldrich & Nelson, 1986). As such, logistic regression does not assume a linearity of relationship between the independent variables and the dependent variable, it does not necessitate normally distributed variables, nor does it assume homoscedasticity, and overall has fewer strict assumptions (Menard, 1995).

Although statistical significance is the typical route with hypothesis testing, due to the large sample size, almost any statistical test would yield “significant results.” Menard, (2001) warns that for large logit coefficients, standard error is inflated, lowering the Wald statistic and leading to Type II errors. Namely, there is a flaw in the Wald statistic, which causes very large effects to yield large standard errors and small Wald chi-square values. For models with large logit coefficients or when dummy variables are involved, it is better to test the difference in model chi-squares for the model with the independent and the model without that independent, or to consult the Log-Likelihood test. As such, in this study, only the Bs, their standard errors, and the odds ratios (Exp(B) in the SPSS output) were used as a measure of effect size since these measures focus on the size of the effect in the data and are not sample size dependent. If $B_k$ is positive, the value of $Exp(B)$ will be greater than 1, indicating that a one-unit increase in the independent variable means the odds are increased that the event will occur. In turn, if the $B_k$ is negative, the odds are decreased that the event will occur and if the $B_k$ zero, the value of $Exp(B)$ is 1, indicating that the odds are unchanged for a one-unit increase in the dependent variable (Hair et al., 1998).

For the purposes of this analysis, logistic regression (LR) was used to identify the best fitting model. Specifically, it was employed to measure the relationships between the following: (a) services (a categorical variable with 23 levels), (b) demographic factors (a
combination of categorical and continuous variables) and (c) rehabilitation outcomes (a categorical variable with 2 levels).

Logistic Regression Model Building

The objective of any statistical method is to select the variables that most appropriately fit the research questions and ultimately result in the best model within the framework of the problem. To achieve this, Hosmer and Lemeshow (1989) suggest that the researcher “must have: (1) a basic plan for selecting the variables for the model and (2) a set of methods for assessing the adequacy of the model both in terms of its individual variables and its overall fit” (p. 91). By following this basic paradigm, Hosmer and Lemeshow suggest that the researcher will become capable of generating the best possible model within the constraints of the available data.

Within the logistic regression model, there are several steps involved in the selection of variables, with the process of model building resembling that used in linear regression. The selection process should begin with a univariable analysis of each variable. Hosmer and Lemeshow (1989) suggest that for nominal, ordinal, and continuous variables with few integer values, a contingency table of outcome (y=0,1) be used versus the k levels of the independent variable. Further, for continuous variables, Hosmer and Lemeshow (1989) recommend, “fitting a univariable logistic regression model to obtain the estimated coefficient, the estimated standard error, the likelihood ratio test for the significance of the coefficient, and the univariable Wald statistic” (p. 93).

The second step of variable selection and model building is to select variables for the multivariable analysis. Based on the results of the univariable analyses, any variable
with a $p$-value <.25 is a candidate for the multivariate model along with additional variables of clinical significance (Hosmer & Lemeshow, 2000). How variables are entered into the logistic regression model can affect outcome. Using different methods, including the enter method, forward or backward stepwise, or hierarchical, a variety of regression models can be constructed from the same set of variables. Stepwise variable selection is the most commonly used method for model building in both linear and logistic regression (Norusis, 2000). The stepwise method selects variables for inclusion or exclusion based solely on statistical criteria. This method runs the risk of creating noise in the data and is considered useful only for exploratory purposes. However, if the researcher is testing the hypothesis that independent variables taken together predict the dependent variable, the Enter method is the preferred approach. Specifically, the Enter method is a procedure for variable selection in which all variables in a block are entered in a single step, as such; all variables are treated equally by the regression equation. For the purposes of this study, the enter method was used.

The third step, after the multivariable model is fit, is to verify the importance of each variable within the model. Typically, this process includes both an examination of the Wald statistic for each variable and a comparison of individual estimated coefficients with the coefficient from the model containing only that variable (Hosmer & Lemeshow, 2000). Based on the large sample size involved in this study, the Wald statistic was not an important measure for the inclusion or exclusion of variables. These initial steps in model building are vital to identifying variables which may not individually impact outcome but can become a significant predictor in the presence of other variables. As such, Hosmer and Lemeshow (1989) repeatedly stress the importance of critically
reviewing all variables included in a model based on statistical methods, experience, and clinical knowledge.

**Step 3- Confirmatory Analysis**

To ensure that the regression model had both generalizability and transferability to the population and situations for which it was intended, model validation was accomplished by splitting the sample approximately in half, resulting in a top and bottom sample. The purpose of this was twofold, it allowed for the testing of the regression model on a different sample drawn from the population and demonstrated model stability. A separate sample ensures representativeness and can be used in numerous ways (Hair et al., 1998). To begin, the original model can predict values in the new sample and a predictive fit can be calculated. Second, a separate model can be estimated with the new sample and then compared with the original equation on characteristics such as the significant variables included; relative importance of the individual variables; and predictive accuracy. Ultimately, the validity of the original model can be determined by comparing it to regression models estimated with the second sample (Hair et al., 1998). This step is an important part of the confirmatory analysis because a logistic coefficient may be found to be significant when the corresponding correlation is found to be not significant, and vice versa. To make global statements about the significance of an independent variable, both the correlation and the logit should be significant. According to Garson (2004), there are several reasons why correlations and logistic coefficients may differ in significance. To begin, logistic coefficients are partial coefficients, controlling for other variables in the model, whereas correlation coefficients are uncontrolled. Next, logistic coefficients reflect linear and nonlinear relationships, whereas correlation reflects
only linear relationships. Finally, a significant logit means there is a relation of the independent variable to the dependent variable for selected control groups, but not necessarily overall (Garson, 2004).

Basic Assumptions

Based on validity studies conducted by the Rehabilitation Services Administration (1995), this study assumed that the instrument used for data collection was valid and reliable. The RSA-911 is based on federal guidelines determined by the Rehabilitation Services Administration (RSA) and is uniformly used in all states. Although the RSA has implemented a system to verify coding of data, there may be an unknown level of miscoding that occasionally exists with collection and analysis of archival data. According to the RSA (1995), 18 comparison checks are utilized at time of data entry to ensure consistency, coherence and efficacy of RSA-911 data components, and the subsequent validity of measurements derived from such data (Rehabilitation Services Administration, 1995).

Likewise, the study assumed that RSC counselors accurately completed the data sheets and subsequent collection of data by RSC was valid and reliable. It also assumed that the individuals who met the criteria for psychiatric disability status by the Rehabilitation Services Administration standards were eligible. The study made no assumptions of causality and attempted only to describe relationships between variables.
CHAPTER 4

RESULTS

Introduction

This chapter presents the results from the analysis of the data. The purpose of this study was to examine the various types of vocational rehabilitation (VR) services provided through the federal-state vocational rehabilitation system to individuals with psychiatric disabilities and the relationship of these services to employment outcome. In addition, this study evaluates and describes the demographic variables that are involved in successful outcome such as gender, race/ethnicity, age, diagnosis, severity of disability, years of education, and disability benefits. With the cooperation and support of the Rehabilitation Services Administration, data were obtained from consumers who received services during federal fiscal year (FY) 2002. Due to the large sample size, and for the purposes of model validation, the sample was split approximately in half and compared. This step ensured representativeness, predictive accuracy, and generalizability.

Research questions related to vocational rehabilitation services were:

1. Can a model be developed identifying the variables and co-variates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?
2. Is this model stable?

Review of Methodology

To begin, descriptive statistics and frequencies were run for an overview of the population. Correlational analysis was used to assess the bivariate relationship between the dependent variables (program closure status) and each of the predictor variables. For the purposes of this analysis, the relationship between the criterion variable (employment outcome) and the predictor variables (demographic variables and services received) helped identify high intercorrelations and assisted in determining which variables were entered into the logistic regression model. Specifically, this intercorrelation between the variables was evaluated by computing the appropriate correlation coefficient. For example, the point-biserial was used to evaluate continuous variables such as age and education that were being compared to the dichotomous outcome variable. Cross-tabulations were run between closure and the remaining research variables, including gender, race, disability benefits services, significant disability, and diagnosis and the phi coefficient was evaluated for measures of association. The dataset was then split approximately in half: 40,000 cases were categorized as the “top” half and 39,967 cases were categorized in “bottom” half.

Finally, a logistic regression was run on both the top and bottom half of data and then compared. The variables were entered into the logistic regression model using the Enter method. Within the logistic regression model, there are several steps involved in the selection of variables, with the process of model building resembling that used in linear regression. Based on the results of the univariable analyses for this study, any variable with a phi coefficient above .02 (cut value = phi ≥ .02) was a candidate for the
multivariate model along with additional variables of clinical significance. The second step of variable selection and model building is to select variables for the multivariable analysis. These initial steps in model building are vital to identifying variables that may not individually influence outcome but can become significant predictors in the presence of other variables. The third step, after the multivariable model is fit, is to verify the importance of each variable within the model. Typically, this process includes both an examination of the Wald statistic for each variable and a comparison of individual estimated coefficients with the coefficient form the model containing only that variable (Hosmer & Lemeshow, 2000). Based on the large sample size involved in this study, the Wald statistic was not an important measure for the inclusion or exclusion of variables. Instead, the model chi-square statistic, or log-likelihood test, was used to test the null hypothesis that the coefficients of all of the independent variables in the regression equation (except the constant) are zero. Next, the $B$ (predictor coefficient) was examined to measure the relative direction (negatively or positively) of having a closure with employment or without employment. For example, a positive value of $B$ indicated that as the value of the independent variable changed, so did the likelihood of achieving a closure with employment. Likewise, a negative value of $B$ indicated that as the value of the independent variable increased, there was a decrease in the likelihood of achieving a closure with employment (Wright, 1995).

Additionally, The odds ratio ($Exp(B)$) is simply the ratio of one odds to another. In essence, it estimates the increase of odds of membership to a group for a one-unit increase in the predictor variable while controlling for all other predictors. In sum, “the odds are 1 when both outcomes are equally likely, greater than 1 when the target event is
more likely than the other event, and less than one when the target event is less likely than the other event” (Wright, 1995, p. 223).

In the logistic regression output for dichotomous dependents, classification tables are the 2 x 2 tables, which compute correct and incorrect estimates and are considered a measure of effect size. The columns are the two predicted values of the dependent, while the rows are the two observed (actual) values of the dependent. In this study, the top group for the best fitting model was 66.6% and the bottom was 65.1% suggesting a strong relationship between the split samples.

Presentation of Results

The results will be presented in four sections. The first section contains overall descriptive statistics of pertinent demographic variables, including race, age, gender, education, diagnosis, benefits, services, and closure status. In the second section, correlations and chi-square statistics for the top and bottom half of the sample will be described. In the third section, the results of the logistic regressions, for both the top and bottom half will be presented. After the initial model was evaluated for goodness of fit, individual variables were modified based on their contribution to the overall model. The best-fit model was duly identified and interpreted. In the fourth section, a comparison of the logistic regressions and overall significance of variables will be presented.

Section 1 of the Findings

Overall Descriptives

Prior to an examination of the data related to answering the research questions, pertinent demographic factors related to the population under study were reviewed. Seventy-nine thousand, nine hundred and sixty-seven men ($n = 38,565, 48.2\%$) and

95
women (n = 41,402, 51.8%) participated in this study. In terms of significant disability, 74,967 (93.8%) were considered to have a significant physical or mental impairment that seriously limited one or more functional capacities in terms of an employment outcome and 4,980 (6.2%) were not. About half of the sample (n = 39,405, 49.3%) had cases closed without achieving an employment outcome, and 40,562 (50.7%) were closed with a successful employment outcome.

Race. Demographic information relevant to race is listed in Table 1. In the original data, Race/Ethnicity was a nominal variable with six levels including: White/European American, Black/African, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, and Hispanic or Latino Origin. The RSA-911 format permits individuals to choose more than one racial/ethnic group, thus allowing individuals to appear in multiple race categories. The selection of more than one race category occurred most often with individuals selecting both Hispanic and Black/African American or White/European American. To control for this, all individuals that were in more than one racial/ethnic group were categorized in a new variable called “multiple race/ethnicity”. Thus, the categories of Black/African American represented individuals who had identified themselves in that group only, and likewise for White/European American and Hispanic.

Table 1 presents the frequency and percent of the participants’ race. The results are as follows: White/European American (n = 55,710, 69.7%), Black/African (n = 15,839, 19.8%), American Indian or Alaskan Native (n = 768, 1.0%), Asian (n = 776, 1.0%), Native Hawaiian or other Pacific Islander (n = 172, .2%), Hispanic or Latino Origin (n = 6,066, 7.6%) and Multiple race/ethnicity (n = 315, .4%).
<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White - Non-Hispanic</td>
<td>55710</td>
<td>69.7</td>
</tr>
<tr>
<td>Black - Non-Hispanic</td>
<td>15839</td>
<td>19.8</td>
</tr>
<tr>
<td>American Indian</td>
<td>768</td>
<td>1.0</td>
</tr>
<tr>
<td>Asian</td>
<td>776</td>
<td>1.0</td>
</tr>
<tr>
<td>Hawaiian or Pacific Islander</td>
<td>172</td>
<td>0.2</td>
</tr>
<tr>
<td>Hispanic - Non-white/non-Black</td>
<td>6066</td>
<td>7.6</td>
</tr>
<tr>
<td>Multiple race/ethnicity</td>
<td>315</td>
<td>0.4</td>
</tr>
<tr>
<td>Missing</td>
<td>321</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>79967</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Frequency and Percent of Participants’ Race When Controlling For Mixed Race (n=79,967)
Educational Level at Closure. Table 2 shows the educational attainment at closure, where over one-third \((n = 32,315, 40.4\%)\) attained a high school diploma and approximately 17 percent \((n = 14,040, 17.6\%)\) achieved some form of post-secondary education, no degree. This was followed closely in percentage by secondary education, with no high school diploma, which represented over a tenth \((n = 10,949, 13.7\%)\) of the overall sample.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal schooling</td>
<td>264</td>
<td>0.3</td>
</tr>
<tr>
<td>Elementary education (grades 1-8)</td>
<td>2667</td>
<td>3.3</td>
</tr>
<tr>
<td>Secondary education, no high school diploma (grades 9-12)</td>
<td>10949</td>
<td>13.7</td>
</tr>
<tr>
<td>Special education certificate of completion/attendance</td>
<td>2806</td>
<td>3.5</td>
</tr>
<tr>
<td>High school grad or GED (regular education)</td>
<td>32315</td>
<td>40.4</td>
</tr>
<tr>
<td>Post-secondary education, no degree</td>
<td>14040</td>
<td>17.6</td>
</tr>
<tr>
<td>Associate degree or Vocational/Technical Certificate</td>
<td>6762</td>
<td>8.5</td>
</tr>
<tr>
<td>Bachelor' degree</td>
<td>6511</td>
<td>8.1</td>
</tr>
<tr>
<td>Master's degree or higher</td>
<td>1546</td>
<td>1.9</td>
</tr>
<tr>
<td>Missing</td>
<td>2107</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Table 2: Frequency and Percent of Education Level at Closure
Primary Disability. Demographic information relevant to the participants’ primary disability (diagnosis of serious mental illness) is listed in Table 3. The Rehabilitation Services Administration codes severe mental illness into three categories. They are first defined as mental impairments and then by source of impairment according to DSM-IV guidelines as follows: cognitive impairments, psychosocial impairments, and other mental impairments. For the purpose of this study, the sources of impairments were restricted to anxiety disorders, attention-deficit hyperactivity disorder (ADHD), depressive and other mood disorders, mental illness (not listed elsewhere), personality disorders, and schizophrenia and other psychotic disorders.

Table 3 presents the percentage distribution of individuals with serious mental illness who received services. The results are as follows: anxiety disorders (n = 6,715, 8%), attention-deficit hyperactivity disorder (ADHD) (n = 2,804, 3.5%), depressive and other mood disorders (n = 24,149, 30.2%), mental illness (not listed elsewhere) (n = 11,279, 14.1%), personality disorders (n = 9,653, 12.1%), and schizophrenia and other psychotic disorders (n = 25,367, 31.7%).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Disorders</td>
<td>6,715</td>
<td>8.4</td>
</tr>
<tr>
<td>Attention-Deficit Hyperactivity Disorder (ADHD)</td>
<td>2,804</td>
<td>3.5</td>
</tr>
<tr>
<td>Depressive and other Mood Disorders</td>
<td>24,149</td>
<td>30.2</td>
</tr>
<tr>
<td>Mental Illness (not listed elsewhere)</td>
<td>11,279</td>
<td>14.1</td>
</tr>
<tr>
<td>Personality Disorders</td>
<td>9,653</td>
<td>12.1</td>
</tr>
<tr>
<td>Schizophrenia and other Psychotic Disorders</td>
<td>25,367</td>
<td>31.7</td>
</tr>
</tbody>
</table>

Table 3: Frequency and Percent of Primary Disability
Type of public support. Table 4 shows the frequency and percent of public support type, or government benefits, at application. The most frequent types of support were SSI (n = 15,744, 19.7%) and SSDI (n = 13,504, 16.9%). However, even with all benefits combined, only slightly more than half of the population received public support (43,786, 54.8%).
<table>
<thead>
<tr>
<th>Type of support</th>
<th>Number receiving</th>
<th>Percent receiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSI</td>
<td>15,744</td>
<td>19.7</td>
</tr>
<tr>
<td>TANF</td>
<td>3,141</td>
<td>3.9</td>
</tr>
<tr>
<td>General Assistance</td>
<td>3,372</td>
<td>4.2</td>
</tr>
<tr>
<td>SSDI</td>
<td>13,504</td>
<td>16.9</td>
</tr>
<tr>
<td>Veteran’s Disability</td>
<td>401</td>
<td>0.5</td>
</tr>
<tr>
<td>Workers’ Compensation</td>
<td>395</td>
<td>0.5</td>
</tr>
<tr>
<td>Other Public Support</td>
<td>5,481</td>
<td>6.9</td>
</tr>
<tr>
<td>Missing</td>
<td>1,748</td>
<td>2.2</td>
</tr>
<tr>
<td>Total Receiving Benefits</td>
<td>43,786</td>
<td>54.8</td>
</tr>
</tbody>
</table>

Table 4: Frequency and Percent of Public Support Type
Services Provided. Table 5 presents the distribution of services provided. The percentages do not sum to 100% because an individual may have received more than one service during his or her vocational rehabilitation tenure. The most common services were assessment (65.7%) and vocational rehabilitation (58.4%). These services were followed by diagnosis and treatment (38.2%), job placement training (31.5%), and job search assistance (30.7%). Further findings are summarized in Table 5.
<table>
<thead>
<tr>
<th>Services Provided</th>
<th>Number receiving</th>
<th>Percent receiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>52,543</td>
<td>65.7</td>
</tr>
<tr>
<td>Diagnosis and treatment</td>
<td>30,510</td>
<td>38.2</td>
</tr>
<tr>
<td>Vocational Rehabilitation</td>
<td>46,737</td>
<td>58.4</td>
</tr>
<tr>
<td>College training</td>
<td>12,090</td>
<td>15.1</td>
</tr>
<tr>
<td>Occupational/Vocational training</td>
<td>14,445</td>
<td>18.1</td>
</tr>
<tr>
<td>On-the-job training</td>
<td>3,351</td>
<td>4.2</td>
</tr>
<tr>
<td>Remedial/Literacy training</td>
<td>1,576</td>
<td>2.0</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>9,563</td>
<td>12.0</td>
</tr>
<tr>
<td>Disability-related training</td>
<td>1,651</td>
<td>2.1</td>
</tr>
<tr>
<td>Miscellaneous training</td>
<td>10,375</td>
<td>13.0</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>24,538</td>
<td>30.7</td>
</tr>
<tr>
<td>Job placement training</td>
<td>25,153</td>
<td>31.5</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>12,374</td>
<td>15.5</td>
</tr>
<tr>
<td>Transportation</td>
<td>23,944</td>
<td>29.9</td>
</tr>
<tr>
<td>Maintenance</td>
<td>11,774</td>
<td>14.7</td>
</tr>
<tr>
<td>Rehabilitation technology</td>
<td>1,224</td>
<td>1.5</td>
</tr>
<tr>
<td>Reader</td>
<td>45</td>
<td>0.1</td>
</tr>
<tr>
<td>Interpreter</td>
<td>120</td>
<td>0.2</td>
</tr>
<tr>
<td>Personal attendant</td>
<td>114</td>
<td>0.1</td>
</tr>
<tr>
<td>Technical assistance</td>
<td>1,969</td>
<td>2.5</td>
</tr>
<tr>
<td>Informational and referral</td>
<td>9,536</td>
<td>11.9</td>
</tr>
<tr>
<td>Other</td>
<td>19,598</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Table 5: Frequency and Percent of Services Provided
Section 2 of the Findings

Assessing Variables for Inclusion into the Regression: Correlations

Point-biserial correlations were conducted between closure type (with employment outcome vs. without employment outcome) with age and education at closure. Table 6 shows that closure was statistically correlated with education, but not with age.
<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.00</td>
</tr>
<tr>
<td>Education</td>
<td>.16**</td>
</tr>
</tbody>
</table>

*Note.* **p < .01.

Table 6: Point-Biserial Correlations between Closure with Age and Education
Assessing Variables for Inclusion into the Regression: Phi Coefficient

To measure association and assess which nominal variables should be entered into the logistic regression, phi coefficient crosstabs were conducted between closure and the independent variables. Specifically, closure status was crosstabulated with gender, race (white, black, American Indian, Asian, Hawaiian, Hispanic), public support (SSI, TANF, GAA, SSDI, Veteran’s disability, workers’ compensation, other public support), services provided (assessment, diagnosis and treatment, college training, occupational/vocational training, on-the-job-training, basic academic remedial training, job readiness training, disability related training, miscellaneous training, job search assistance, job placement assistance, on-the-job-supports, transportation, maintenance, rehabilitation technology, reader, interpreter, personal attendant, technical assistance, informational and referral, other), and significant disability.

To avoid missing an important variable, any variable that was significantly related to closure in either the top or bottom groups at phi ≥ .02 was entered into both logistic regressions; these variables are italicized in Table 7. Based on the univariate analyses and clinical judgment, the race variable, which showed significance only with White/European American and Black/African American groups, the two groups representing the majority of the population, were recoded with Blacks serving as the “reference” group and Whites as the “identified” group. This new variable was named “race”. Specifically, variables that were entered into the logistic regression equation based on the chi-square analyses were gender, race, SSI, TANF, GAA, SSDI, diagnosis and treatment, counseling and guidance, occupational/vocational training, on-the-job training, job readiness training, miscellaneous training, job search assistance, job
placement assistance, on-the-job supports, maintenance, technical assistance, informational and referral, other services provided, significant disability, ADHD, depressive/mood disorders, and schizophrenia and other psychotic disorders.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Phi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.017</td>
</tr>
<tr>
<td>White</td>
<td>.025</td>
</tr>
<tr>
<td>Black</td>
<td>-.027</td>
</tr>
<tr>
<td>American Indian</td>
<td>-.009</td>
</tr>
<tr>
<td>Asian</td>
<td>.000</td>
</tr>
<tr>
<td>Hawaiian</td>
<td>.001</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.004</td>
</tr>
<tr>
<td>SSI</td>
<td>-.119</td>
</tr>
<tr>
<td>TANF</td>
<td>-.021</td>
</tr>
<tr>
<td>GAA</td>
<td>-.033</td>
</tr>
<tr>
<td>SSDI</td>
<td>-.046</td>
</tr>
<tr>
<td>Veteran’s disability</td>
<td>-.011</td>
</tr>
<tr>
<td>Workers’ compensation</td>
<td>.008</td>
</tr>
<tr>
<td>Other public support</td>
<td>-.006</td>
</tr>
<tr>
<td>Assessment</td>
<td>.012</td>
</tr>
<tr>
<td>Diagnosis and treatment</td>
<td>.055</td>
</tr>
<tr>
<td>Counseling and Guidance</td>
<td>.071</td>
</tr>
<tr>
<td>College training</td>
<td>.006</td>
</tr>
<tr>
<td>Occupational/vocational training</td>
<td>.057</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>.068</td>
</tr>
<tr>
<td>Basic academic remedial training</td>
<td>.004</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>.042</td>
</tr>
<tr>
<td>Disability related augmentative training</td>
<td>-.006</td>
</tr>
<tr>
<td>Miscellaneous training</td>
<td>.020</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>.161</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>.205</td>
</tr>
</tbody>
</table>

Continued

Table 7: Phi Coefficient Analyses between Closure and Research Variables (cut value of phi > .02)
Table 7 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-the-job-supports</td>
<td>.122</td>
</tr>
<tr>
<td>Transportation</td>
<td>.015</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.069</td>
</tr>
<tr>
<td>Rehabilitation maintenance</td>
<td>.020</td>
</tr>
<tr>
<td>Reader</td>
<td>.007</td>
</tr>
<tr>
<td>Interpreter</td>
<td>-.001</td>
</tr>
<tr>
<td>Personal attendant</td>
<td>.005</td>
</tr>
<tr>
<td>Technical assistance</td>
<td>.048</td>
</tr>
<tr>
<td>Informational and referral</td>
<td>.074</td>
</tr>
<tr>
<td>Other services</td>
<td>.061</td>
</tr>
<tr>
<td>Significant disability</td>
<td>-.040</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>.007</td>
</tr>
<tr>
<td>ADHD</td>
<td>.049</td>
</tr>
<tr>
<td>Depressive and other mood disorders</td>
<td>.034</td>
</tr>
<tr>
<td>Mental illness (not listed elsewhere)</td>
<td>-.017</td>
</tr>
<tr>
<td>Personality disorders</td>
<td>.010</td>
</tr>
<tr>
<td>Schizophrenia and other psychotic disorders</td>
<td>-.052</td>
</tr>
</tbody>
</table>

Note: Italicized variables indicate that the variable met the cut value of phi ≥ .02 and would be entered into the logistic regression.
To further examine the efficacy of isolating individuals of mixed race, the standard residuals were evaluated for all seven categories to examine the difference between the value observed and the value predicted by the model. In sum, residuals are basically errors in prediction, and for the purposes of this study, the residual variables were examined to see if they could account for the unexplained part of the dependent variable not addressed by the independent variables. According to Grimm and Yarnold (1995), a model fits well for a single case if there is a small standardized residual in terms of absolute value. Typically, if the standardized residual is greater than 2.0 (absolute value), than the variable is considered to be a key contributor to the overall chi-square value. While residuals show the difference of the observed and expected counts in each cell, the adjusted residuals adjust because large expected values tend to have larger residuals. However, the cells with the largest adjusted residuals show where the model is working least well. Table 8 demonstrates the residuals for all seven categories of race, with White/Non-Hispanic showing an absolute value of 6.7 and Black/Non-Hispanic at 7.7, suggesting that these two races are the primary contributors to the overall chi-square.

Based on the univariate analyses, the adjusted standardized residuals, and clinical judgment, the race variables of White/Non-Hispanic and Black/Non-Hispanic groups were recoded with Blacks serving as the “reference” group and Whites as the “identified” group. This new variable was named “race”.

112
<table>
<thead>
<tr>
<th>Race/Ethnic Group</th>
<th>Closure</th>
<th>Total</th>
<th>Adjusted Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Closure</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>White/Non-Hispanic  Count</td>
<td>27009</td>
<td>28701</td>
<td>55710</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>48.5%</td>
<td>51.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>-6.7</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>Black/Non-Hispanic  Count</td>
<td>8238</td>
<td>7601</td>
<td>15839</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>52.0%</td>
<td>48.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>7.7</td>
<td>-7.7</td>
<td></td>
</tr>
<tr>
<td>American Indian Count</td>
<td>416</td>
<td>352</td>
<td>768</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>54.2%</td>
<td>45.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>2.7</td>
<td>-2.7</td>
<td></td>
</tr>
<tr>
<td>Asian  Count</td>
<td>392</td>
<td>384</td>
<td>776</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>50.5%</td>
<td>49.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>.7</td>
<td>-.7</td>
<td></td>
</tr>
<tr>
<td>Hawaiian or Pacific Islander Count</td>
<td>94</td>
<td>78</td>
<td>172</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>54.7%</td>
<td>45.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>1.4</td>
<td>-1.4</td>
<td></td>
</tr>
<tr>
<td>Hispanic - Non-white/non-Black Count</td>
<td>2948</td>
<td>3118</td>
<td>6066</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>48.6%</td>
<td>51.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>-1.1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Multiple race/ethnicity Count</td>
<td>134</td>
<td>181</td>
<td>315</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>42.5%</td>
<td>57.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>-2.4</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Total  Count</td>
<td>39231</td>
<td>40415</td>
<td>79646</td>
</tr>
<tr>
<td>% within Racial/ethnic identify</td>
<td>49.3%</td>
<td>50.7%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 8: Racial/Ethnic Variables Crosstabulation with Closure Status
Section 3: Conducting Logistic Regressions

Two standard multiple logistic regressions were conducted, on the top and bottom groups, to assess whether the odds of employment were predictable from a set of research variables. Based on the preliminary univariate analyses of the criterion variables and clinical judgment, the variables were entered using the forced entry option or “enter” method. This standard logistic model (or enter method) was conducted because it allows the researcher to assess the unique predictability of that variable (i.e., each variable is evaluated as if all the other variables were first entered into the equation). The first model was evaluated for fit and was then rerun after the modification of poorly fitting variables and the forced removal of other variables. After examining the remaining variables and their contribution to the overall model, the best fitting model was identified and interpreted. Although several analyses were conducted to examine the role of respective covariates, two full models were evaluated for the most apposite model.

Based on clinical judgment, the univariate analysis, and an additional standardized residual crosstabulation, the variable “race” was condensed to White/non-Hispanics and Black/non-Hispanics. As such, Black/non-Hispanics were recoded as the “reference” group and White/non-Hispanics as the “identified” group. This new variable was named “race”.

Classification tables are a type of crosstabulation in the standard logistic regression output for dichotomous dependent variables, and display correct and incorrect estimates in 2 x 2 tables. While the columns are the two predicted values of the dependent, the rows are the two observed values of the dependent. According to Garson
In an ideal model, all cases would be on the diagonal and the total percent correct would be 100%.

In the first regression for the top group, the base model was statistically significant, $X(25) = 4946.49, p < .001$, and the model accurately predicted 66.1% of the cases correctly (Table 9). After several revisions to the model, the final model had similar results, with $X(17) = 3499.22, p < .001$, with the model accurately predicting 66.6% of the cases correctly (Table 10).
<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Closure</th>
<th>Percentage</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>.00</td>
<td>1.00</td>
<td>12632</td>
<td>4900</td>
<td>72.1</td>
</tr>
<tr>
<td>1.00</td>
<td>6643</td>
<td>9898</td>
<td>59.8</td>
<td></td>
</tr>
<tr>
<td>Overall Percentage</td>
<td>66.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Classification Table for the Top Sample-Base Model

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Closure</th>
<th>Percentage</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>.00</td>
<td>1.00</td>
<td>9210</td>
<td>3218</td>
<td>74.1</td>
</tr>
<tr>
<td>1.00</td>
<td>4667</td>
<td>6492</td>
<td>58.2</td>
<td></td>
</tr>
<tr>
<td>Overall Percentage</td>
<td>66.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Classification Table for the Top Sample-Best Fit Model
Table 11 shows the base model for the top group, with the beta, standard error, Wald statistic, degrees of freedom, significance level and \( Exp(B) \) (the odds ratio). Numerous variables were statistically significant at the \( p < .05 \) level. For example, job placement assistance showed a strong relationship to closure, suggesting that individuals with job placement services were almost three times more likely to achieve a successful employment outcome than counterparts who did not receive the service (\( Exp(B) = 2.688; B = .989 \)). The race variable, which was condensed to White/non-Hispanics and Black/non-Hispanics based on the univariate analysis, showed almost no association with closure (\( B = .023 \) and \( Exp(B) = 1.108 \)). However, gender was a significant covariate of employment outcome; when you move from males to females (numerically from 1 to 2), the odds of employment is 1.108 times more likely. Likewise, the odds of employment are 1.13 times more likely (1/.882) when the participant does not receive job readiness training. The other odds ratios can be similarly interpreted for \( Exp(B) \) values above or below 1.
<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.102</td>
<td>.024</td>
<td>18.351</td>
<td>1</td>
<td>.000</td>
<td>1.108</td>
</tr>
<tr>
<td>Race</td>
<td>.023</td>
<td>.030</td>
<td>.606</td>
<td>1</td>
<td>.436</td>
<td>1.024</td>
</tr>
<tr>
<td>SSI</td>
<td>-.642</td>
<td>.030</td>
<td>457.732</td>
<td>1</td>
<td>.000</td>
<td>.526</td>
</tr>
<tr>
<td>TANF</td>
<td>-.142</td>
<td>.066</td>
<td>4.660</td>
<td>1</td>
<td>.031</td>
<td>.868</td>
</tr>
<tr>
<td>GAA</td>
<td>-.380</td>
<td>.067</td>
<td>32.262</td>
<td>1</td>
<td>.000</td>
<td>.684</td>
</tr>
<tr>
<td>SSDI</td>
<td>-.296</td>
<td>.030</td>
<td>94.685</td>
<td>1</td>
<td>.000</td>
<td>.744</td>
</tr>
<tr>
<td>Diagnosis &amp; Treatment</td>
<td>.009</td>
<td>.025</td>
<td>.122</td>
<td>1</td>
<td>.727</td>
<td>1.009</td>
</tr>
<tr>
<td>Counseling &amp; Guidance</td>
<td>.153</td>
<td>.025</td>
<td>36.839</td>
<td>1</td>
<td>.000</td>
<td>1.165</td>
</tr>
<tr>
<td>Occupation/Voc. Training</td>
<td>.018</td>
<td>.032</td>
<td>.309</td>
<td>1</td>
<td>.578</td>
<td>1.018</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>.365</td>
<td>.059</td>
<td>38.276</td>
<td>1</td>
<td>.000</td>
<td>1.440</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>-.125</td>
<td>.039</td>
<td>10.510</td>
<td>1</td>
<td>.001</td>
<td>.882</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>.360</td>
<td>.030</td>
<td>142.491</td>
<td>1</td>
<td>.000</td>
<td>1.433</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>.989</td>
<td>.030</td>
<td>1064.601</td>
<td>1</td>
<td>.000</td>
<td>2.688</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.348</td>
<td>.032</td>
<td>119.201</td>
<td>1</td>
<td>.000</td>
<td>1.417</td>
</tr>
<tr>
<td>Rehab Assistance</td>
<td>.024</td>
<td>.091</td>
<td>.071</td>
<td>1</td>
<td>.789</td>
<td>1.025</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>.242</td>
<td>.146</td>
<td>2.728</td>
<td>1</td>
<td>.099</td>
<td>1.274</td>
</tr>
<tr>
<td>Informational and Referral</td>
<td>-.149</td>
<td>.044</td>
<td>11.441</td>
<td>1</td>
<td>.001</td>
<td>.862</td>
</tr>
<tr>
<td>Other Services</td>
<td>.179</td>
<td>.026</td>
<td>46.180</td>
<td>1</td>
<td>.000</td>
<td>1.196</td>
</tr>
<tr>
<td>Education</td>
<td>.381</td>
<td>.014</td>
<td>782.726</td>
<td>1</td>
<td>.000</td>
<td>1.463</td>
</tr>
<tr>
<td>Significant Disability</td>
<td>-.115</td>
<td>.052</td>
<td>4.906</td>
<td>1</td>
<td>.027</td>
<td>.891</td>
</tr>
</tbody>
</table>

Table 11: Logistic Regression with Closure at the Criterion and Research Variables as Covariates for the Top Group- Base Model
Table 11, continued

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>.609</td>
<td>.070</td>
<td>75.036</td>
<td>1</td>
<td>.000</td>
<td>1.839</td>
</tr>
<tr>
<td>Depress/Mood Dis.</td>
<td>.033</td>
<td>.031</td>
<td>1.161</td>
<td>1</td>
<td>.281</td>
<td>1.034</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>-.112</td>
<td>.029</td>
<td>15.082</td>
<td>1</td>
<td>.000</td>
<td>.894</td>
</tr>
</tbody>
</table>
In the second model (Table 12), poorly fitting variables, such as education and primary disability were modified and reentered into the model, while other covariates, such as public assistance benefits (TANF and GAA) were removed by the forced removal option based on clinical judgment. Based on frequency and relevance to the study, the variable for education was compressed into three distinct groups: high school degree; post high school but no degree; and college degree. While the goal of modifying the education variable was to find more clarity on its association with closure status, the results in the second regression model were very similar to the base model. There was a slight change in the odds ratio for education between models, with the second, or best fit model \((\text{Exp}(B)=1.408)\) showing a slight decrease from the base model \((\text{Exp}(B)=1.463)\).

The primary diagnosis variable was adapted based on frequency of disability, clinical judgment, relevance to study, and the phi coefficient analysis. Specifically, the diagnostic categories of Depressive and other mood disorders and Schizophrenia and other psychotic disorders each represented over thirty percent of the overall population, and along with ADHD, exceeded the cut for the phi \((\phi \geq .02)\) in the phi coefficient analysis. However, ADHD comprised a mere of 3.5% of the population and was subsequently removed. The resulting variable was named “primary disability” and consists solely of Depressive and other mood disorders serving as the “reference” variable and Schizophrenia and other psychotic disorders serving as the “identified” group. As such, the primary disability variable demonstrated a negative relationship with closure status \((B=-.151; \text{Exp}(B)=.860)\).

Of the overall variables entered into the final model, the most prominent were job support services, such as job placement assistance \((B=.979; \text{Exp}(B)=2.661)\), and on-the-
job supports ($B=0.785$; $\text{Exp}(B)=2.192$), and on-the-job training ($B=0.450$; $\text{Exp}(B)=1.568$).

In contrast, the variables, which had the most negative impact on a successful closure, were SSI ($B=-0.601$; $\text{Exp}(B)=0.548$), and SSDI ($B=0.836$; $\text{Exp}(B)=-0.179$).
<table>
<thead>
<tr>
<th>Covariate</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.139</td>
<td>.029</td>
<td>23.701</td>
<td>1</td>
<td>.000</td>
<td>1.149</td>
</tr>
<tr>
<td>SSI</td>
<td>-.601</td>
<td>.033</td>
<td>325.708</td>
<td>1</td>
<td>.000</td>
<td>.548</td>
</tr>
<tr>
<td>SSDI</td>
<td>-.179</td>
<td>.034</td>
<td>27.189</td>
<td>1</td>
<td>.000</td>
<td>.836</td>
</tr>
<tr>
<td>Counseling &amp; Guidance</td>
<td>.124</td>
<td>.030</td>
<td>17.013</td>
<td>1</td>
<td>.000</td>
<td>1.132</td>
</tr>
<tr>
<td>Occupation/Voc. Training</td>
<td>-.057</td>
<td>.039</td>
<td>2.112</td>
<td>1</td>
<td>.146</td>
<td>.944</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>.450</td>
<td>.070</td>
<td>40.737</td>
<td>1</td>
<td>.000</td>
<td>1.568</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>-.186</td>
<td>.043</td>
<td>18.566</td>
<td>1</td>
<td>.000</td>
<td>.830</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>.342</td>
<td>.035</td>
<td>95.630</td>
<td>1</td>
<td>.000</td>
<td>1.408</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>.979</td>
<td>.035</td>
<td>774.293</td>
<td>1</td>
<td>.000</td>
<td>2.661</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>.785</td>
<td>.038</td>
<td>415.864</td>
<td>1</td>
<td>.000</td>
<td>2.192</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.348</td>
<td>.039</td>
<td>80.755</td>
<td>1</td>
<td>.000</td>
<td>1.416</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>.352</td>
<td>.178</td>
<td>3.901</td>
<td>1</td>
<td>.048</td>
<td>1.421</td>
</tr>
<tr>
<td>Informational and Referral</td>
<td>-.113</td>
<td>.050</td>
<td>4.986</td>
<td>1</td>
<td>.026</td>
<td>.893</td>
</tr>
<tr>
<td>Other Services</td>
<td>.195</td>
<td>.031</td>
<td>39.056</td>
<td>1</td>
<td>.000</td>
<td>1.216</td>
</tr>
<tr>
<td>Education</td>
<td>.342</td>
<td>.016</td>
<td>452.654</td>
<td>1</td>
<td>.000</td>
<td>1.408</td>
</tr>
<tr>
<td>Significant Disability</td>
<td>-.144</td>
<td>.072</td>
<td>4.015</td>
<td>1</td>
<td>.045</td>
<td>.866</td>
</tr>
<tr>
<td>Primary Disability</td>
<td>-.151</td>
<td>.030</td>
<td>26.059</td>
<td>1</td>
<td>.000</td>
<td>.860</td>
</tr>
</tbody>
</table>

Table 12: Logistic Regression with Closure at the Criterion and Research Variables as Covariates for the Top Group- Best-Fit Model
In the regression for the bottom group, the base model was statistically significant, $X(25) = 3753.92, p < .001$, and the model accurately predicted 65.0% of the cases correctly (Table 13). In the revised model, the model was again statistically significant, $X(17) = 2658.99, p < .001$, and the model accurately predicted 65.1% of the cases correctly (Table 14).
### Table 13: Classification Table for the Bottom Sample-Base Model

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Closure</th>
<th>Percentage</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>.00</td>
<td>.00</td>
<td>8507</td>
<td>6069</td>
<td>58.4</td>
</tr>
<tr>
<td>1.00</td>
<td>1.00</td>
<td>4997</td>
<td>12016</td>
<td>70.6</td>
</tr>
<tr>
<td>Overall Percentage</td>
<td></td>
<td></td>
<td></td>
<td>65.0</td>
</tr>
</tbody>
</table>

### Table 14: Classification Table for the Bottom Sample-Best Fit Model

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Closure</th>
<th>Percentage</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>.00</td>
<td>.00</td>
<td>6060</td>
<td>4156</td>
<td>59.3</td>
</tr>
<tr>
<td>1.00</td>
<td>1.00</td>
<td>3594</td>
<td>8416</td>
<td>70.1</td>
</tr>
<tr>
<td>Overall Percentage</td>
<td></td>
<td></td>
<td></td>
<td>65.1</td>
</tr>
</tbody>
</table>
Table 15 shows the beta, standard error, Wald statistic, degrees of freedom, significance level and $\text{Exp}(B)$ (the odds ratio), where numerous variables were statistically significant at the $p < .05$ level. However, similar to the top group, neither gender nor race was a significant covariate of employment outcome (Table 15). With a beta coefficient ($B$) of -.011 and an odds ratio ($\text{Exp}(B)$) of .989 for gender and a ($B$) of -.002 and an odds ratio ($\text{Exp}(B)$) of .998, it was clear that in this model, there was no relationship between either gender or race and closure. Regardless, the gender variable was force entered in the second model (Table 16) based on clinical judgment. As expected, the results were similar within the revised model, with gender yielding a beta coefficient ($B$) of .022 and an odds ratio ($\text{Exp}(B)$) of 1.023. The other odds ratios can be similarly interpreted for $\text{Exp}(B)$ values above or below 1.
<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.011</td>
<td>.025</td>
<td>.185</td>
<td>1</td>
<td>.667</td>
<td>.989</td>
</tr>
<tr>
<td>Race</td>
<td>-.002</td>
<td>.029</td>
<td>.004</td>
<td>1</td>
<td>.947</td>
<td>.998</td>
</tr>
<tr>
<td>SSI</td>
<td>-.477</td>
<td>.034</td>
<td>195.536</td>
<td>1</td>
<td>.000</td>
<td>.621</td>
</tr>
<tr>
<td>TANF</td>
<td>-.238</td>
<td>.060</td>
<td>15.522</td>
<td>1</td>
<td>.000</td>
<td>.788</td>
</tr>
<tr>
<td>GAA</td>
<td>-.459</td>
<td>.057</td>
<td>64.823</td>
<td>1</td>
<td>.000</td>
<td>.632</td>
</tr>
<tr>
<td>SSDI</td>
<td>-.364</td>
<td>.035</td>
<td>113.070</td>
<td>1</td>
<td>.000</td>
<td>.692</td>
</tr>
<tr>
<td>Diagnosis &amp; Treatment</td>
<td>.094</td>
<td>.026</td>
<td>12.866</td>
<td>1</td>
<td>.000</td>
<td>1.098</td>
</tr>
<tr>
<td>Counseling &amp; Guidance</td>
<td>-.232</td>
<td>.029</td>
<td>62.444</td>
<td>1</td>
<td>.000</td>
<td>.793</td>
</tr>
<tr>
<td>Occupation/Voc. Training</td>
<td>.415</td>
<td>.032</td>
<td>170.458</td>
<td>1</td>
<td>.000</td>
<td>1.514</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>.549</td>
<td>.070</td>
<td>61.255</td>
<td>1</td>
<td>.000</td>
<td>1.731</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>.029</td>
<td>.039</td>
<td>.548</td>
<td>1</td>
<td>.459</td>
<td>1.030</td>
</tr>
<tr>
<td>Miscellaneous training</td>
<td>-.052</td>
<td>.035</td>
<td>2.169</td>
<td>1</td>
<td>.141</td>
<td>.949</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>.267</td>
<td>.032</td>
<td>70.530</td>
<td>1</td>
<td>.000</td>
<td>1.306</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>.690</td>
<td>.031</td>
<td>481.954</td>
<td>1</td>
<td>.000</td>
<td>1.993</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>.754</td>
<td>.040</td>
<td>357.250</td>
<td>1</td>
<td>.000</td>
<td>2.126</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.246</td>
<td>.038</td>
<td>41.345</td>
<td>1</td>
<td>.000</td>
<td>1.279</td>
</tr>
<tr>
<td>Rehab Assistance</td>
<td>.037</td>
<td>.103</td>
<td>.132</td>
<td>1</td>
<td>.717</td>
<td>1.038</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>.412</td>
<td>.068</td>
<td>36.877</td>
<td>1</td>
<td>.000</td>
<td>1.510</td>
</tr>
<tr>
<td>Informational and Referral</td>
<td>.315</td>
<td>.037</td>
<td>72.488</td>
<td>1</td>
<td>.000</td>
<td>1.371</td>
</tr>
<tr>
<td>Other Services</td>
<td>.426</td>
<td>.033</td>
<td>164.507</td>
<td>1</td>
<td>.000</td>
<td>1.532</td>
</tr>
<tr>
<td>Education</td>
<td>.385</td>
<td>.015</td>
<td>701.919</td>
<td>1</td>
<td>.000</td>
<td>1.470</td>
</tr>
<tr>
<td>Significant Disability</td>
<td>-.443</td>
<td>.051</td>
<td>75.421</td>
<td>1</td>
<td>.000</td>
<td>.642</td>
</tr>
</tbody>
</table>

Table 15: Logistic Regression with Closure at the Criterion and Research Variables as Covariates for the Bottom Group-Base Model
Table 15, continued

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>.733</td>
<td>.069</td>
<td>111.239</td>
<td>1</td>
<td>.000</td>
<td>2.081</td>
</tr>
<tr>
<td>Depress/Mood Dis.</td>
<td>.165</td>
<td>.030</td>
<td>30.087</td>
<td>1</td>
<td>.000</td>
<td>1.179</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>-.060</td>
<td>.032</td>
<td>3.478</td>
<td>1</td>
<td>.062</td>
<td>.942</td>
</tr>
</tbody>
</table>
As with the second model in the top group, any poorly fitting variables, such as education and primary disability were modified and reentered into the model, while other covariates, such as public assistance benefits (TANF and GAA) were removed by the forced removal option based on clinical judgment for the second model for the bottom group. Although force entered, gender again demonstrated a negligible association with closure with odds ratio hovering close to 1.0, indicating that the variable was independent of the dependent variable (Exp(B) =1.023).

Similar to the second model for the top group, of the variables entered into the final model for the bottom group, the most prominent were job support services, including job placement assistance ($B= .720; \text{Exp}(B)=2.054$), and on-the-job supports ($B= .752; \text{Exp}(B)=2.120$), and on-the-job training ($B= .634; \text{Exp}(B)=1.886$). In contrast, the variables that again had the most negative impact on a successful closure were SSI ($B= -.413; \text{Exp}(B)=.662$), and SSDI ($B= -.344; \text{Exp}(B)=.709$). Additionally, the primary disability variable demonstrated a negative relationship with closure status ($B= -.254; \text{Exp}(B)=.776$), along with significant disability ($B= -.567; \text{Exp}(B)=.567$).
<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.022</td>
<td>.029</td>
<td>.583</td>
<td>1</td>
<td>.445</td>
<td>1.023</td>
</tr>
<tr>
<td>SSI</td>
<td>-.413</td>
<td>.039</td>
<td>113.636</td>
<td>1</td>
<td>.000</td>
<td>.662</td>
</tr>
<tr>
<td>SSDI</td>
<td>-.344</td>
<td>.038</td>
<td>80.517</td>
<td>1</td>
<td>.000</td>
<td>.709</td>
</tr>
<tr>
<td>Counseling &amp; Guidance</td>
<td>-.243</td>
<td>.033</td>
<td>53.229</td>
<td>1</td>
<td>.000</td>
<td>.784</td>
</tr>
<tr>
<td>Occupation/Voc. Training</td>
<td>.493</td>
<td>.036</td>
<td>184.242</td>
<td>1</td>
<td>.000</td>
<td>1.637</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>.634</td>
<td>.090</td>
<td>50.031</td>
<td>1</td>
<td>.000</td>
<td>1.886</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>.008</td>
<td>.046</td>
<td>.028</td>
<td>1</td>
<td>.868</td>
<td>1.008</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>.258</td>
<td>.039</td>
<td>43.390</td>
<td>1</td>
<td>.000</td>
<td>1.295</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>.720</td>
<td>.039</td>
<td>340.462</td>
<td>1</td>
<td>.000</td>
<td>2.054</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>.752</td>
<td>.046</td>
<td>271.280</td>
<td>1</td>
<td>.000</td>
<td>2.120</td>
</tr>
<tr>
<td>Maintenance</td>
<td>.235</td>
<td>.048</td>
<td>24.406</td>
<td>1</td>
<td>.000</td>
<td>1.265</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>.450</td>
<td>.070</td>
<td>41.553</td>
<td>1</td>
<td>.000</td>
<td>1.569</td>
</tr>
<tr>
<td>Informational and Referral</td>
<td>.360</td>
<td>.041</td>
<td>76.314</td>
<td>1</td>
<td>.000</td>
<td>1.433</td>
</tr>
<tr>
<td>Other Services</td>
<td>.490</td>
<td>.043</td>
<td>132.425</td>
<td>1</td>
<td>.000</td>
<td>1.633</td>
</tr>
<tr>
<td>Education</td>
<td>.355</td>
<td>.017</td>
<td>434.122</td>
<td>1</td>
<td>.000</td>
<td>1.426</td>
</tr>
<tr>
<td>Significant Disability</td>
<td>-.567</td>
<td>.069</td>
<td>68.342</td>
<td>1</td>
<td>.000</td>
<td>.567</td>
</tr>
<tr>
<td>Primary Disability</td>
<td>-.254</td>
<td>.032</td>
<td>63.313</td>
<td>1</td>
<td>.000</td>
<td>.776</td>
</tr>
</tbody>
</table>

Table 16: Logistic Regression with Closure at the Criterion and Research Variables as Covariates for the Bottom Group- Best-Fit Model
Section 4: Confirmatory Analysis

To assess whether the model was stable, several logistic regressions were conducted. Table 17 presents a comparison of significance for each variable by top and bottom groups in both the base and best-fit models. The majority of variables entered into the final model, some 14 covariates, were significant in both the top and bottom groups. The variables that were significant in both groups included counseling & guidance, on-the-job-training, job readiness training, job search assistance, job placement assistance, on-the-job supports, maintenance, tech assistance, informational and referral, other services, education, significant disability, and primary disability. Finally, there were only three covariates remaining that were clearly not significant in either the top or bottom groups, including gender, job readiness training, and occupational/vocational training.

Of particular note was that the services associated with job placement and on the job supports were the most positively associated with an employment outcome while having a significant disability and receiving benefits were detrimental variables. Likewise, a high school education and technical assistance appeared to have a positive effect on outcome and closure status.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Top Group</th>
<th>Bottom Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exp(B)</td>
<td>Exp(B)</td>
</tr>
<tr>
<td>Gender</td>
<td>1.149***</td>
<td>1.023</td>
</tr>
<tr>
<td>SSI</td>
<td>.548***</td>
<td>.662***</td>
</tr>
<tr>
<td>SSDI</td>
<td>.836***</td>
<td>.709***</td>
</tr>
<tr>
<td>Counseling &amp; Guidance</td>
<td>1.132***</td>
<td>.784***</td>
</tr>
<tr>
<td>Occupation/Voc. Training</td>
<td>.944</td>
<td>1.637***</td>
</tr>
<tr>
<td>On-the-job-training</td>
<td>1.568***</td>
<td>1.886***</td>
</tr>
<tr>
<td>Job readiness training</td>
<td>.830***</td>
<td>1.008</td>
</tr>
<tr>
<td>Job search assistance</td>
<td>1.408***</td>
<td>1.295***</td>
</tr>
<tr>
<td>Job placement assistance</td>
<td>2.661***</td>
<td>2.054***</td>
</tr>
<tr>
<td>On-the-job supports</td>
<td>2.192***</td>
<td>2.120***</td>
</tr>
<tr>
<td>Maintenance</td>
<td>1.416***</td>
<td>1.265***</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>1.421**</td>
<td>1.569***</td>
</tr>
<tr>
<td>Informational and Referral</td>
<td>.893**</td>
<td>1.433***</td>
</tr>
<tr>
<td>Other Services</td>
<td>1.216***</td>
<td>1.633***</td>
</tr>
<tr>
<td>Education</td>
<td>1.408***</td>
<td>1.426***</td>
</tr>
<tr>
<td>Significant Disability</td>
<td>.866**</td>
<td>.567***</td>
</tr>
<tr>
<td>Primary Disability</td>
<td>.860***</td>
<td>.776***</td>
</tr>
</tbody>
</table>

***Significant at the .01 level.
**Significant at the .05 level.

Table 17: Comparison of Logistic Regression with Closure at the Criterion with Best-Fit Models for Top and Bottom Groups
To make comprehensive statements about the significance of an independent variable, both the correlation and the logit should be significant. This becomes an important part of the confirmatory analysis because a logistic coefficient may be found to be significant when the corresponding correlation is found to be not significant, and vice versa. According to Garson (2004), there are several reasons why correlations and logistic coefficients may differ in significance. They are as follows: “(1) logistic coefficients are partial coefficients, controlling for other variables in the model, whereas correlation coefficients are uncontrolled; (2) logistic coefficients reflect linear and nonlinear relationships, whereas correlation reflects only linear relationships; and (3) a significant logit means there is a relation of the independent variable to the dependent variable for selected control groups, but not necessarily overall “(p. 9, Garson, 2004).

Based on the selection of variables used for this study, the majority of covariates entered into the logistic regression equations were significant in the chi-square analysis. However, the variables that were force entered, such as gender and race, were never significant and race was removed from the final model. Due to the large sample size in this study, the model chi-square value was high for both the top and bottom groups (model chi-square=3499 and 2658, respectively) however, because of the small p value (≤.001), the model may be considered a good fit overall.

Another way of assessing correct and incorrect predictions with logistic regression is with a histogram, or classplot. Specifically, the X-axis is the predicted probability of the dependent being classified ”1”, whereas the Y-axis shows the number of cases classified. In the classplot for the top model (Table 18), at the p = .25 point, the
column with one "1" and five "0's" shows that six cases were predicted to be "1's" with a probability of .25, and consequently were classified as "0's." Each “0” or “1” symbol represents 100 cases. Of these, five were actually "0's" but one (an error) was a "1" on the dependent variable. In contrast, in the bottom group (Table 19), there are only two “0’s” meaning that they were predicted to be “1’s” with a probability of .25, and thus were correctly classified as “0’s”. In sum, the classplot demonstrates how well the model classifies difficult cases, or cases in the middle. Based on an analysis of the two classplots, the final model does only a marginal job of classifying cases, with a convergence of cases equally distributed in the middle.
Table 18: Observed Groups and Predicted Probabilities for the Best Fit Model-Top Group

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Observed Group</th>
<th>Predicted Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>00000000000000000000000000000011111111111111111111111111111</td>
<td>≥ 0.75</td>
</tr>
<tr>
<td>E</td>
<td>11111010110 01111 1 1 1</td>
<td>≥ 0.50</td>
</tr>
<tr>
<td>Q</td>
<td>1 1 1 1</td>
<td>≥ 0.25</td>
</tr>
<tr>
<td>U</td>
<td>1 1 1 1 1</td>
<td>≥ 0.00</td>
</tr>
<tr>
<td>E</td>
<td>1 11 1 1 1 1</td>
<td>≥ 0.50</td>
</tr>
<tr>
<td>N</td>
<td>110101111 1 1 1</td>
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Predicted Probability is of Membership for 1.00
The Cut Value is .50
Symbols: 0 - .00
1 - 1.00
Each Symbol Represents 100 Cases.
Predicted Probability is of Membership for 1.00
The Cut Value is .50
Symbols: 0 - .00
1 - 1.00
Each Symbol Represents 125 Cases.

Table 19: Observed Groups and Predicted Probabilities for The Best Fit Model-Bottom Group
Summary

This study addressed two research questions:

1. Can a model be developed identifying the variables and co-variates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?

2. Is this model stable?

This study examined individuals with serious mental illness who received vocational rehabilitation services from the Rehabilitation Services Administration in FFY 2002. Due to the large sample size, and for the purposes of model validation, the sample was split approximately in half and compared. The participants were required to meet the inclusion criteria of: (a) being between 16 and 65 years of age; (b) having a psychiatric disability status; (c) eligible/referred for vocational rehabilitation; (d) receiving at least one rehabilitation service and (e) closure as either “achieving employment outcome”, or “without achieving employment outcome”.

Descriptive statistics and frequencies were run for an overview of the population in its entirety. Correlational analysis was used to assess the bivariate relationship between the dependent variables (program closure status) and each of the predictor variables to identify high intercorrelations and assist in determining which variables were entered into the logistic regression model. The point-biserial was used to evaluate continuous variables such as age and education that were being compared to the dichotomous outcome variable and chi-square analyses were run between closure and the remaining research variables, including gender, race, disability benefits, diagnosis,
significant disability, and services. The point-biserial correlations show that closure was statistically correlated with education, but not with age in both groups. Chi-square analyses were conducted using the phi coefficient (phi > .02) as the measure of association between covariates and the dependent variable. Based on the univariate analysis including the correlations, chi-square analyses, and clinical judgment, variables of interest and those that were significantly related to closure were entered into the logistic regression. Finally, the first logistic regression was run on both the top and bottom groups of data and then compared. In the second model, poorly fitting variables, such as education and primary disability were modified and reentered into the model, while other covariates, such as race and public assistance benefits (TANF and GAA) were removed by the forced removal option based on clinical judgment. The final “best-fit” model for both the top and bottom groups was established after the second logistic model was created.
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter contains three sections: (1) a summary of the study; (2) conclusions generated from data; and (3) recommendations for future research.

The purpose of this study was to examine the various types of vocational rehabilitation (VR) services provided through the federal-state vocational rehabilitation system to individuals with psychiatric disabilities and the relationship of these services to employment outcome. In addition, this study evaluates and describes the demographic variables that are involved in successful outcome such as gender, race/ethnicity, age, diagnosis, severity of disability, years of education, and disability benefits. With the cooperation and support of the Rehabilitation Services Administration, data were obtained from consumers who received services during federal fiscal year (FY) 2002.

Specifically, this study attempted to answer two research questions related to vocational rehabilitation services:

1. Can a model be developed identifying the variables and co-variates that are the greatest predictors of successful rehabilitation outcome for individuals with psychiatric disabilities?
2. Is this model stable?

Summary

The subjects in this study were individuals with serious mental illness who received vocational rehabilitation services through the Rehabilitation Services Administration in 2002. Subjects were obtained through examination of 2002 client data from the RSA-911 federal-state case reporting system. All participants were classified as having psychiatric disability, were eligible/referred for vocational rehabilitation, received at least one rehabilitation service and were closed having either “achieved employment outcome”, or “without an employment outcome”. In total, seventy-nine thousand, nine hundred and sixty-seven men ($n = 38,565, 48.2\%$) and women ($n = 41,402, 51.8\%$) participated in this study. Based on the large sample size of this study and to provide a comparative measure of results, the dataset was then split roughly in half. Approximately 40,000 cases were categorized as the “top” half and 39,967 cases were categorized in the “bottom” half.

To begin, descriptive statistics and frequencies were run for a summary of the population before correlational and chi-square analyses were performed to establish bivariate relationships between the criterion and outcome variables. Approximately half of the total sample ($n = 39,405, 49.3\%$) had cases closed without an employment outcome and 40,562 (50.7\%) maintained employment and were closed with a “successful” employment outcome. Analogous to many other studies evaluating demographic predictors of closure outcome, there were slight discrepancies even amongst the top and bottom data sets. Typically, this could be attributed to many factors, including sampling error, or an inadequate sample size, however, this sample was the
entire population of individuals with psychiatric disabilities receiving vocational rehabilitation services in the federal-state program nationwide.

Descriptive data showed that the population with serious mental illness that received vocational rehabilitation services was fairly equally split with men comprising 48.2% of the participants and women totaling 51.8% of the overall population in the study. Within this population, gender was somewhat related to closure status in the chi-square analysis. Further examination in the logistic regression revealed that women were slightly more likely to be closed with employment than men were. A possible rationale for this phenomenon is that women may be more likely to seek out treatment and pursue more rehabilitation services. The literature on the association between gender and vocational rehabilitation outcome is sparse, and results are mixed, although most studies have found gender to be a non-significant predictor of employment outcome (Corrigan, Reedy, Thadani & Ganet, 1995; Razzano & Cook, 1994; Rogers, Anthony, Cohen & Davies, 1997). In contrast to the results of this study, Capella (2002) found that employment outcomes favored men over women, with age acting as an effect modifier. In two distinct studies, Cook identified gender and employment history as related to vocational outcome with women achieving fewer placements than men, but maintaining significantly longer job tenure (Cook & Roussel, 1989). Similar to Anthony (1979) the authors suggest that the characteristics which relate to outcome for individuals with SMI parallel the labor force participation in the United States. In general, men and women have similar lifetime prevalence rates of mental disorders, although the rates differ for the types of disorders and men are more likely than women to experience limitations due to their symptoms of mental illness (National Center for Health Statistics, 1996). This
phenomenon may be due in part to a higher level of willingness on the part of women to seek out treatment and overall rehabilitation services.

Chi-square analyses between closure and race/ethnicity demonstrated that only the White/European Americans and Black/African Americans had a small association with closure in both the top and bottom groups in the chi-square analysis. A possible explanation of these differences could be linked to sample size distribution. White/European Americans and Black/African Americans represented the greater part of the population at 74.8% and 20.2% respectively. Further, the chi-square analysis is more likely to find significance, when the sample size is large, and/or the number of values of the two associated variables is large. Regardless, because of the mixed results when examined as a multivariate, race was only a marginal predictor of employment outcome in this study during the preliminary analyses and was not entered into the final logistic regression model.

To further examine the efficacy of isolating individuals of mixed race, the adjusted standardized residuals were evaluated for all seven categories to examine the difference between the value observed and the value predicted by the model. The residual variables were examined to see if they could account for the unexplained part of the dependent variable not addressed by the independent variables. Based on the univariate analyses, the adjusted standardized residuals, and clinical judgment, the race variables of White/Non-Hispanic and Black/ Non-Hispanic groups were recoded with Blacks serving as the “reference” group and Whites as the “identified” group. This new variable was named “race”. As such, the variable for race/ethnicity was not significant
and when these variables were force entered into the logistic regression model, there was little to no relationship between the covariates.

The literature suggests more confounding results between race and closure outcomes. For example, Atkins and Wright (1980) conducted one of the earliest studies addressing the relationship between race and vocational rehabilitation outcome and unequivocally concluded that White/European Americans fared much better than Black/African Americans did. Likewise, Capella (2002) found that employment outcomes favored European Americans over both African Americans and Native Americans. However, in a subsequent study, which controlled for many conflicting variables of the Atkins and Wright study, Bolton and Cooper (1980) found that race was not a significant contributor to outcome.

Historically, educational attainment has been significantly lower for people with disabilities than for the general population. Approximately a third (34.4%) of individuals with disabilities in the general population did not complete high school, while 46% of all individuals with mental illness did not complete high school, more than twice the proportion as the general population (18%) (Adler, 1995). Significantly lower proportions of persons with disabilities had at least some college (31.5%) compared to almost half (47.2%) of the general population (Adler, 1995). For the psychiatric population, these results are not unexpected, as symptomatology and diagnosis typically occur between high school age and early adulthood, often derailing education goals or postponing educational achievement for several years.

Based on the point-biserial correlation, there was a small, yet significant relationship between education and closure, however there was no association between
age and closure status. As such, education was force entered into the logistic regression
analysis. A possible explanation for the small association between education and closure
is that the predominant level of education was high school graduate/GED at 40.4% of the
population followed closely by post-secondary education (with no degree) at 17.6%.
Therefore, based on frequency and relevance to the study, the variable for education was
compressed into three distinct groups: high school degree; post high school but no
degree; and college degree. While the goal of modifying the education variable was to
find more clarity on its association with closure status, the results in the second
regression model were very similar to the base model. Thus, over half of the population
level achieved only a high school level degree, which may or may not be related to the
onset of mental illness, which often occurs between 18-22 years of age. In the 2001
census report, McNeil noted that the less education an individual had, the more likely the
individual would encounter a disability. However, educational level has not been found to
be significant in most studies (Corrigan, Reedy, Thadani, Ganet, 1995; Rogers, Anthony,
Cohen and Davies, 1997; Rogers, Anthony, Toole & Brown, 1991). Future research
could focus on the relationship between age, education, and work history to establish if
such patterns exist.

Amongst the diagnoses, ADHD, Mental illness (not listed elsewhere), and
Schizophrenia and other psychotic disorders were significant in the initial statistical
queries while Anxiety disorders and Personality disorders were not. Approximately two-
thirds of participants receiving vocational services were categorized either in the
Depressive and other mood disorders group (30.2%) or with Schizophrenia and other
psychotic disorders (31.7%). However, ADHD was the only significant predictor of
closure with employment (successful outcome) in the base model logistic regression. The Depressive/Mood disorders group produced confounding results, showing significance only in the bottom group, yet with a low odds ratio suggesting only a negligible relationship with closure. The primary diagnosis variable was adapted based on frequency of disability, clinical judgment, relevance to study, and the phi coefficient analysis. Specifically, the diagnostic categories of Depressive and other mood disorders and Schizophrenia and other psychotic disorders each represented over thirty percent of the overall population, and along with ADHD, were significant in the phi coefficient analysis. However, ADHD comprised a mere of 3.5% of the population and was subsequently removed. The resulting variable was named “primary disability” and consists solely of Depressive and other mood disorders serving as the “reference” variable and Schizophrenia and other psychotic disorders serving as the “identified” group. As such, the primary disability variable demonstrated a small, but negative relationship with closure status.

These mixed results are mirrored in the literature. Many researchers staunchly claim that both diagnostic category and psychiatric symptomatology are poor predictors of future work performance (Anthony & Jansen, 1984). Included were three related studies that examined the demographic and clinical correlates of diagnosis, work skills and vocational outcome and found that diagnostic category was not predictive of work outcome (Anthony et al., 1995; Rogers et al., 1991, 1997). However, in a more recent literature review, psychiatric symptomatology and diagnosis were found to be significant predictors of employment outcome in 10 of 35 studies (Tsang et al., 2000). Tsang and colleagues (2000) suggest that the contradictory findings among such a wide array of
studies may be due in part to significant methodological flaws. For example, Massel, et al. (1990) reported that in a comprehensive review of studies, they found that psychiatric diagnosis and psychopathology were often unreliably recorded and vocational outcome was inconsistently determined. Further, in studies in which diagnosis was looked at separately from the effects of symptomotology, the results were mixed. These results may suffer from similar issues. In future research, it would be recommended that both diagnoses be measured in context with psychiatric symptomotology and level of functioning to produce more meaningful and cogent results.

In terms of significant disability, 74,967 (93.8%) were categorized as having a significant physical or mental impairment that seriously limited one or more functional capacities in terms of an employment outcome and 4,980 (6.2%) were not. This far exceeds the percentage of individuals with disability in the general population, and based on the negative association between having significant disability and achieving employment, may explain the dearth of employment outcomes in the overall psychiatric population. Specifically, about half of the sample (n = 39,405, 49.3%) had cases closed without achieving an employment outcome, and 40,562 (50.7%) were closed with a successful employment outcome. In the general population, employment rates hover around 74.6% yet amongst those with disabilities, it falls to 50.6% and individuals with mental illness, it plummets further to 22.5% according to a report prepared by the U.S. Department of Health and Human Services (Adler, 1995).

Significant disability was related to closure in both the chi-square analysis and the logistic regressions with a negative relationship between significant disability and closure and suggests that individuals with significant disability are less likely to have a successful
closure. This result is what was predicted, with less than a tenth of the population (6.2%) having a significant disability. Individuals with severe mental illness within the federal and state vocational rehabilitation population have consistently averaged fewer successful employment closures than other disability groups (Rutman, 1994). Such disparity between the significantly disabled group and the general group may be reflective of a multitude of variables interacting. For example, the onset of mental illness is typically between 18-22 years of age, concomitantly affecting educational and vocational experiences when most individuals enter the workforce. The combinations of medication balance, work experience, social stigma, and a multitude of other barriers often deluge individuals with serious mental illness as they attempt to enter the workforce.

Types of disability benefits were varied, although the majority of individuals receiving benefits had either SSI (19.7%) or SSDI (16.9%), and when combined with the remainder of beneficiaries, over fifty percent of the population (54.8%) received some type of disability benefits. In types of benefits, SSI, TANF, GAA, and SSDI showed a strong, albeit negative relationship to an employment outcome while Veterans’ disability, Workers’ compensation, and other public support were not reliable predictors. These results are in agreement with much of the literature on benefits. At approximately 31%, individuals with psychiatric disabilities represent the largest percentage group of any disabled individuals receiving benefits such as SSI and SSDI payments (Social Security Administration, 1997). For individuals receiving benefits through the SSA, including SSI or SSDI, the policy regarding the effect of earned income on benefits often is viewed as a barrier to employment for consumers who wish to return to work and maintain their benefits (Pratt, et al., 1999). Specifically, individuals with psychiatric disabilities are
often aware that despite being successfully employed, psychiatric symptoms can resurface at anytime, impairing their ability to sustain employment. Thus, the combined fear of losing benefits and subsequently being unable to maintain employment increases the risk of attempting employment and ultimately becomes a disincentive (Berkowitz, 1981; Rutman, 1994). Thus, the combined fear of losing benefits and subsequently being unable to maintain employment increases the risk of attempting employment and ultimately becomes a disincentive (Berkowitz, 1981; Rutman, 1994).

Amongst services provided, types of rehabilitation services were divided among 22 services, with each participant able to receive more than one service. Several service groups showed relationships in all statistical evaluations, namely counseling and guidance, occupational and vocational training, on-the-job training, job readiness training, job search assistance, job placement assistance, on-the-job supports, maintenance, technical assistance, informational and referral, and other services provided. The majority of these variables were significant predictors of a successful employment outcome, however, in the top group, job readiness services and informational and referral services were associated with closure without employment. Likewise, in the bottom group, the only negative predictor was counseling services. These results are in keeping with the research literature. While there is some evidence indicating that programs within the vocational rehabilitation system are effective, there is a dearth of data and research on specific rehabilitation program efficacy. However, a general trend may be noted, namely that the services most predictive of employment were those that typically come with supported employment services and would be offered to consumers who were already preparing for employability. Likewise, variables such as
counseling and guidance, and job readiness training would be likely bestowed upon individuals with a lack of job skills, training, and overall readiness to work.

Conclusions

The purpose of this study was to examine the effects of gender, race, disability benefits, vocational rehabilitation services, significant disability, and diagnosis on closure outcome for individuals with psychiatric disability going through the federal-state vocational rehabilitation program. Although sixteen covariates were found to have significance in relation to closure, most of the relationships were moderate at best. When the study commenced, the goal was to have a few covariates which could be clearly demarcated as key predictors of outcome, but this was not supported by the data. However, some clear trends were identified, specifically that disability benefits are, as previous research has suggested (Rutman, 1994), detriments to achieving employment. Likewise, while the majority of the psychiatric population (93%) is categorized as having “significant disability”, the distinction is one which is linked to a lack of success in achieving employment status. This may ultimately explain the vast difference between the percentages of individuals with disabilities that are employed in the general population versus those employed in the SMI population. Similarly, individuals who had achieved more education tended to achieve employment more easily. Again, this may be related to onset of symptomotology and diagnosis and the resulting relationship to prior work experience.

There are several current theoretical trends in the field of vocational rehabilitation for individuals with psychiatric disabilities. These include assisting consumers with the management of disability benefits, development of readiness factors, job shadowing with
ongoing support, and supported employment with a move toward competitive employment. For years, researchers and mental health advocates have emphasized the potential disincentives that disability benefits can create in consumers who are undergoing work training and preparing for competitive employment. Recipients of Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) benefits often resist planning for employment due to a dearth of information relating to work incentive programs developed by the SSA. Many individuals are concerned that full-time employment will lead to a cessation of benefits, although legislation has allowed for extended periods of trial work and savings of funds for work related expenditures (Rutman, 1994). Again, in this study, disability benefits emerge with a negative impact on closure outcome.

Another area of relative importance is that of the impact of diagnosis and severity of disability. There is a wealth of research addressing the relationship between employment outcomes of individuals with psychiatric disabilities and significant predictors of success (Anthony & Jansen, 1984; Anthony et al, 1995; Buell & Anthony; Fabian, 1992). Based on a thorough review of the literature since the 1980’s, Tsang, Lam, Ng, and Leung (2000) suggest that due to inconsistent results of multiple research studies, researchers are still irresolute on what clinical and demographic variables are consistent and reliable predictors of vocational functioning of individuals with psychiatric disabilities. The review does propose however, that consistent predictors include level of functioning before the onset of mental illness, work history, and social skills (Tsang et al., 2000). Likewise, this study is no exception, while some diagnoses showed little or no effect (anxiety disorders and personality disorders), others, including depression/mood
disorders, mental illness (not listed elsewhere), and schizophrenia and other psychotic disorders, had a strong negative association with closure status. Future research with this population would benefit from a more clearly defined set of diagnostic criteria. Although the Rehabilitation Services Administration (RSA) has loosely based their diagnostic guidelines on the DSM-IV, there are still gaps for the information recorded. Specifically, what level of symptomatology an individual might have in a given diagnosis, and how functioning might co-vary based on medication compliance and work behaviors.

Recommendations for Future Research

The limitations of this study yield to areas for future inquiry. This study utilized an ex post facto analysis of previously existing data. As a result, manipulation of the independent variables, or the assignment of subjects to different treatments was not feasible. Thus, the participants in the study represented a self-selected sample of individuals who voluntarily sought vocational rehabilitation services through the federal-state vocational rehabilitation program. Consequently, this study was limited in that a direct causal link between variables was not tenable. Additionally, due to the ex post facto method of analysis, this study incorporated the broad definitions of mental illness used by the Rehabilitation Services Administration (RSA) instead of the more precise diagnostic terms set forth in the DSM-IV (American Psychiatric Association, 1994). Ideally, the use of standardized, precise terms would allow for a better analysis of the role of symptomatology and diagnosis on outcome.

Specifically, within any particular diagnostic criterion, there is a huge range of functional levels, symptomatology and functional behaviors that an individual might possess. Additionally, there are numerous factors involved in vocational outcome,
beyond simple demographic variables and vocational rehabilitation services, which may not be accounted for in this particular study. Specifically, factors such as (a) the quality of interaction between the consumer and the counselor, (b) consumer readiness, and (c) the duration and intensity of services must also be measured to provide a more comprehensive view of factors involving consumer characteristics. Additional measures of vocational outcome and success, such as client satisfaction with employment, fringe benefits, and career advancement opportunities, were not included in this analysis. In future studies, these factors may provide supplementary information about the quality and duration of successful closures.

Another unique aspect of this database is that the participants within the state-federal system are ultimately self-selecting. In other words, to receive rehabilitative services, an individual must seek out an agency or have a direct referral. This ultimately may screen out a significant portion of the general population, including homeless people and those at the opposite end of the spectrum receiving privatized medical care. According to the Federal Task Force on Homelessness and SMI (1992), it is estimated that of the roughly 600,000 homeless people, 200,000 are suffering from SMI. Additionally, due to lack of income, insufficient social supports, and problems with alcohol or drug abuse, the situation becomes infinitely more volatile and destructive. Homeless individuals with SMI would conceivably need services in addition to traditional vocational rehabilitation to assist with housing, alcohol and drug abuse treatment, health care, treatment of mental illness, and income support and benefits. Another factor with individuals with SMI is dual diagnosis of substance abuse and mental illness. According to the National Comorbidity Study (Kessler et al., 1999), upwards of
45% of individuals alcohol abuse disorder reported a co-occurring mental illness; 72% with history of drug abuse reported alcohol abuse, mental illness, or both; and 29% of individuals with a mental disorder reported a co-occurring a alcohol or drug abuse problem.

Regardless of these limitations, this study supports the hypothesis that specific vocational rehabilitation services and demographic factors have an influence on employment outcome for individuals with psychiatric disabilities. Additional research is needed to evaluate how individuals with serious mental illness can better access the federal/state vocational rehabilitation programming.

Many researchers have suggested that each study raises more questions than it answers, and this study is no exception. While interpreting the results and framing the implications of this study, several ideas for future research arose. For example, a strong predictor of future work performance in past research has been prior work experience, a variable that has been removed from the RSA’s database. Thus, to evaluate the role of previous work and work behaviors (e.g. having job tenure, years of experience, developed work skills), many other variables might covary and have a significant impact on the dataset. For instance, individuals who are older, with a later onset of mental illness, might have more work experience, and might then qualify for SSDI. In contrast might be an individual with the same diagnosis, but with an earlier diagnosed disability, so the individual has a limited education, no work experience and has not had the opportunity to develop work skills, and also can only qualify for SSDI. How will these individuals differ from one another? Would the predictive variables from this study hold when they covary with new variables, such as work behaviors?
Another area that should be evaluated is the two new variables measuring supported employment and competitive employment. When used as predictive variables they are highly correlated with a successful closure, because they could almost be considered a type of closure instead of a predictor. Comparing the two services and coming up with a predictive model when combined with other services could yield interesting results as well.

Although it is essential that we continue to evaluate what services promote vocational success, it is equally paramount that researchers gain an understanding of what personal characteristics contribute to successful entry into the vocational rehabilitation process and to subsequent vocational outcome (Anthony, 1994). With the enduring high rate of unemployment amongst individuals with serious mental illness, research is needed to broaden knowledge about how to facilitate access and success in vocational rehabilitation programs. There is a clear consensus between consumers, researchers and practitioners that strategies must be developed to expand opportunities to enable individuals with psychiatric disabilities to participate and assume more productive roles in the workforce and society as a whole. There is evidence to suggest that many types of vocational rehabilitation contribute to some aspects of vocational restoration of individuals with serious mental illness (McGurrin, 1994).

Further research should be directed at identifying more specific features of rehabilitation services that lead to successful employment outcomes enabling persons with serious mental illness to enter and remain in the work force for an indeterminate amount of time. Finally, it is recommended that replication and/or confirmatory studies be assumed using similar data from the federal/state rehabilitation program. A particular
emphasis should be directed at identifying and defining in detail what types of services yield successful outcomes.

The results of this study, like many in the field of psychiatric rehabilitation, suggest that additional research is warranted to determine what patterns of service delivery are the most effective for the most individuals. Additionally, can a model eventually be developed that can truly predict which individuals need certain services to succeed? On that note, and in final closing, "I hope that posterity will judge me kindly, not only as to the things that I have explained, but also to those that I have intentionally omitted so as to leave to others the pleasure of discovery" (Descartes, in Newman, 1956, p. 237).
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