VALIDATION OF THE MENNINGER RETURN TO WORK SCALE
AS A SELECTION TOOL IN REHABILITATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
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School of The Ohio State University

By

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* * * * *

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To my wife and children
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CHAPTER I
INTRODUCTION

Statement of the Problem

The personal and economic consequences of long term disability in the United States are of major concern to individuals with disabilities, employers, insurers, government officials and society at large. The increasing incidence and prevalence of occupational disability resulting from the functional limitations imposed by various physical and mental impairments are now viewed as a social crisis which is essentially "out of control."

One of the fastest growing disability support systems is the Social Security Disability Insurance (SSDI) program. The SSDI program was established in 1956 through an amendment of the original Social Security Act which was passed in 1935. When the SSDI program was established, it was the intent of Congress to provide a program of early retirement for those workers fifty-five years of age or older who were not able to work because of a serious disability. The age requirement for SSDI was subsequently relaxed and now includes workers of any age whose impairments preclude substantial gainful employment. Accordingly, SSDI is perceived as an early retirement system
particularly with awards being made to younger workers (Hester, 1990).

A second provision in the SSDI legislation was vocational rehabilitation (VR). The statute directed the Social Security Administration to refer applicants for VR services to the end that "the maximum number of such individuals may be rehabilitated into productive activity" (Report of the Disability Advisory Council, 1988; p. 2). The legislative responsibility for referring applicants for VR services, however, did not rest with the Social Security Administration (SSA). This responsibility was given to the state-federal rehabilitation system's Bureau of Disability Determination (BDD). Data indicate that the referral of SSDI applicants for VR has been very ineffective. Nationally, only 10% of new SSDI beneficiaries are referred to state rehabilitation agencies (Hester, 1990). Additionally, there is a significant difference between being referred for VR services and actually receiving these services. Hester and Faimon (1985) found that less than 2% of SSDI beneficiaries in the state of Illinois were successfully referred by BDD to state VR agencies over a five year period of time. Furthermore, 80% of those who were referred never received services!

The report of the Disability Advisory Council to the SSA (1988) concluded that the current VR programs have a negligible impact on increasing the capacity of SSI and SSDI beneficiaries to work or return to work. Essentially, the
Council believes that many beneficiaries who have the potential for gainful employment are not being referred or enrolled in VR programs. The Council summarized this problem by stating,

SSA has little data on what happens to disabled beneficiaries who are referred to state VR agencies and which rehabilitation methods are most successful for various subgroups within its disability population. There is no assurance that VR services provided are necessary or appropriate, as SSA does not audit VR claims. Beneficiaries may fail to receive appropriate services that would help them go to work. In addition, money may be spent for services to beneficiaries who would have returned to work in the absence of such services, and excess services may be provided to beneficiaries who stand to gain from VR (1988; p. 40).

According to Hester and Decelles (1987), part of the reason for the underutilization of VR services among SSDI beneficiaries may be due to an inability to properly identify those persons who need and will benefit from VR services. Accordingly, the individual making the referral must be able to identify those who will not be able to return to work, even with VR services, and those who will return to work without services, from those who are in need of VR services and will be able to return to work once the services have been provided. The Menninger Return to Work Scale (MRTWS) was developed to address this problem (Hester, Decelles, and Gaddis, 1986). The MRTWS consists of 10 items which distinguish between those workers who return to work and those who do not. This instrument was initially developed on a group of individuals on long-term disability. The ten items
were combined in a unique way to form the MRTWS which indicates the likelihood of a person with a disability returning to work.

The possible range of scores on the scale is 30 to 74. The researchers found that the MRTWS provided excellent separation between those who returned to work and those who did not in that 89% of those who scored 50 or more points returned to work while only 18% of those who scored less than 50 ever returned. The MRTWS will be fully described in Chapter 2.

**Purpose of Study**

The developers of the MRTWS indicated that additional validation studies of this instrument are needed (Hester, et al., 1990).

The purpose of this analysis is to conduct an additional validation study of the MRTWS using a sample of 114 SSDI beneficiaries who participated in a Research and Demonstration Project funded by SSA and conducted at the University of Cincinnati.

**Significance of the Problem**

General disability data for the United States population, indicate that over the past 25 years there has been a 400% increase in the number of severely disabled individuals between the ages of 17-44 (Carbine and Schwartz, 1987). It is
estimated that over 21 million Americans of working age are
disabled and about two-thirds of these individuals are not
working even though they desire to work (Schwartz, et al.,
1989). Approximately 569,000 workers annually leave their
jobs for at least 5 months due to a physical impairment with
only 48% ever returning to the work force (Hester and
Decelles, 1988).

The number of beneficiaries and total expenditures under
the SSDI program have grown significantly since 1966 (Social
SSDI program now insures over 110 million workers. In 1986,
over 1.2 million applications were filed for SSDI benefits and
nearly 417,000 awards were granted. Total SSDI program
expenditures in 1986 approached 21 billion dollars. In the
upcoming years, the SSDI support system is expected to grow
more rapidly due to the aging of our work force. Hester
(1990) pointed out that between 1985 and 2020, the number of
U.S. workers who are age 45 to 64 will increase by 51%, while
the total work force will increase by only 28%. This aging of
the work force is likely to result in a dramatic increase in
the number of newly disabled workers in the next 30 years.
Hester, et al., (1986) estimates that the number of disabled
workers in the SSDI system could increase by as much as 50% by
the year 2017. These figures are quite alarming considering
the fact that over 2.7 million workers with disabilities were
receiving SSDI benefits in 1986. Based on the high personal,
social, and financial costs associated with disability, it is essential that new methods of identifying appropriate candidates for VR services be researched and developed. As Hester and Decelis (1986) pointed out, rehabilitation services are a precious commodity and we have neither the money or rehabilitation professionals to serve all of the workers who experience some type of disability. These authors state,

... currently 48% of all workers who become physically disabled return to work, mostly without rehabilitation assistance. The problem is to identify the 48% who do not need assistance to return to work and the small percentage (about 9%) who are not willing and/or able to return to work no matter how many services are provided (p.vii).

Similarly, Berkowitz and Dean (1987) stated that a major problem with Social Security Disability programs is the inability to identify persons who could benefit from VR services. These authors describe the current referral dilemma as follows,

Identification of those who could benefit from services is difficult mainly because of the desire to identify persons early in their periods of incapacity before they become accustomed to receiving benefits and not working at their old jobs. Yet we know that many (most) persons who leave their jobs because of illness or injury will return to them without the necessity of services of any kind. To screen all persons in anything but the most superficial manner becomes expensive; to wait too long before doing any screening could be to miss the most promising candidates at a time when some rehabilitation could be the most effective (p.43).

The need to validate the MRTWS as an instrument to help resolve the referral dilemma in the SSDI system is important
research. If additional studies can validate the MRTWS, it may be used as an effective method of identifying those SSDI recipients who actually need VR services from those who do not need services and those who cannot benefit from such services.

Research Questions

The following research questions will be addressed in this study:

1) Can an individual's score on the Menninger Return to Work Scale be used to discriminate among three outcome (criterion) groups, (i.e., successfully rehabilitated or job placed, unsuccessfully rehabilitated, and actively participating in services at the closure of the project) of SSDI beneficiaries who participated in a vocational rehabilitation project funded by the Social Security Administration?

2) Does the Menninger Return to Work Scale correlate with another independent measure of rehabilitation potential, (i.e., the person's Psycho-social Dysfunction Index)?

Research Hypotheses

1) There is no relationship between an individual's score on the MRTWS and successfully completing rehabilitation services.

2) There is no relationship between an individual's score on the MRTWS and not successfully completing rehabilitation
services.

3) There is no relationship between an individual's score on the MRTWS and continuing to participate in rehabilitation services at the time of project closure.

4) There is no relationship between an individual's score on the MRTWS and a measure of their psycho-social dysfunction index.
CHAPTER II
REVIEW OF THE LITERATURE

Historical Development of the Social Security Disability System

The original intent of the Social Security Act passed in 1935 was the protection of loss of income at old age. The original Social Security legislation consisted of two major programs: 1) Old Age Survivors Insurance (OASI) and, 2) Old Age Assistance (OAA). OASI basically functioned as an insurance program funded by a social security tax paid by employers and employees. Workers who paid into the fund for a specified amount of time were eligible for pension benefits at age 65. The OAA program provided pensions for those in need who were not covered by OASI. Eligibility for OAA benefits was based on need or a "means test" indicating that the individual was not capable of self support. The OAA program is considered a progenitor of the current Supplemental Security Income (SSI) program (Brinker, 1968).

Numerous changes have occurred in the social security system since the passage of the initial legislation. It is noteworthy that the 1935 social security act did not authorize payment of benefits to workers with disabilities, although as early as 1938 the Advisory Council of the SSA considered the
creation of a disability insurance program for workers under age 65. While council members agreed, in principal, that the provision of benefits to a worker who becomes permanently disabled was socially desirable, they failed to endorse such a program because of anticipated administrative burdens, the problem of disability determination, and the inability to assess the probable costs (Department of Health and Human Services, SSA, 1988).

The 1948 SSA Advisory Council also recommended to Congress that a disability insurance program be developed. The Council asserted that the absence of this type of program forced workers with disabilities to rely on public assistance (welfare) rather than higher paying disability insurance benefits. The Council believed that administrative and cost-related problems could be overcome via tight eligibility criteria and a strict definition of disability. The Council concluded,

Benefits should be paid to an insured individual who is permanently and totally disabled. For the purpose of this program, disability is defined as any condition which is demonstrable by objective tests which prevents the worker from performing any substantially gainful activity and which is likely to be of long, continued, and indefinite duration (Department of H&HS, SSA, 1988, p. 4)

Despite the Council's recommendations, Congress did not act on implementing a disability insurance program. In 1954, Congress did enact a "disability freeze" provision which protected the retirement benefits of workers during periods of total disability. Prior to the enactment of this freeze
provision, workers who were unemployed for extended periods of time due to disabling conditions could lose their right to retirement benefits or have these benefits reduced. The disability freeze guaranteed retirement benefits for those workers who missed significant amounts of time from work because of disability.

Congress also stressed the importance of vocational rehabilitation (VR) for disabled workers and recommended that workers eligible for the freeze provision be promptly referred to state VR agencies. Thus, the value of early rehabilitation intervention for workers with disabilities was appreciated by Congress as evidenced by this passage for the House Committee on Ways and Means,

> It is a well-recognized truth that prompt referral of disabled persons for appropriate vocational rehabilitation services increases the effectiveness of such services and enhances the probability of success (Department of H&HS, SSA., 1988, p.5).

The 1954 legislation creating the disability freeze provision also required that eligibility determinations be made not directly by SSA, but by state agencies which operated under the Vocational Rehabilitation Act (i.e., the State-Federal VR system). The legislators assumed that the establishment of state bureaus of disability determination (BDD) would release the federal government of the administrative burden of determining which applicants were eligible for the freeze provision. In addition, since BDD is a part of the state-federal VR system, Congress believed that this organizational
linkage would encourage and promote prompt referral for VR service. Despite this early programmatic emphasis on VR, however, contemporary critics of the social security system are in consensus that Congress' intentions for prompt referral and participation in VR services has not been realized for the vast majority of beneficiaries (Berkowitz and Dean, 1987; Hester, 1990; Greenblum, 1975).

Creation of the Social Security Disability Insurance Program

The social security amendments of 1956 established the Social Security Disability Insurance (SSDI) program and represented an important departure from previous benefit programs. The objective of the new disability insurance program was the payment of retirement benefits at age 50 to workers who were forced into premature retirement because of disability. The stringent eligibility for disability insurance benefits stipulated that the disabling condition had to be both total and of indefinite duration. The 50 years of age requirement essentially created an early retirement program for disabled workers. A report from the House Ways and Means Committee summarized the intent of the new disability insurance program,

Though present law provides for the preservation of the insurance rights of disabled workers, so as to ensure that when they attain age 65 they will get full retirement benefits, many will not survive to age 65. The time they need their retirement protection is when they are in fact permanently retired whether it results from age or disability (Department of H&HS, 1988, p. 7).
Despite objectives to the SSDI program from the Senate Finance Committee and various employer groups, President Eisenhower signed the bill into law on August 1, 1956. The SSDI program symbolized a major change in federal policy since now for the first time it recognized that disability, like age, can deprive a worker of the capacity to work and earn a living. As a consequence of the 1956 Amendments, SSA paid the first disability benefits beginning in 1957 to disabled workers age 50 and over.

Later amendments liberalized the eligibility criteria for the SSDI program. In 1960, Congress made disability benefits available to workers of any age. In 1965, the definition of disability was modified as the old definition specified that the duration of a disability had to be "long, continued, and indefinite," and the revised definition indicated that the impairment has to have lasted or be expected to last 12 months or result in death. In 1972, Congress enacted the Supplemental Security Income (SSI) program which pays benefits to people with disabilities who cannot engage in any substantive remunerative employment even though these beneficiaries never paid into the social security system (as opposed to those workers covered by the SSDI program who paid social security taxes).
Summary of Historical Aspects

Although disability insurance was not a part of the original Social Security Act, as early as 1938 there was a recognition for the need of this type of program. The continuing theme over the years as reflected in the legislative amendments to the Social Security Act has been that benefits should not be given on the basis of mere physical impairment, but such impairments must also preclude the individual's ability to perform any type of substantive gainful activity (Brehm and Rush, 1988).

Disability benefits were added to the OASI program in 1956. Individuals who have the required work history (i.e., contribute to the program for a specified number of quarters) can receive benefits prior to reaching retirement age if they meet the programs eligibility criteria. Eligibility is defined as "unable to engage in substantial gainful activity (SGA) because of a medically determinable physical or mental impairment that has lasted or is expected to last for 12 months or result in death.

Another theme in the legislative history of the social security program is the belief that beneficiaries should be promptly referred for vocational rehabilitation services. Congress involved the states in the disability determination process in order to establish a link between the determination of disability and the provision of services by state VR agencies. Congress believed that the stringent definition of
disability for program eligibility (emphasizing that impairments must be of a long duration) was not contradictory to the objectives of vocational rehabilitation. Congress' response to this apparent contradiction was summarized in a report which stated,

This provision is not inconsistent with efforts towards rehabilitation since it refers only to the duration of the impairment and does not require a prediction of continued inability to work (Dept. of H&SS, 1988, p.6).

It can be reasonably concluded that the vocational rehabilitation of SSDI beneficiaries continues to be a legislative priority of the Social Security Administration. Congress explicitly stated that beneficiaries should be referred to state VR agencies for services "to the end that the maximum number of disabled individuals may be restored to productive activity." Legislators assumed that even though some people had chronic disabling conditions there was still a substantial number of these people who could return to gainful employment if they received timely and appropriate VR services.

Characteristics of the SSDI Program and Beneficiaries

Nearly 96% of the work force or 130 million workers are covered by the SSDI program (Dept. of H&HS, Publication #64-032, 1988). At the end of 1989, approximately 8.5 million individuals were receiving disability benefits from social security. These include 2.9 million disabled worker under the
SSDI program with an additional 1.2 million family members of
disabled workers receiving SSDI benefits, and 4.5 million
beneficiaries of the SSI program.

In 1989, the SSDI program paid out 23.3 billion dollars in
benefits and over one million new applications (claims) were
filed. About 40% of those who apply for SSI benefits also
apply for SSDI awards. The SSA estimates an annual claims
allowance rate of 50%. The average SSDI monthly benefit for
a single worker was 555 dollars and 975 dollars for a worker
with dependents (SSA Annual Report to Congress, 1989). Types
of benefits paid to SSDI beneficiaries include: 1) monthly
benefits to disabled workers under age 65, 2) benefits paid to
dependent children (under age 18) of disabled workers, 3)
benefits paid to the wife of a disabled worker regardless of
age if she has a dependent child, or if she is age 62 or
older, 4) benefits paid to adults disabled in childhood if
they are dependents of insured deceased workers, and 5)
benefits paid to disabled widows or widowers, or divorced
disabled wives. After 24 months of consecutive disability
benefits, medicare protection is provided for most
beneficiaries.

An individual is required to have been disabled for 5
months prior to filing an application for benefits. To
acquire insured status, the person must have 20 quarters of
coverage of their last 40 quarters of employment; younger
workers with less experience need not meet this criteria.
Demographical Characteristics of SSDI Beneficiaries

a) Sex and Race:

Nearly 69% of all SSDI beneficiaries are male. Concerning the racial composition of beneficiaries, 77% of the males are white, 14.5% are black, and 8.5% are of other races. Among the female beneficiaries, 77% are white, 18.5% are black, and 4.5% are of other racial groups.

b) Residence:

Census data indicate that 35% of all SSDI beneficiaries live in the Southern region (17 states) of the United States; 25% reside in the North Central region (11 states); 22% reside in the North East region (9 states); and, 18% reside in the Western region (13 states). States with higher concentrations of SSDI beneficiaries include California (8.7%), New York (7.4%), Texas (5.1%), Pennsylvania (4.8%), Ohio (4.8%), and Florida (4.5%).

c) Occupational Characteristics

Data concerning the occupational characteristics indicate that 8.3% of the beneficiaries come from the Professional, Managerial, and Technical groups; 8.5% are from the Clerical and Sales group; 9.7% are from the Service group; 5.0% come from Processing type jobs; 7.7% from the Structural group; 2.0% from farming jobs; and 7.7% from the Miscellaneous category of which 3.6% in this group are from transportation related industries. Among the female beneficiaries, over 40% are concentrated in three
occupational divisions which include the Professional, Managerial, and Technical division; the Clerical/Sales division; and, the Service division. Approximately 32% of the male beneficiaries are concentrated in the Structural division; the Professional, Managerial, and Technical division; and, the Machine Trades division.

d) Educational Level
Approximately 37% of the beneficiaries have 12 years of education; nearly 14% have 13 years of school or more; 22% of all beneficiaries have between 9 to 11 years of school while 23% have less than 9 years of school. Approximately 48% of all recipients under age 35 have 12 years of school, while only 33% of the beneficiaries over age 50 have 12 years of school.

e) Type of Disability
The major diagnostic groups among SSDI beneficiaries include: 20% as having impairments related to the circulatory system; 20% qualify for benefits on the basis of mental disorders; 15.3% have neoplasms; 12.7% have musculoskeletal impairments; 7.5% have disorders related to the nervous system; and, 5.2% suffer from impairments of the respiratory system.
Considering the mobility of SSDI beneficiaries, 1.7% are institutionalized (57% of these for mental disorders); 1.9% are confined to a general hospital (40% of these for neoplasms); 9.6% need assistance in mobility activities;
and, over 80% of the beneficiaries are independently mobile.

f) Age

Approximately 45% of beneficiaries are age 55 or older; 15% are between the ages of 50 to 54, while the remaining 40% are under the age of 50. The median age for men is 54 and the median age for women is 52.

g) Basis for the Allowance of Claims

Nearly 50% of all SSDI claims are allowed because the severity of the impairment corresponds to those medical conditions listed in the SSDI eligibility criteria (this is referred to as "meeting the listing"). Another 7.6% of claims are allowed on the basis that, although the severity of the impairment is not specifically listed, the disabling effect is considered equal to those impairments which are listed in the eligibility requirements. Adverse vocational factors were cited as the reason for awarding benefits in 22% of all claims. Interestingly, among those claims allowed on the basis of adverse vocational factors, 58% are between the working ages of 30 to 49. Adverse vocational factors were the basis for claim allowance in 20% of all awards made to females, and in 22% of all awards made to males. The fact that such a high proportion of younger workers are awarded benefits on the basis of adverse vocational factors documents the need for effective vocational rehabilitation services.
Key Issues in the Social Security Disability Insurance Program

a) Introduction:

The 1988 report of The Disability Advisory Council to the SSA identified a number of problems or key policy issues in the SSDI program. Other writers, for example Brehm and Rush (1988), Hester (1990), Hester and Famion (1985), Berkowitz (1987), Yelin (1986), and, Greenblum and Bye (1987), have also expressed various perspectives that are critical of the current operation of the SSDI program.

At the core of the "overarching" problems identified by the Advisory Council is the belief that the current SSDI program functions as a premature retirement system for people with disabilities. The Council argued that the focus of the SSDI program should not be to function as a ticket out of the workforce for people with disabling conditions. Rather, the SSDI program should operate on the principle that many people with disabilities can work, if provided with prompt and appropriate VR services, and they should be encouraged to do so. According to the Council, the SSA has traditionally measured the success of its programs by improvements in the processing of claims (i.e., processing applications expeditiously and accurately by getting the right check to the right person). SSA makes monthly payments to tens of millions of beneficiaries and processes nearly one-half million applications per year. Thus, the priority in
administering the SSDI and SSI programs for people with disabilities has been to pay cash benefits to those eligible and not to enhance the work capacity of beneficiaries (i.e., "to compensate and not rehabilitate"). In the 1970's, however, several members of Congress became more concerned about the potential depletion of the SSDI trust fund due to the growth in the number of beneficiaries and increased program costs. This concern was reinforced by a 1978 General Accounting Office (GAO) report which concluded that a substantial number of SSDI and SSI beneficiaries may be capable of engaging in gainful employment. While various work incentives have recently been initiated by the SSA, the Disability Advisory Council concluded that the SSDI and SSI programs should be restructured so as to assign a higher priority to encouraging beneficiaries to work rather than declaring them unable to work.

b) The Problem of Disability Determination:

Some have argued that the SSDI eligibility determination process is by its very nature detrimental to the objectives of vocational rehabilitation. Hester (1990) observed that in order to qualify for SSDI benefits, applicants must invest great effort in demonstrating their inability to work. Programmatic confusion surrounds the opposing objectives of establishing eligibility by defining one's self as totally disabled and participating
in VR services with the objective of reemployment. SSDI differs from other disability insurance programs like workers' compensation or long term disability insurance in that these other systems only require an applicant to submit a medical statement indicating their inability to work at the time of their application. SSDI, however, requires a declaration concerning the anticipated length of time which the person will be incapable of working. The inherent subjectivity involved in specifying the length of time one is occupationally incapacitated has resulted in increased litigation pertaining to the awarding of benefits. In 1980, 49% of the applicants appealed their initial denial of benefits, and 48% of those who appealed were subsequently awarded benefits (Hester, 1990). The lengthy appeal process, itself, facilitates chronic disability. As Nadolsky (1984) pointed out, "the longer the SSDI applicants play the appeal game, remain unemployed, and wait for a new decision to be made, the greater the chance that they will actually become disabled for work (p.8)." Similarly, Hester (1990) commented that once a former worker successfully internalizes the feeling of total incapacity, it is very difficult for that worker to seriously consider VR. The statutory definition of disability in the SSDI program, which requires the applicant to demonstrate the inability to work for a significant amount of time,
actually undermines the inducements for beneficiaries to participate in VR and return to work. The Disability Advisory Council summarized this situation in their 1988 report,

This sends mixed signals to people with disabilities who expend a significant effort proving that they cannot work, and once on the rolls, are understandably reluctant to demonstrate that they can work, particularly since employment can jeopardize their entitlement to benefits (p.23).

Increased costs and the increasing number of workers projected to enter the SSA disability support system has resulted in more pressure to encourage the vocational rehabilitation and successful reemployment of beneficiaries. The low labor force participation among SSDI and SSI beneficiaries is now viewed by many as a sign of programmatic and administrative failure of the SSA.

In order to resolve the VR disincentives inherent in the protracted SSDI eligibility process, some critics have recommended that the SSA implement a short term disability insurance program. Berkowitz (1987) argued that VR services would be more effective earlier in the disability process, rather than being offered after an extensive application ordeal establishing long term incapacity for work. In his comparison of social insurance disability systems among eight countries, Berkowitz noted that the United States stands alone in not having a short term disability benefits program. Without a short-term program, it is practically impossible to identify those at risk for disability prior to their
application for long-term benefits.

Hester (1990) also supports the initiation of a short term disability benefits program in the social security system. According to Hester's plan, a "two-stage" system would make it easier to provide a maintenance income for those who are truly unable to continue working and to help those who are temporarily disabled return to their former job or find another job. Murov (1986) similarly proposed that time-limited benefits be provided to disabled workers who are participating in VR and that long-term benefits be awarded to those persons whose disabilities are so severe that they can never return to employment. Under this plan, the application procedure for short-term disability would be simplified, eligibility would be based on a definable temporary disability, and VR would be mandatory. Temporary benefits would be paid up to a period of two years while VR services were provided. The two year period is significant as data indicate that 85% of those seriously disabled workers who return to work do so within two years (Hester and Decelles, 1985). Hester (1990) estimated that adding a short-term disability feature to the SSDI program would decrease long-run costs, prevent long-term disability, more effectively use VR services, and decrease litigation.

Perhaps the major potential advantage of a short-term disability program would be establishing a method of diverting those with temporary disabilities from entering the long-term
disability support system. Evidence from the 1978 GAO study suggested that substantial numbers of SSDI and SSI beneficiaries may be capable of working and not meet the legal definition of disability despite the severity and permanency of their impairments. There is also evidence that many severely disabled individuals, who would meet the statutory definition of the SSDI eligibility criteria, are in the labor force (Brehm and Rush, 1988).

A major SSA policy issue, therefore, surrounds the current disability determination process which is not able to accurately discriminate, among the severely impaired, those with work capacity and those who cannot work. As summarized by The Disability Advisory Council, "the most troublesome group comprises beneficiaries whose medical conditions are both severely dehabilitating and unlikely to improve. Despite the severity and permanency of their impairments, many of these beneficiaries can work (p.17)."

Once an individual enters the SSDI support system, their chances of returning to the workforce is extremely unlikely. In one study, it was found that when a person is allowed SSDI benefits, their chances of returning to work drop from 46% to 17% (Hester, et al., 1986). Another study found that only 7% of SSDI beneficiaries returned to work within a three year period after obtaining benefits (Trietel, 1979). This is the lowest return-to-work rate among beneficiaries of any disability support system (Hester, 1990). The under
utilization of VR services is viewed as the most significant factor contributing to the poor return-to-work rate among SSDI beneficiaries.

c) Issues Related to the Vocational Rehabilitation of SSDI Beneficiaries:

In response to the underutilization of VR services among beneficiaries, the SSA has recently funded a number of Research and Demonstration Projects aimed at developing and implementing more effective VR interventions for this population. In 1987, the SSA allocated 6.5 million dollars for demonstration projects. Criteria for awarding these grants emphasized approaches that linked Federal and State resources with private sector rehabilitation organizations. Requests for proposal specifically required programs that 1) allow access to private sector VR and job placement resources, 2) identify appropriate candidates for reemployment and provide them with effective public or private sector resources, 3) disseminate information regarding new work incentives for beneficiaries, and 4) employ state-of-the-art computer technology (Rehab Brief, Vol.XI, No.4, p.3).

The report of the Disability Advisory Council to the SSA strongly recommended that funded demonstration projects should be used to test proposed changes in the SSDI program policies including: the acceleration of the initial eligibility process; shifting responsibility of the initial eligibility determinations from BDD to SSA regional offices; active
participation of SSDI beneficiaries in establishing job goals and selecting service providers; using case managers to oversee the planning, provision of services and employment of beneficiaries; development of reemployment strategies which make returning to work with the former employer a priority; and, using return to work as the primary effectiveness criterion for demonstration projects (SSA. 1988).

In addition to the funded demonstration projects, various work incentives were contained in the social security amendments of 1980 as efforts to encourage beneficiaries to return to work. For example, beneficiaries are entitled to a trial work period in which disability benefits can continue for up to 9 months while the person's ability to work is assessed. Only those months in which gross wages exceed 200 dollars count as trial work time. Other work incentives include an extended period of eligibility after the trial work period if the person becomes disabled and cannot perform substantial gainful activity, continuation of medicare coverage for 39 months after the trial work period, the ability to return to benefits without reapplying if the person becomes disabled within 5 years of the trial work period, and payment of various other impairment-related work expenses, (e.g., medical devices, equipment, etc.) (U.S. Department of Health and Human Services, SSA, No. 5, 1990).

The philosophical basis of the work incentive provisions is the premise that many beneficiaries have been reluctant to
pursue VR or attempt reemployment because of a fear of losing their benefits. There is concern, however, that the work incentives have not resulted in a substantial improvement in the return to work rates among beneficiaries. Currently, only a small percentage of beneficiaries are taking advantage of the work incentive reforms. To further liberalize the use of work incentives for SSDI beneficiaries, some have proposed establishing a new status, "Disabled and Worker" which would allow the severely disabled worker to earn wages and still remain eligible for cash and medical benefits (Inge, 1990).

The low return to work rate among beneficiaries is even more disturbing in light of the results of a 1978 SSA survey which indicated that 53% of the men on the SSDI roll and 39% of the women stated that they would return to work if they could find a suitable job and receive VR or training services. Other survey data supporting the reemployment potential of program beneficiaries include the facts that most beneficiaries have a work history (except for some who receive benefits based on a relative's work experience), 34% have 12 years or more of education, and the average age is 51 with an increasing number of younger beneficiaries.

Greenblum and Bye (1987) compared the work values of SSDI beneficiaries to other people with impairments, and non-disabled individuals. The authors' concept of work values was defined as the importance of having a job to one's self concept and sense of self-worth. Contrary to popular belief,
Greenblum and Bye found that the importance of having a job does not decline after people are granted disability benefits. They concluded,

Descriptive data comparing male and female disabled beneficiaries having similar demographic and occupational characteristics indicate that the belief in the importance of a job does not decline after entitlement to disability insurance benefits.... Efforts to encourage and assist beneficiaries to return to work are therefore important to pursue (pp. 70-71).

Although evidence exists that many SSDI beneficiaries may be capable of working and even desire to work, a number of factors related to the structural and administrative nature of the SSA plus the characteristics of the beneficiaries, themselves, have been identified as barriers towards VR and successful reemployment. The protracted eligibility process, previously discussed, is an example of a structural factor which discourages successful rehabilitation. Other concerns center around the response of SSDI recipients to VR services. Greenblum (1975) found that SSDI beneficiaries are less likely to be accepted for VR services by state VR agencies than are other types of referrals. Differences were also observed for the outcome of VR services which revealed that SSDI beneficiaries are more likely to be closed as unsuccessful cases compared to other clients. Better (1979) conducted a study of SSDI beneficiaries that were accepted for VR services in the state of Alabama. This analysis compared those who successfully completed VR services with those who were not successful. Results indicated that a combination of 10
variables could account for only 38% of the variance in client closure status. The variables associated with successful VR completion included: physical as opposed to mental disability, the beneficiaries perception of good health, being female, having a more extensive pre-disability work history, and an absence of transportation problems.

Hester and Faimon (1985) conducted a 5 year study of SSDI referrals to the Illinois state VR agency. This analysis indicated that for the five year period (FY 1979 to 1973), a total of 13,731 SSDI beneficiaries were closed by the Illinois state VR system. Only 2,380 (17.3%) were referred to VR by the Bureau of Disability Determination (BDD). The other 11,351 SSDI recipients were either referred by other sources or were self referrals. During this five year period, a total of 124,818 individuals with disabilities were allowed SSDI benefits in the State of Illinois. Thus, out of the total number of cases that were granted SSDI benefits, only 1.9% were referred by BDD for VR services. Of the 13,731 SSDI cases that were closed by the VR agency for this five year period, a total of 17% were referred by BDD. SSDI referrals from BDD were significantly different, in terms of demographic characteristics, than SSDI referrals from other sources. Those referred by BDD were younger, more likely to be males and a member of a minority group, and have either an orthopedic or cardiac impairment. SSDI referrals from other sources tend to have disabilities associated with mental illness or
neurological problems. Only 58% of the total 13,731 case closures were considered as "feasible" candidates for VR services since 42% were closed as "not feasible" following vocational testing. Interestingly, those beneficiaries referred by BDD were more likely to be considered non-feasible than SSDI referrals from other sources. Referrals who were older and members of minority groups were more likely to be judged non-feasible. There were also significant differences on certain variables between clients who were closed as successful rehabilitants and those closed unsuccessfully. These variables included age, sex, race, and disability type. Older recipients were more likely to be successful closures than their younger counterparts. Since more older workers were considered non-feasible, this difference may be an artifact of a system which tends to provide services to only those older workers with better vocational potential. In terms of race, minority workers are more likely to be closed as not rehabilitated as compared to White beneficiaries. This finding may be related to the fact that a majority of the minority group members live in inner city environments where employment opportunities are more limited and also due to racial discrimination involved in the hiring process. Women were more likely to be rehabilitated than men. Concerning type of disability, those with visual or hearing impairments were more likely to be rehabilitated than those with mental illnesses or blood diseases.
Kamkar and Tenney (1991) conducted a study to evaluate variables related to return to work among SSDI beneficiaries. This study of 664 SSDI beneficiaries examined the relationship their success in returning to work and length of job retention with a number of demographic and socio-economic variables. The most significant finding was that the longer beneficiaries were unemployed at the time of involvement in rehabilitation, the less successful they were in returning to work. This result is consistent with other studies supporting the influence of early intervention and positive responses to vocational rehabilitation (e.g., Olsheski and Growick, 1987; Spitz, 1983; Gates, Taler, and Akabas, 1989). Other significant factors were the beneficiaries' trial work status and educational level. Beneficiaries with no trial work period remaining at all had the lowest return to work rate (31%). Beneficiaries who had the full 9 months of trial work period time remaining were not that successful either as their return to work rate was only 39%. Beneficiaries who had 1-4 months of trial work time remaining, however, had the highest return to work rate of 54%. This finding was attributed to the fact that the group falling into the middle of their trial work period eligibility are more likely to obtain employment since they have previously attempted working and could be more willing to try again. Beneficiaries who had used all 9 months of their trial work period and failed to maintain employment may be more reluctant to try and work since they no longer
have the security afforded by this provision. Beneficiaries with high school diplomas and trade school degrees had a higher return to work rate (47%) than college graduates (43%). The researchers attribute this finding to the possibility that college graduates may be more selective in the types of jobs they accept. Also, college graduates that did return to work obtained higher wages ($6.73/hr.) compared to those with lesser education ($4.16/hr.). Disability type was found to be the only significant variable related to job retention. Both mental disorders and impairments related to head injuries were found to have a negative impact on the length of time a beneficiary remained on the job.

In a project funded by the SSA, Shrey, Bangs, Mark, Hursh, and Kues (1991), used a multidisciplinary disability management model to assist SSDI beneficiaries in returning to work. Project services included multidisciplinary evaluation (e.g., medical, functional capacity, psychosocial, and vocational assessments), case management, vocational counseling, job seeking skills training, and educating beneficiaries of the SSA work incentive provisions. A total of 112 project participants were divided into four groups: 1) project placed group (27 clients), who were employed at the close of the project; 2) the active not placed group (21 clients) composed of those still involved in rehabilitation services at the close of the project; 3) the inactive group (59 clients) consisted of those who were not placed at the
close of the project and those who did not complete services; and 4) the pre-placed group (5 clients) who were already working at the time of project initiation but used project services focusing on job retention. Statistical comparisons among the four groups indicated significant differences in educational level among the placed group (13.3 average years of education) and the inactive group (12.2 average years of education). Pre-project job application activity also significantly differed among the four outcome groups. Forty-eight percent of the placed group indicated that they had submitted at least one job application since they began receiving SSDI benefits. This figure is higher than the participants in the active group (33%) and the inactive group (22%). The authors concluded that submitting even one job application may indicate higher motivation and a sincere desire for obtaining employment.

In another field demonstration project funded by the SSA, Hester, et al. (1990), provided independent case management services, vocational counseling, and job placement services for SSDI beneficiaries and applicants. The sample was divided into an "early referral group" consisting of individuals who had applied for SSDI benefits but whose claims were not yet allowed, and a "late referral group" composed of those whose claims for SSDI benefits were recently granted. Only 6% of the late referral group agreed to participate in project services while 22% of those in the early referral group agreed
to participate. Consequently, a total of 87 individuals actually received services. A significantly higher percentage of the early referral group (21%) returned to work compared to the late referral group of whom only 3% returned to work. Project participants who viewed their financial situations as being either poor or critical were less likely to be successfully employed (29%) compared to those who had a more positive view of their financial status and had a 73% return to work rate. Participants who had a vocational history in the service and technical/sales types of occupations were more likely to return to work than those coming from the craft and repair occupations.

The limited number of rehabilitation outcome studies pertaining to SSDI beneficiaries appear to be characterized by similar types of methodological problems associated with rehabilitation success studies in general. Bolton (1972) has noted the difficulty in generalizing the results of VR outcome research. Typically, these studies do not measure comparable variables or use the same definition of rehabilitation success. Thus, general studies of VR outcome have stressed the importance of different variables as predictors of VR success. Some studies have stressed the importance of various combinations of psychological, demographic, vocational, medical, functional capacity, and work environment variables. The profile most often found in summarizing outcome studies is a client who is younger, married, has a relatively higher
level of education, and is younger when becoming disabled (Bolton, 1972; Rubin, Bolton, and Sally, 1973). Vander Kolk (1989), for example, found age, level of education, and previous work experience as significant predictors of the vocational success of visually impaired clients. Younger clients (age 25-31), those with more than an eighth grade education, and those with more years of work experience had higher vocational success rates. Beck (1989) found a different set of variables related to the outcome of VR services for injured workers in the state of Wisconsin. Using a multivariate (loglinear) analysis, results indicated that unsuccessful outcome (i.e., not returning to work) was associated with the following interactive variables: external locus of control, lengthy healing period (over six months), and high unemployment rate in the local labor market.

Another study by Lam, Bose, and Geist (1989), investigated the employment outcomes of clients served by private rehabilitation firms. A total of 35 variables were used to discriminate among groups of clients with different rehabilitation outcomes. Discriminant analysis identified nine significant variables combined in two significant functions. Function one accounted for 69.7% of the variance and function two accounted for 30.3% of the variance in outcome of services. The "unemployed group" tended to have the highest incidence of attorney representation, the highest number of months on unemployment prior to rehabilitation
referral, the lowest degree of transferable skills, and the lowest post-injury residual physical capacity. The group that returned to work with the same (original) employer had the lowest incidence of attorney representation, the shortest unemployment period, the most months employed by their employer, the lowest level of pre-injury vocational skills, the least physically demanding pre-injury jobs, but the highest level of residual physical capacity post-injury, the highest frequency of medical management involvement, and the lowest costs for rehabilitation services. The third group in this study, those employed by a new employer, were characterized as having the least number of months employed with the previous employer, the highest level of pre-injury vocational skills, the highest rated transferable skills, the highest physical job demands, the least involved medical management, and the highest costs of rehabilitation services. The researchers concluded that the pre-injury physical demands of the job and the individual's residual physical capacities accounted for the majority of the differentiation among the outcome groups.

Other studies have addressed the relationship between the financial benefits of disability support systems and rehabilitation outcome. Better (1979) compared rehabilitation outcomes of severely disabled SSDI beneficiaries and severely disabled non-beneficiaries. He found that 71% of the non-recipient group returned to work while only 56% of the
beneficiary group obtained employment. Better concluded that the difference in return to work rates was related to the financial benefits which functioned as a disincentive to return to work among the beneficiary group.

Berkowitz (1980; 1981) argues that impaired people have choices to make regarding the labor market. Accordingly, they may choose to be disabled and qualify for benefits, or they may choose to work. Berkowitz concludes that when replacement rates (i.e., the ratio of benefits to previous wages) are high, applicants are encouraged to seek out benefits and to prefer the securities of benefit status vs. the uncertainties of the labor market.

A study by LaForge and Harrison (1987) examined the relationship of workers' compensation wage replacement benefits and return to work. Their findings indicated that individuals who received time limited compensation benefits returned to work at a substantially higher rate than those receiving unlimited benefits. The researchers concluded that the anxieties associated with the loss of benefits, among the time limited group, apparently acted as an incentive to return to work sooner. Conversely, the lower return to work rate among those receiving time unlimited benefits was viewed as evidence that such benefits function as financial disincentives to the reemployment process.

There are other studies that tend to support the argument that disability cash benefits generally function as
disincentives to participate in VR and return to work. Walls (1982) examined the relationship between vocational rehabilitation clients who were receiving various types of compensation benefits and their return to work rates. He found that the higher the amount and the greater the sources of benefits, the less likely a return to work outcome was achieved. Another study by Walls, Dowler, and Fullmer (1989) showed support for the financial disincentive theory. This study analyzed the relationship between cash and in-kind benefits and return to work among a sample of 100 state VR clients in West Virginia. Results indicated that higher benefit levels and more sources of benefits are related to poorer rehabilitation outcomes. A more in-depth analysis of these data, however, indicated that when the source and use of benefit dollars are examined, those clients who used their benefits for vocational training earned higher salaries after rehabilitation than those who did not participate in training programs. The authors refer to this positive use of benefits as the "bootstrap effect", (i.e., the use of benefits for self-improvement as opposed to self-maintenance).

Some evidence suggests that the disabled individual's fear of loosing benefits (both financial and medical) lies at the core of the financial disincentive perspective. Walls and Dowler (1987), for example, analyzed client decision making as it pertains to the vocational rehabilitation process. This study concluded that a client's decision to cooperate with the
vocational rehabilitation process is essentially one of economic choice. In their survey of 100 disabled VR clients, many responded that they would choose to work but they feared the potential loss of benefits if they were to fail vocationally.

There is evidence that vocational rehabilitation counselors also perceive the client's fear of losing benefits as a major barrier to the successful outcome of services. A survey of vocational rehabilitation counselors conducted by the General Accounting Office (GAO, 1987) indicated that the main reason SSDI beneficiaries are reluctant to participate in VR services was their fear of losing cash and Medicaid benefits. The report of the SSA Disability Advisory Council (1988) also acknowledged that the fear of losing benefits is a major concern among SSDI beneficiaries. The Council believes that much of this fear is based on the beneficiary's lack of understanding of how entitlement to benefits is protected by the various work incentive provisions in social security law. The Council recommended that this problem be addressed by improving public information and clarifying rules and regulations for program beneficiaries.

Yelin (1986) analyzed data obtained from the 1978 Social Security Survey of Disabled and Non-disabled adults which included 9,859 respondents of working ages 18 to 64. Contrary to the financial disincentive perspective, however, he found that the nature of the person's job and their functional
capacities are the strongest determinants of labor force participation. Financial benefits (wage replacement ratios) were found to be the weakest predictive variables. Impaired workers who had discretion over the activities and pace of their jobs were 20 times more likely to be working than those with less autonomy. Yelin suggests that control over work may be a variable which has an intervening influence on the relationship between financial benefits and return to work. Yelin concluded, "In turn, the nature of work closely correlates with replacement rate, and, no doubt, accounts for much of its effect on work outcome (p.639)."

The Menninger Return to Work Scale

Introduction:

A review of the literature yields two major themes regarding the labor force participation of SSDI beneficiaries: 1) many SSDI beneficiaries enter the disability support system even though they may have vocational potential, and 2) a very limited number of SSDI beneficiaries actually participate in vocational rehabilitation services and return to work.

The first problem is primarily related to the current SSDI disability determination process which does not effectively discriminate between those who cannot work because of their impairments from those who have impairments but remain (potentially) capable of working. Brehm and Rush (1988) point out that the SSDI eligibility process accepts the existence of
certain impairments (the medical listings in the eligibility criteria) as proof of occupational disability. Their research, however, revealed that there are a substantial number of people in the work force who have impairments that are equivalent to those listed in the SSDI eligibility criteria. This finding supports the assertion that "impairment does not equal disability" (Nagi, 1976). Individuals with similar impairments (in terms of type and severity) may or may not be occupationally disabled. Brehm and Rush concluded that the disabled (i.e., those not working) are a unique subset of the impaired who can be identified, not by the state of their health, but by their demographic and socioeconomic characteristics. These findings are consistent with most of the VR outcome research which has been previously reported. In general, client demographic and biographical variables have been found to be the strongest predictors of successful return to work (Vandergoot, 1987; Vandergoot and Worall, 1979).

The low return to work rate among SSDI beneficiaries is compounded by the second problem identified in the literature review: the extremely limited number of these individuals who participate in vocational rehabilitation programs. This problem, in part, suggests a reluctance of state VR counselors to consider SSDI beneficiaries as feasible candidates for services. The issue of client feasibility in the state VR system is operationally defined as "the counselor's reasonable
expectation that the provision of services will most likely result in the client's employment." This decision of who can reasonably benefit from services is very vulnerable to the subjective perceptions of the counselor (Lipsky, 1980). A negative result of this discretion is inconsistency in the method that employability judgements are made. Jones (1983), for example, found significant variability among counselors in the same work units regarding eligibility decisions. Significant variation was even found when dealing with the same disabled persons having identical and comprehensive diagnostic information. Jones found that providing employability information, obtained from using the Preliminary Diagnostic Questionnaire (PDQ), increased agreement among counselors in VR eligibility decisions.

In a study by Hester and Decelles (1987), wide variation existed in the ability of counselors to predict return to work potential. In this study, counselors were asked to select feasible clients for VR services from a sample in which the researchers had knowledge of service outcomes. Counselors who were more accurate decision makers differed from those with poorer decision making ability. The better decision makers used more information in the process and weighed each piece of information more evenly.

Even though employability is the cornerstone of the VR system, there is no generally accepted method of evaluating it. Performance evaluation and program accountability are
constrained by this lack of agreement in terms of dealing with employability in a practical and operational fashion (Moriarity, Walls, and McLaughlin, 1988). In light of these concerns, a reasonable conclusion is that the current methods of selecting candidates for VR services from the population of persons with disabilities is generally not effective or accurate. This problem is even of more concern when considering SSDI beneficiaries for VR services as evidence suggests that VR counselors are less likely to find SSDI beneficiary referrals as feasible candidates (Hester and Faimon, 1985). The result of this situation is the under utilization of VR services for many SSDI beneficiaries who may actually have vocational potential. As a response to this type of selection problem, Hester, Decelles, and Gaddis (1986) developed the Menninger Return to Work Scale (MRTWS). The primary use of the MRTWS is as a rehabilitation selection tool (i.e., as a method of objectively identifying those who need and can benefit from vocational rehabilitation services from those who do not need or cannot benefit from these services). According to the developers, the MRTWS offers the possibility of helping rehabilitation professionals identify persons with rehabilitation potential who might otherwise be overlooked. Should the MRTWS prove to be a valid tool, its use can greatly improve the current system of referring and accepting SSDI beneficiaries for VR services. Undoubtedly, an instrument which would make the current referral and feasibility decision
process more objective looms as a vast improvement over the current system.

Development of the MRTWS:

The MRTWS was developed from a study of 600 long term disability claimants, half of whom returned to work (Hester, Decelles, and Gadds, 1986). Ten items were found to significantly differentiate between those who did not return to work and those who were successful in their return to work. These items are operationally defined as:

1) **AGE** - Age cohorts are grouped as follows:

   16 - 34  
   35 - 44  
   45 - 54  
   55 - 64

2) **SEX**

3) **EDUCATION** - Years of education are grouped as:

   Less than or equal to 8 years  
   9 - 11 years of education  
   12 years of education  
   13 - 15 years of education  
   16 years of education  
   More than or equal to 17 years of education

4) **MARITAL STATUS** (Married, Single, or Other)

5) **PLACE OF RESIDENCE** - Defined as population density in the claimant's county of residence;

   Residential classifications include:

   **Rural** - counties with 75 or fewer persons per square mile.

   **Metropolitan** - counties with 1500 people or more per square mile.

   **Urban** - counties with 76 to 1,499 people per square mile.
6) **FORMER OCCUPATION** - The person's occupation was coded as follows:

A) **Managerial and Professional Specialty:** includes executive, administrative and managerial workers, as well as professionals, e.g., attorneys, doctors, teachers, etc.

B) **Technical, Sales, and Administrative Support:** includes technicians, sales persons, administrative support personnel such as secretarial and clerical workers.

C) **Service Occupations:** includes domestics, protective service workers, barbers and other personal service providers.

D) **Precision, Production, Craft, and Repair:** includes mechanics and repair persons and construction trade workers.

E) **Operators, Fabricators, and Laborers:** Machine operators, assemblers, transportation workers, laborers, and equipment cleaners.

F) **Farming, Forestry, and Fishing**

7) **TYPE OF DISABILITY:** Defined as the individual's primary disability which were grouped according to the Merck Manual classification system and coded as:

03 - **Cardiovascular Problems:** includes myocardial infarctions, arteriosclerotic heart disease, coronary artery disorder, hypertension, and angina pectoris.

04 - **Pulmonary Problems:** includes lung cancer, lung obstructions, bronchitis, emphysema, and asthma.

05 - **Gastrointestinal Problems:** includes intestinal cancer, stomach ulcers, and gastritis.

10 - **Musculoskeletal Problems:** includes fractures, strains, arthritis, sprains, torn muscles, and back pain. (Includes Other types of disability).

11 - **Neurological Problems:** includes herniated nucleus pulposus, CVA, disk disorder, brain concussion, fractured vertebrae, radiculopathy, ruptured intervertebral disk, and multiple sclerosis.
8) **TYPE OF EMPLOYER** -
   A) Small Employer - under 100 employees
   B) Major Employer - 100 or more employees
   C) Self Employed
   D) Public Employer

9) **WAGE REPLACEMENT RATIO** - A Ratio of more than 1.0 means that the disability support payments are greater than the former wages. The ratios are divided into six groups. Each group has a range of 0.25 with the last group consisting of those whose wage replacement is greater than 1.50 (or 150%).

   Wage replacement ratio expresses the relationship of disability support payments to pre-disability earnings.

10) **SOURCES OF DISABILITY SUPPORT RECEIVED:**
    1) None
    2) Workers' compensation
    3) SSDI, only
    4) Long term disability insurance
    5) Other
    6) Multiple support (i.e., more than one source of support).

**Population used in the Development of the MRTWS:**

As previously mentioned, the population used in the development of this scale consisted of 600 individuals on long term disability (LTD) insurance. These LTD claims were considered serious in nature. A serious LTD claim is defined as a situation in which the disabled individual is not able to return to work for five months or more. The developers of the scale argue that the sample used seems to closely approximate the general working population. The vast majority have blue collar, clerical, or service jobs. The sample includes more men than women. The average age of the sample is 50.4 years
which is not significantly different than the average age of the total disabled worker population. The sample had an average of 12.7 years of education (S.D. = 4.07). Seventy-five percent of the sample were married, 16% were single, and 9% were divorced, widowed, or separated. The sample is fairly well divided between those who worked for major companies (20%), small companies (32%), public employers (25%), and self-employed (24%).

Data Analysis and Scale Construction:

According to Hester, et al., (1986), the most important step in the development of a scale is to identify those items which are significantly related to the outcome characteristic which is to be predicted. The 10 items on the MRTWS are those which significantly differentiated the LTD claimants (in the sample) who returned to work from those who did not return to work. Univariate comparisons (Chi square and t-tests) of the return to work and the non-return to work subsamples, with respect to each of the variables, were performed. Only the variables that significantly differentiated between these two outcome groups were included as scale items. Each variable was transformed to a set of scale scores from 0 to 10 where each unit corresponds to a 10% probability of return to work for the variable in isolation from other variables.

The next step in scale construction is to weigh the items and the categories within each item. The scaling method used by Hester and associates was to derive a score from the
percentage of people with that characteristic who returned to work. For example, 63% of the claimants who are single returned to work. This percentage was converted to a scale score of 6 on the marital status item. Appendix A lists the conversions from percentage ranges to scale scores. The resulting scale scores for all 10 items (i.e., the scoring key) are listed in Appendix B. The values for the person's rating on the items are added together, and the sum is the person's MRTWS score. The scores can range from a low of 30 to a high of 74. A person receiving the lowest possible score, for example, would be a man, 55 years of age or older, who is widowed, divorced, or separated, and has a neurological disability. He resides in a rural county, has less than 9 years of education, was employed in a service trade either for himself or a small company. He receives both LTD and SSDI benefits which provides wage replacement in excess of 150% of his former wages.

Other adjustments had to be made, however, in the scaling of the educational and wage replacement items due to incomplete (sample) data. In the case of these two items, more data was available on those who returned to work than for those who did not. Based on the way the sample was selected, it was expected that 50% of the data would come from those that returned to work and 50% from those who did not. In case of the worker's level of education, 60% of the data were from those who returned to work, and 40% from those who did not.
In order to correct for this discrepancy, they divided the number in each classification of an item by the percentage (in decimal form) of the number who either returned to work or did not, depending on which was appropriate. For example, 24 persons who returned to work had less than eight years of education. Thirty-two of those who did not were at the same educational level. The 24 were divided by .595 (the proportion of the data in the return to work group) yielding a value of 40. The 32, who did not return to work were divided by .405 which yields a value of 79. The sum of 40 and 79 (119) was divided into 40 to produce the percentage which was then converted into the scale score. This methodology assumes that the collection of data was unbiased, and therefore, is representative of the total sample. Since this sub-sample consists of almost two-thirds (65.7%) of the total sample the researchers were confident in this assumption. The adjusted percentages for educational level are shown in Appendix C. These percentages resulted in all educational levels being given a scale score of one lower than if the original percentages had been used.

The same procedure was used to correct the fact that only 82% of the wage replacement data were available for the group which did not return to work. These results are shown in Appendix D. In this item, only one classification, a wage replacement ratio of 1.01 to 1.50, changed from that which would have been derived using the original percentages.
The average scale score for those who returned to work was 56.8 (S.D. = 6.37). For those who did not return to work, the average scale score was 44.4 (S.D. = 5.54). These results were highly significant (t = 10.23, p<.001). Eighty-nine percent of those who score 50 or more points on the scale returned to work, while only 18% of those who score less than 50 ever return to work. It is important to note that these scores were derived from 375 individuals in the sample for whom complete data was available. Sixty-one percent of these were in the return to work group, and thirty-nine percent in the non-return to work group. Therefore, in order to generate the predicted return to work percentages for scale scores, the same type of adjustment methodology as done with the educational and wage replacement items was applied. The results of this adjustment are shown in Appendix E: Likelihood of Return to Work Based upon Adjusted Probabilities Within the Sample Population.

It is very important to note that while the researchers have gone from the probability of return to work for each scale item, one cannot go directly from the total scale score back to the return to work probability. For example, if a person obtains a total scale score of 30, does not mean there is a 30% chance that he/she will return to work. In fact, the chance of this person returning to work is only 3%.
Relationship Among Scale Items:

Some of the items in the scale are obviously interrelated. In order to quantify the interrelationships, the researchers initially intercorrelated the scale scores from each of the disabled workers in the sample. The resulting intercorrelational matrix is shown in Appendix F. Two clusters of scale items are higher than 0.40. The first cluster involves education, occupation, type of employer, and sex. The second cluster involves the type of support and the amount of wage replacement.

A factor analysis of the intercorrelations among scale scores for the significant variables was performed (n=375). Pearson's correlation coefficient was used as a measure of intercorrelation. The factor analysis employed the principal factor method (Thurstone, 1947) using BMDP-83. The values for the diagonals were derived from an iterative estimation of the communalities. An oblique rotation solution to the factors was obtained, since they assumed the factors were interrelated. This analysis identified four factors. Since only one item, wage replacement, is significantly loaded on two factors, they referred to the factors as "groups." These groups and the factor loadings are found in Appendix G. The intercorrelation matrix for the four factors are found in Appendix H.

In order to determine the importance of each scale item, the scale score of the item was correlated with the total
scale score. The square of the correlation coefficient times 100% provides a measure of the amount of variance in the total score explained by that particular item. The items and the amounts of variances are as follows: type of support (54%), education (42%), wage replacement (39%), occupation (35%), disability (27%), employer (26%), sex (16%), age (12%), residence (10%), marital status (4%). The sum of these percentages total to 265% rather than 100% due to the intercorrelations of some of the items (i.e., some of the items overlap). The researchers point out that if only the percentages of the primary items in each of the four factor groups are added (occupation, wage replacement, marital status, and age), the total percentage of variance accounted for is 90%. These percentages are nearly additive since the highest intercorrelation among these four items is 0.25 for occupation and wage replacement.

**Use of the MRTWS as a Rehabilitation Selection Tool:**

The most efficient use of vocational rehabilitation resources requires: 1) that they are not used for those who will return to work without assistance; and, 2) that services not be provided for those who are not able or willing to return to work. The developers of the MRTWS use scale scores to classify disabled workers into treatment groups. These treatment groups can potentially be used by the counselor in the rehabilitation selection process (i.e., deciding who can
benefit from rehabilitation services in terms of returning to work).

This classification system is presented below (Hester, et al. 1986, pp. 72-75):

**Group 1 (score less than or equal to 39)** - do not provide rehabilitation services unless requested by the claimant, and then only after careful evaluation.

**Group 2 (score 40 to 44)** - look at the person's strengths as identified by the scale. If it appears that the claimant may be willing and able to benefit from rehabilitation services, proceed with caution. Watch the client's progress carefully and be prepared to stop services if it appears that the person is resisting.

**Group 3 (score 45 to 49)** - people in this group should be considered rehabilitation candidates until proven otherwise.

**Group 4 (score 50 to 54)** - claimants in this category who are not going to be able to return to their former job, should definitely be provided with rehabilitation services.

**Group 5 (score 55 to 59)** - since the vast majority of individuals in this group return to work without assistance, rehabilitation services probably will not be needed. However, look at the person's weaknesses as identified by the scale. If any items except wage replacement are very low, or the disability is very severe, the need for rehabilitation services should be evaluated.

**Group 6 (score 60 to 64)** - vocational rehabilitation services will not normally be needed; however, if medical rehabilitation is recommended, it should be provided since the person will almost assuredly return to work.

**Group 7 (score of 65 or more)** - claimants in this group will be returning to work. Their progress should be monitored and assistance provided if requested.

**Previous Research using the MRTWS:**

In a study titled "Project Return: Rehabilitation of SSDI Applicants" by Hester, Caddis, Decelles, and Webb (1990), the MRTWS was used as a tool to select SSDI applicants for vocational rehabilitation services. Potential candidates who
had a scale score of 45 or less were not considered as feasible candidates for VR services and, in the data analysis, were considered the Non-feasible group of applicants. Those applicants who had scored higher than 45 on the MRTWS were randomly assigned to one of three groups designated as Early Referral, Late Referral, and Control. Those in the Early Referral group were contacted by phone within two weeks of their application for SSDI benefits to arrange for an initial interview. Those in the Late Referral group were not contacted for the interview until they were notified that they were awarded SSDI benefits (if benefits were denied, no contact was made). Applicants in the Control group were not offered direct VR services from the project. A total of 87 applicants participated in project rehabilitation services. At the close of the project, 36 individuals were employed, 47 did not complete services, and 4 were still involved in rehabilitation services. Only 6% of those who were in the Late Referral group agreed to participate in services while 22% of those in the Early Referral group agreed to participate. Of those SSDI applicants who participated in project services, 46% returned to work as compared to 13% of those in the Control group. The effectiveness of the MRTWS as an instrument for rehabilitation selection, however, could not be determined since there was no significant difference between return to work for the Control group (13%) and those who were considered as Non-feasible for services (12%). The
researchers claimed that this lack of significant differentiation may have been due to the fact that return to work, without rehabilitation intervention, is very rare for any SSDI applicant. They further recommended that to more properly test the validity of the MRTWS, a future study should provide services to those who the scale identifies as feasible as well as non-feasible for services. By comparing the outcomes for these groups, the validity of the scale could be more accurately evaluated. The study described in this proposal follows this recommendation (see Chapter III).

In another study, the MRTWS was used to assess the relationship between scale scores and the return to work among workers' compensation claimants in Alberta (Hester and Decelles, 1989). The data base for this study consisted of 200 claimants, 104 of whom returned to work after receiving rehabilitation services, while 96 did not return to work. Results indicated a significant difference in the average MRTWS scores between those who returned to work and those who did not return to work ($t = 3.82$, $p < .001$). The average score for those who returned to work was 54.2 (S.D. = 2.97) while the average scale score for those who did not return to work was 52.5 (S.D. = 3.17). The researchers cautioned, however, that while this difference of 1.7 points is statistically significant, it is not sufficiently large to determine which claimants scoring between 51 and 56 will return to work. A major problem in this study was that the range of scale scores
for the Alberta workers' compensation claimants was much narrower (40 to 60) than for the long-term disability population on which the scale was developed (30 to 74). This restriction of the range of scores normally hinders the instrument's usefulness in prediction. Aside from this problem, however, more than three-fourths (77%) of those who received a score of 57 to 60 returned to work while only about one-third (32%) of those who received a score of 50 or less returned to work. Accordingly, the researchers concluded that it is reasonable to assume that claimants who score 57 or higher will return to work and those who score 50 or lower will not return.
CHAPTER III
METHODOLOGY

Sample
The 114 subjects of this study were obtained from a field demonstration research project funded by the Social Security Administration. This project was named **Disability Management of Social Security Beneficiaries: A Physical Medicine and Vocational Rehabilitation Work Return Demonstration Project** (Federal Grant No. 13-P-10007-5-02). The principal investigator was Donald Shrey, Ph.D. Research associates for the project were Steven Bangs, CRC, and Lynn Marks, CRC. Dr. Shrey authorized this study (see letter in Appendix I).

Project Outcome Groups
The project participants were divided into three outcome groups (see Table I). These groups consisted of: 1) **Placed Group** - 34 beneficiaries who were working at the time of project closure; 2) **Active Group** - consisted of 21 beneficiaries who were still involved in training or job search at the time of project closure; and, 3) **Unsuccessful Group** - 59 beneficiaries who failed to completed project
services (i.e., discontinued participation during the course of the project).

**TABLE 1**

**Project Outcome Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed</td>
<td>34</td>
<td>29.8</td>
<td>34</td>
<td>29.8</td>
</tr>
<tr>
<td>Active</td>
<td>21</td>
<td>18.4</td>
<td>55</td>
<td>48.2</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>59</td>
<td>51.8</td>
<td>114</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Characteristics of the Sample**

Since the subjects in this study were not randomly selected, but rather volunteered for services, demographical characteristics of the sample will be compared to the general SSDI beneficiary population when possible.

a) Age

The mean age for all three outcome groups was 36.8 years. The mean age for the placed group was 36.3, for the active group the mean age was 35.0, and the mean age for the unsuccessful group was 37.6. There were no statistically significant differences among the three groups when compared by age (see Table 2). The participants in this sample tended to be in their thirties and early forties.
with 20 to 35 potential work years before age 65. It is noted that 97% of the sample were age 50 and under while only 40% of the general SSDI beneficiary population is in this age group. This age difference is related to the nature of the project since younger beneficiaries are more likely to be interested in return to work services. Age is also a item on the MRTWS and the younger the individual, the higher the score on this item.

### TABLE 2
Age Distribution of Sample

<table>
<thead>
<tr>
<th></th>
<th>21-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-59</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>24</td>
<td>55</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>Percent</td>
<td>21%</td>
<td>48%</td>
<td>28%</td>
<td>3%</td>
</tr>
</tbody>
</table>

b) Sex

There were 41 (36%) females and 73 (64%) males in the sample. These data are fairly consistent with the sexual composition of the general SSDI population of whom 69% are male and 31% are female. Of the placed group, 15 (44%) were female, and 19 (56%) were male. The active group was composed of 5 (24%) females and 16 (76%) males. The unsuccessful group included 21 (36%) females and 38 (64%) males. There were no statistically significant
differences among the outcome groups when compared by sex.

c) Marital Status

The marital status of the sample is summarized in Table 3. There were no statistically significant differences among the outcome groups when compared by marital status.

**TABLE 3**
Marital Status of Outcome Groups

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Placed n (%)</th>
<th>Active n (%)</th>
<th>Unsuccessful n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>15 (44)</td>
<td>8 (38)</td>
<td>23 (39)</td>
</tr>
<tr>
<td>Married</td>
<td>14 (41)</td>
<td>8 (38)</td>
<td>28 (47)</td>
</tr>
<tr>
<td>Divorced</td>
<td>5 (15)</td>
<td>4 (19)</td>
<td>8 (14)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>1 (05)</td>
</tr>
</tbody>
</table>

d) Level of Education

The mean years of education for the participants was 12.6. The placed group mean years of education was 13.3; the active group had an average of 13.0 years of education; and the unsuccessful group had an average of 12.2 years of education. Approximately half (56%) of the placed group had educational levels beyond high school, while only one-third of the unsuccessful group had similar educational experiences. An analysis of variance revealed a
statistically significant difference among the three outcome groups when compared by educational level \( (F, 2, 104) = 3.77, p<.05 \). A Duncan's multiple range test suggested a significant difference between the placed group and the unsuccessful group. Educational levels for the sample were higher than the general SSDI beneficiary population. This may, in part, be due to the younger ages of the sample. Data regarding the educational level of SSDI beneficiaries indicated that younger beneficiaries have more years of education. For example, 55% of the beneficiaries under age 50 have 12 years of education or more, whereas only 33% of those over age 50 have similar levels of education (U.S. Department of H&HS, SSA, Publication NO. 64-032, 1988). It is also noted that level of education is an item on the MRTWS with those individuals with higher levels of education receiving a higher score on this scale.

e) Medical Diagnoses

The two major diagnostic groups of the sample were neurological impairments (26%) including CVA, TBI, spinal cord injuries; and musculoskeletal impairments (25%) including lower back injuries, arthritis, etc. Approximately 9% of the sample were diagnosed as having psychiatric disorders, while 7% suffered from cardiovascular impairments. Another 6% of the sample had organ transplants and 5% had visual impairments. There
were no statistically significant difference among the groups when compared by type of disability. When comparing the medical diagnoses of the sample to the general SSDI population, it is noted that the sample is somewhat over representative of neurological and musculoskeletal impairments. In the general SSDI population 13% have musculoskeletal impairments while 8% have neurological disorders. Around 20% of the general SSDI population have psychiatric impairments.

f) **Length of Time in SSDI Benefit Status**

The mean length of time that sample members had been receiving SSDI benefits at the time of their initial interview was 64.8 months. The project placed group had been receiving benefits for an average of 65 months; the active group were on benefits for an average of 62 months; and, the unsuccessful group had been receiving benefits for an average of 65.6 months. There were no statistically significant differences among the outcome groups when compared by length of time receiving benefits. Since 66% of the sample had been in a beneficiary status for over three years, it is accurate to classify the sample members as individuals suffering from long-term, chronic disability.
Project Description

The objective of this 24 month project was to demonstrate a comprehensive multidisciplinary disability management approach to assist SSDI beneficiaries in returning to work. The total project staff included a disability management specialist, a licensed rehabilitation psychologist, two physiatrists, two certified rehabilitation counselors, a physical therapist, an occupational therapist, and a biostatistician.

A total of 114 SSDI beneficiaries participated in the project. Selection criteria included: 1) currently a SSDI beneficiary; 2) be between the ages of 21 to 55; 3) have a physical disability (some individuals had psychiatric disabilities in conjunction with their physical disabilities); 4) have a reasonable potential of benefiting from project services demonstrated by signing an agreement to participate and making a commitment to project objectives.

The primary recruitment method for obtaining participants was mailings to randomly selected beneficiaries, who met the selection criteria, from a computerized list provided by the Social Security Administration. The selected beneficiaries were sent a recruitment letter inviting them to participate in a voluntary return to work project. If the beneficiary was interested in participation, or desired additional information, he or she phoned the project staff. During the telephone contact the staff ascertained if the beneficiary was
interested and met the selection criteria.

A total of 1197 recruitment letters were mailed to beneficiaries with a Cincinnati address. From this mailing, 93 beneficiaries responded and participated in the project. Another 400 recruitment letters were mailed to beneficiaries outside of the greater Cincinnati area, yielding only 4 beneficiaries who participated. A total of 203 letters were mailed to recently awarded beneficiaries referred by the Bureau of Disability Determination. This recruitment effort resulted in 4 additional participants. The dissemination of project information was another source of recruitment and resulted in 13 beneficiaries who participated.

The project staff completed initial interviews using data sheets referred to as DI Project Interview Forms (see Appendix J) and Vocational Information Data Collection Forms (see Appendix K). These forms collected demographic information including age, address, sex, race, marital status, education level, employer, occupation, disability, wages, support income) and other information. Information obtained from these forms made it possible to complete the MRTWS for the subjects.

Project services

Intensive case management was the primary service of the project. The case manager was responsible for the planning, development, and implementation of the rehabilitation and work
return processes. Case managers coordinated services and facilitated communication among the multidisciplinary team members. The case managers also coordinated beneficiary referrals to a variety of community organizations (e.g., state VR, Veterans Administration, Human Services, Projects with Industry, etc).

The project implemented a number of individualized evaluation services including medical evaluations (66 beneficiaries), functional capacity evaluations (51 beneficiaries), Psycho-social Dysfunction Index (49 beneficiaries), and various levels of vocational testing (75 beneficiaries). These assessments facilitated vocational rehabilitation case management, job placement, and post-employment planning for the participants.

Placement networking procedures included dissemination of project information to rehabilitation, medical, employer, and advocacy organizations. Project case managers linked project participants with community placement resources and coordinated job development efforts with local organizations as part of an on-going placement referral network. Job placement efforts were coordinated with such organizations as the Southwest Ohio Self-Insured Association, The Private Industry Council, Employment Specialist Placement Network, Bureau of Vocational Rehabilitation, Ohio Bureau of Employment Services, Ohio Industrial Commission, and the Kentucky Office of Vocational Services. Beneficiaries were helped in
obtaining assistive devices, Targeted Jobs Tax Credit vouchers, pursuing Plans for Achieving Self-Support (PASS), and obtaining additional training or education.

Beneficiaries participated in both small group and individual placement activities including job seeking skills training workshops and SSA work incentives presentation. Project staff assisted beneficiaries in analyzing the personal and economic benefits of returning to work and attempted to increase beneficiary motivation to work. Post employment and follow-up services were provided to help beneficiaries with adjustment problems and any on-going medical or rehabilitation needs. To help ensure successful job retention, placement staff worked directly with employers when necessary in order to resolve worker performance problems or accommodation issues.

**Validation Procedures:**

Validity refers to the extent to which an instrument actually measures the characteristics that we intend to measure. Walsh and Betz (1990) elaborate that validity is also concerned with the theoretical and applied usefulness of a test or instrument. The usefulness of an instrument is contingent upon our ability to make inferences about people or environments from the scores yielded by the instrument. The range and accuracy of possible inferences to real-world phenomena provides evidence of an instrument's validity.
Thus, if the MRTWS is a valid tool for selection in rehabilitation, we can make accurate inferences about a person's feasibility and need for rehabilitation services based upon their scale score.

Criterion-related validity is the most important type of validity that can be demonstrated by an instrument (Growick, 1977). Criterion-related validity usually is defined as the extent to which a measure of an attribute demonstrates a relationship with some independent or external indicator of the same attribute (Walsh and Betz, 1990). The independent indicator is called the criterion and represents the behavior that we are interested in predicting on the basis of scores yielded by the instrument. In this study the criterion consists of the outcome groups the Social Security Research and Demonstration Project that provided vocational rehabilitation services to SSDI beneficiaries. The predictor consists of the individuals' score on the MRTWS.

The procedure for the criterion-related validation of an instrument consists of two components (Cronbach, 1970). First, concurrent validity is established when a measure is shown to correlate highly with another instrument which supposedly measures the same trait, and is also shown to correlate minimally with another instrument which is postulated to measure a different or unrelated trait. Campbell and Fisk (1959) referred to this aspect of the validation process as convergent and discriminant validity.
Secondly, predictive validity of an instrument is demonstrated when the instrument correlates highly with some independent criterion measure which is obtained some time in the future.

**Data Analysis:**

The two major ways of investigating criterion-related validity, from a data analysis standpoint, include correlation analysis and the analysis of group differences data (Walsh and Betz, 1990). Accordingly, this study will employ both of these procedures. The SAS System for Elementary Statistical Analysis (Schlotzhauer and Littell, 1987) will be used to perform the statistical analyses of the data. A one way analysis of variance (ANOVA) will be used to assess the differences of mean scores of the MRTWS among the three outcome groups. The level of significance or p value will be set at .05. A multiple comparison procedure (multiple t tests) will be used for the post hoc analysis in order to identify which groups differ from one another should significance be established by the ANOVA. It is noted that the SAS system selects Fisher's Least Significant Difference Test, if appropriate, when the multiple t test procedure is used. Further post hoc analysis may include a calculation of the predictive value (Riegelman and Hirsch, 1989) of the MRTWS as a method of assessing the practical usefulness of this instrument if such implications are not apparent from the potential statistical significance.
As an attempt to evaluate the convergent validity of the MRTWS, a correlation analysis will be performed between the MRTWS scores and the individual's score obtained on the Psycho-social Dysfunction Index. The SAS correlational procedure will be used to compute a Pearson correlation coefficient which measures the strength of the relationship between these two scores. The p value will be set at the .05 level. The Psycho-social Dysfunction Index was derived from a clinical structured interview of 49 participants. The interviews were performed by a licensed clinical psychologist. This assessment focused on secondary psychosocial concerns and stress-related problems resulting from having a physical disability. Based on this assessment, the beneficiary was given a rating of 1 to 5 on eight psychosocial criteria: depression, anxiety, sleep disturbance, hostility, social supports, family supports, alcohol/drug use, and pain. Possible scores ranged from a low of 8, indicating the least amount of psychosocial dysfunctioning, to a high of 40, indicating a high amount of psychosocial dysfunction. There are obvious limitations in using this Psycho-social Dysfunction Index as a method of assessing the convergent validity of the MRTWS. First, since the Index is not a standardized and objective test it may contain a significant amount of error variance and, therefore, not correlate highly with another (possibly) similar instrument. Secondly, since Index scores were available for only 49 individuals (43% of
the sample) this group may not be representative of the sample as a whole. Despite these substantial limitations, the correlational analysis was performed since the project researchers found a significant difference on Index scores among the placed group and the unsuccessful group. It was therefore suspected that the Index possessed an inherent positive covariance with the MRTWS since both measures attempt to predict reemployment potential.

Procedures

A masters level certified rehabilitation counselor will be trained in scoring procedures for the MRTWS. This person will review all 114 files of project participants and use the form (see Appendix L) developed for scoring the MRTWS. A second masters level certified rehabilitation counselor, also trained in scoring procedures, will review the scoring sheets to ensure accuracy in calculations.

All sample members will be assigned a three digit identification code as a method of protecting their anonymity and confidentiality. Outcome groups will be identified by the following codes: 1 = Placed Group, 2 = Active Group, and 3 = Unsuccessful Group. Data will be entered on the SAS system by a research associate employed at the University of Cincinnati Center for Occupational Health.
Chapter IV
RESULTS AND DISCUSSION

Distribution of MRTWS Scores

The distribution of the MRTWS scores for the entire sample is presented in Table 4. The minimum score was 37 and the maximum score was 59 yielding a range value of 22. Nearly 73% of the sample, however, received scores between 45 and 52 indicating a fairly normal distribution. The mean MRTWS score for the entire sample was 48.3 and the standard deviation was 4.15. The modal score was 50.

Tables 5, 6, and 7 present the distribution of MRTWS scores for each outcome group. Univariate statistics for the distribution of MRTWS scores among the three outcome groups are summarized in Table 8.
TABLE 4
Distribution of MRTWS Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>2</td>
<td>1.8</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>38</td>
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<td>13</td>
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<td>0.9</td>
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</tr>
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<td>58</td>
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<td>0.9</td>
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<td>99.1</td>
</tr>
<tr>
<td>59</td>
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<td>0.9</td>
<td>114</td>
<td>100.0</td>
</tr>
</tbody>
</table>
TABLE 5
Frequency Distribution of MRTWS Scores for Placed Group
(n = 34)

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
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<td>40</td>
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<td>5.9</td>
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<td>11.8</td>
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<td>14.3</td>
<td>16</td>
<td>76.2</td>
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<td>85.7</td>
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<td>9.5</td>
<td>20</td>
<td>95.2</td>
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<td>4.8</td>
<td>21</td>
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# TABLE 7

Frequency Distribution of MRTWS Scores for Unsuccessful Group

(n = 59)

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
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<tbody>
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<td>37</td>
<td>2</td>
<td>3.4</td>
<td>2</td>
<td>3.4</td>
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<tr>
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<td>1.7</td>
<td>5</td>
<td>8.5</td>
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<td>33.9</td>
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<tr>
<td>48</td>
<td>7</td>
<td>11.9</td>
<td>35</td>
<td>59.3</td>
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<td>6</td>
<td>10.2</td>
<td>41</td>
<td>69.5</td>
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<td>93.2</td>
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<td>3.4</td>
<td>57</td>
<td>96.6</td>
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<tr>
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<td>1</td>
<td>1.7</td>
<td>58</td>
<td>98.3</td>
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<tr>
<td>59</td>
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<td>1.7</td>
<td>59</td>
<td>100.0</td>
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TABLE 8
Summary of Univariate Statistics for MRTWS Scores Among the Outcome Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>S.D.</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Placed</td>
<td>34</td>
<td>50</td>
<td>50</td>
<td>50, 52, 55</td>
<td>4.524</td>
<td>18</td>
</tr>
<tr>
<td>Active</td>
<td>21</td>
<td>48</td>
<td>48</td>
<td>45, 48, 50</td>
<td>3.659</td>
<td>16</td>
</tr>
<tr>
<td>Unsuccess</td>
<td>59</td>
<td>47</td>
<td>48</td>
<td>46</td>
<td>3.909</td>
<td>22</td>
</tr>
</tbody>
</table>

Assessment of the Predictive Validity of the MRTWS

The foremost concern of this study is to assess the predictive validity of the MRTWS and ultimately the practical utility of this scale as a tool in the rehabilitation selection process. Can the MRTWS be used as a tool to aide rehabilitation professionals in selecting appropriate candidates for services?

In order to gather evidence for the predictive validity of the MRTWS and answer the above stated research question, a one-way analysis of variance (ANOVA) on the MRTWS mean scores was performed to ascertain whether any significant differences existed among the three outcome groups. These groups consisted of those clients who were successfully employed (Placed Group), clients who were still actively participating in rehabilitation services at the close of the project (Active...
Group), and clients who discontinued their participation in rehabilitation services (Unsuccessful Group). The specific hypothesis in this analysis was that the Placed Group would have the highest mean scores on the MRTWS, the Active Group would exhibit lower mean scores, and the Unsuccessful Group would have the lowest mean scores of all the groups.

The mean scale scores for the three groups varied in the expected direction. The results of the one-way ANOVA indicated that a statistically significant difference existed among the mean scores (see Table 9).

**Table 9**
**One-Way ANOVA of MRTWS Mean Scores Among Outcome Groups**

<table>
<thead>
<tr>
<th>S.V.</th>
<th>S.S.</th>
<th>df</th>
<th>M.S.</th>
<th>F</th>
<th>Fisher's LSD Test</th>
</tr>
</thead>
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<tr>
<td>Between</td>
<td>122.271</td>
<td>2</td>
<td>61.135</td>
<td>3.71</td>
<td>Group 1 &gt; 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>1829.983</td>
<td>111</td>
<td>16.486</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1952.254</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P = .0276
Group 1 = Placed
Group 2 = Unsuccessful

A multiple comparison test was performed to see which group means were statistically different from one another.
The multiple t test SAS procedure was used as the post hoc analysis. It is noted that when using this procedure, SAS software selects Fisher's Least Significant Difference (LSD) test if it can be used. Results of this post hoc analysis indicated that only the MRTWS means of the Place Group were significantly different from the MRTWS means of the Unsuccessful Group. Since there only was a statistical significant difference between these two groups, a t test was conducted to obtain the values of t and the values of p (these values are not printed in the SAS Fisher LSD procedure). The MRTWS was sensitive enough to discriminate between those SSDI beneficiaries that were placed and those that were unsuccessful \((t = 2.623, \ p = .01)\) but not sensitive enough to discriminate the active group from either of these two groups.

**Practical Implications of the MRTWS for Rehabilitation Selection**

Although the results of the one-way ANOVA and post hoc analysis indicated a statistically significant difference of the MRTWS mean scores between the placed and unsuccessful groups, the practical significance of this difference is not readily apparent. There is not a large amount of difference in the variance of MRTWS scores among the three outcome groups as reflected in the slight differences among the means. This restriction of the range of scores limits the usefulness of the MRTWS for prediction purposes.
The results of this study are similar to a previous study in which the MRTWS was used on a sample of injured workers and the range of scores was also narrow (see Hester and Decelles, 1989; Chapter II pp. 56-57).

Due to the closeness of the means between the successful and the unsuccessful groups, the practitioner could find it difficult to make a rehabilitation selection decision on the basis of a person's MRTWS score. In the sample used to develop the MRTWS those who scored 50 or above on the scale had an 89% return to work rate, while those who scored less than 50 had only an 18% return to work rate. In addition, the mean scale score for the Placed Group was 50 while the mean scale scores for the other two groups was less than 50. Therefore, the score of 50 establishes the cutoff score between those who are more likely and less likely to return to work. As a attempt to clarify the practical significance of the MRTWS, the concepts of positive and negative predictive values was applied (Riegleman and Hirsch, 1989). The concept of predictive value of a test addresses two questions of practical concern to the clinician: 1) If the MRTWS score is 50 or higher, how likely is it that the person will return to work? and 2) If the MRTWS score is less than 50, how likely is it that the person will fail at returning to work? The first question is concerned with the positive predictive value of the MRTWS (i.e., the test is positive in that a score of 50 or more labels the person as having employment potential).
Conversely, the second question involves the negative predictive value of the MRTWS (i.e., the test is negative in the sense that a score of less than 50 labels the person as not having employment potential).

When comparing only the Placed Group with the Unsuccessful Group, the positive predictive value is calculated by dividing the number of individuals who scored 50 or more and returned to work (19) by the total number of individuals who scored 50 or more (37), see Table 10. This calculation yields a .51 value. Predictive value can be thought of as a type of posttest probability. Therefore, the probability that a person who scores 50 or above will return to work is 51%. We can consider the remaining 49% as "false positive" cases (i.e., the MRTWS predicted that these individuals possessed employment potential but they actually did not). We conclude that the positive predictive value of the MRTWS is rather low.

Conversely, the negative predictive value of the MRTWS is calculated by dividing the number of individuals who scored less than 50 and did not return to work (41) by the total number that score less than 50 which is (56). This calculation yields a negative predictive value of .73. Thus, of those who the MRTWS labels as negative (i.e., not having employment potential), 73% never do return to work. The remaining 27% can be considered as "false negatives." We conclude, that when return to work as the criterion, the MRTWS is better at predicting failures than successes.
These results are understandable since the predictive values of a test (or posttest probability) are related to the prevalence (or the pretest probability) of the condition you are trying to predict. In this case we are using the scores of the MRTWS as an attempt to predict the presence or absence of employment potential in a sample of SSDI beneficiaries. We desire to select for rehabilitation services only those individuals whom we believe have employment potential. Since only about 17% of these individuals in the general SSDI beneficiary population ever return to work, it makes sense that the scale is more accurate in predicting occupational failure (i.e., has a higher negative predictive value than positive predictive value).

If counselors were to use the MRTWS score of 50 as a cutoff score for referring or not referring SSDI beneficiaries for services, nearly half of the cases could be false positive types. Conversely, for those individuals who would not be referred based on scoring less than 50, there is only a 27% chance that some of these people actually have employment potential (i.e., could be false negative types). From a programmatic perspective, excluding an individual from services who actually has employment potential has more serious ramifications than providing services to someone who we feel has employment potential but is subsequently unsuccessful in his or her attempt to return to work. Considering the philosophical, legal, and ethical standards of
the rehabilitation profession, making false positive errors in rehabilitation selection is more desirable than making false negative errors. Accordingly, the higher negative predictive value of the MRTWS reduces the likelihood of making false negative types of errors in selecting individuals for vocational rehabilitation services. Due to the overlapping in scores between those who have employment potential and those who do not, it is recommended that the person's MRTWS score be considered only in conjunction with other diagnostic data as a basis for making the selection decision.

### TABLE 10
Predictive Value of MRTWS
Result (Outcome)

<table>
<thead>
<tr>
<th>Score</th>
<th>Successful</th>
<th>Unsuccessful</th>
<th>n</th>
</tr>
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<tr>
<td>Hi</td>
<td>True Positive</td>
<td>False Negative</td>
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<td>19</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>Lo</td>
<td>False Positive</td>
<td>True Negative</td>
<td>Total Negative</td>
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<tr>
<td></td>
<td>15</td>
<td>41</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>(+) Outcome</td>
<td>(-) Outcome</td>
<td>Total n</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>59</td>
<td>93</td>
</tr>
</tbody>
</table>

Hi = Score of 50 or above
Lo = Score < 50
Results of Correlation Analysis

As an attempt to evaluate the convergent validity of the MRTWS a correlation analysis between it and the Psycho-social Dysfunction Index (Index) was performed. As previously indicated, Index scores were available for only 49 individuals in the sample. The distribution of Index scores is contained in Table 11.

The mean Index score was 17 and the standard deviation was 4.80. Index scores ranged from a high score of 31 to a low score of 11. Results of the Pearson Correlation indicated an extremely low positive correlation between the two tests ($r = .13$, $p = 0.38$). Thus, there is not a significant relationship between these two instruments. As previously reported, this may be due to the unknown amount of error variance in the Index measurement. Even though both instruments were able to differentiate between the Placed Group and the Unsuccessful Group, results of the correlation analysis indicates that they measure different aspects of employment potential. It appears that the items on the MRTWS do not measure psycho-social aspects or issues. Once again, however, these results must be interpreted with caution in light of the limitations previously cited.
TABLE 11
Distribution of Psycho-Social Index Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
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<td>Low</td>
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<td>18</td>
<td>36.7</td>
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<tr>
<td>Medium</td>
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<td>44.9</td>
<td>40</td>
<td>81.6</td>
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<tr>
<td>High</td>
<td>9</td>
<td>18.4</td>
<td>49</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Low = scores from 8 to 14
Medium = scores from 15 to 20
High = scores > 20
CHAPTER V

CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

Conclusions: The Validity of the MRTWS

The foremost concern of this study was to obtain information on the predictive validity of the MRTWS in order to provide evidence of its practical utility as a selection tool in rehabilitation. In order to gather evidence for the predictive validity, and thereby answer the first research question, a one-way ANOVA and post hoc analysis were performed.

First, the one-way ANOVA was performed to ascertain whether any significant differences existed among three outcome groups of clients: Placed, Active, and Unsuccessful. The specific hypothesis was that the group of clients closed as unsuccessful would have the lowest mean scores on the MRTWS, those who were still involved in services at the close of the project (active) would have higher mean scores, and those who were placed would have the highest mean scores.

Although a control group was not employed and causal statements, therefore, cannot be made, the MRTWS was sensitive enough to discriminate between the placed group and the unsuccessful group. Due to the narrow range of scores
among the sample members, and the closeness of mean scores of the groups, the predictive value of the MRTWS became questionable. An analysis of the predictive value of the MRTWS was performed to clarify this issue. The score of 50 was established as the cutoff score separating those who the test predicted would return to work (score of 50 or above) from those who the test predicted would not return to work (score less than 50). A positive predictive value of .51 was obtained indicating that the MRTWS is not very effective as a prediction instrument for identifying those who will return to work. As such, the MRTWS identifies a high number of "false positive" cases.

A negative predictive value of .73 was obtained for the MRTWS indicating that it is more effective at predicting vocational failure than success. These results are consistent with the high prevalence of chronic occupational disability among SSDI beneficiaries.

Based upon professional ethical and legal standards of rehabilitation, it is more desirable to screen-in individuals who initially show some degree of vocational potential but fail (i.e., "false positive types"), than to screen-out those individuals who do not initially demonstrate employment potential but actually succeed at returning to work (i.e., "false negative types"). It was accordingly recommended that the MRTWS be used in conjunction with other types of assessments or diagnostic data. Perhaps the primary utility
of the MRTWS lies in its use as a method of initial identification of potential rehabilitation candidates who can be further evaluated for the provision of services. This would certainly be an improvement in the current rehabilitation selection process which is highly subjective and unstructured.

The second research question in this study involved the concurrent validity of the MRTWS. Concurrent validity addresses itself to the theoretical question of a test's traits or underlying constructs. To assess the concurrent validity of a test, the guidelines of convergent and divergent validity are followed.

In this study, the method of investigating the concurrent validity of the MRTWS consisted of a correlation analysis with a measure called the Psycho-social Dysfunction Index (Index). The results of the correlation analysis indicated an extremely low, non-significant, positive correlation between the two measures. There were serious limitations in using the Index as a criterion measure. If a criterion measure contains a substantial amount of error variance, it will not correlate with another test regardless of the validity of the latter measure. Consequently, the greater the error variance of a criterion, the lower the correlation between that instrument and the instrument one is attempting to validate. This situation may be the reason such a low correlation was obtained in this analysis. There was no way of assessing the
reliability of the Index measure. The possibility of obtaining a significant positive correlation, however, was explored since the Index did significantly discriminate between the placed and the unsuccessful groups in the return to work project.

Another possible interpretation of the low correlation between the MRTWS and the Index may be that the items on the MRTWS do not really measure psychosocial aspects related to returning to work. Although such MRTWS items as age, sex, marital status, type of disability, support, and level of education have psychosocial implications, they are not directly related to the items on the Index measure such as anxiety, depression, sleep disturbance, substance abuse, pain, etc. Considering the methodological limitations in the correlation of these two measures, we can tentatively conclude that the two instruments are not related.

**Recommendations**

The validation of an instrument is a continuous process (Grovick, Butler, and Sather, 1979). It is only through a series of studies, and not one individual research, that the validity of an instrument is established. It is, therefore, imperative that future research be undertaken to obtain additional evidence on the validity of the MRTWS. Until such evidence is accumulated, caution must be exercised in using the MRTWS as a tool for selecting rehabilitation candidates.
One of the limitations of this study is the lack of a comparison group. If administratively possible, a future study could apply the MRTWS to a random sample of SSDI beneficiaries who did not volunteer for services designed to help them return to work. The results of such a study might be compared to the findings in this analysis. At present, we do not know if those who volunteered for project services differ significantly from those who chose not to participate. This information would be of tremendous value in assessing the validity of the MRTWS. A concern related to this issue is the representativeness of the sample used in this study. Based on the narrow range of MRTWS scores of this sample, the subjects can be considered a relatively homogeneous group, namely, SSDI beneficiaries who volunteered for vocational rehabilitation services. Hester and Decelles (1989) encountered a similar situation in a study which used the MRTWS on a sample of workers' compensation claimants. This study assessed the scale's ability to identify which claimants were most likely or least likely to return to work. The range of MRTWS scores in their study was 20 (compared to a range of 22 in this study). Although they found a statistically significant difference in the average MRTWS score between the return to work and non-return to work groups, the actual score difference was only 1.7 points. This slight difference in scale scores reduces its usefulness in prediction. It is, therefore, recommended that in future validity studies of the
MRTWS, a wider and more diverse sample be employed. This was true of the sample of long-term disability (LTD) clients used in the study to develop the MRTWS which had a score range of 44.

Another recommendation involves finding a suitable criterion to which the MRTWS can be compared. This is difficult since there is no generally accepted definition or method of assessing employability in vocational rehabilitation (Moriarity, et al, 1988). The current practice in the rehabilitation selection process is largely one of unstructured discretion on the part of the counselor. There are some instruments, like the Preliminary Diagnostic Questionnaire (Moriarity, Walls, and McLaughlin, 1987), that show promise in assessing the employability of individuals with disabilities. A future study could involve a correlational analysis between the MRTWS and the Preliminary Diagnostic Questionnaire to more effectively assess concurrent validity issues.

**Implications**

Contrary to popular belief, worker disability is not limited to the problem of workers' compensation. Only 15% of workers who become disabled do so because of work-related injuries. Over 60%, however, of serious worker disability is caused by acute and progressive illnesses (Hester and Decelles, 1988). The vast majority of these individuals are
added to the disability support systems administered by the Social Security Administration (SSA). The Federal Social Security Act of 1935 pioneered the provision of disability benefits to non-industrially disabled workers. Since that time, the number of beneficiaries of SSA disability support programs has grown tremendously. About 470,000 people are added each year to the SSDI program and 420,000 to the SSI rolls. Most of those who become beneficiaries remain there despite the goal of the SSA to reduce the number of beneficiaries by facilitating their return to work.

Even though the Social Security Act was amended in 1956 to provide vocational rehabilitation services for beneficiaries who have the potential to return to work, evidence suggests that a very small percentage (10%) are actually referred for services. Of those 10% who are referred, over one-third are rejected for services by rehabilitation counselors on the basis of not being "feasible candidates" (Rehab Brief, Vol. XI, No. 3).

At the present time, rehabilitation counselors find it difficult to identify individuals with rehabilitation potential among the SSDI population. Counselors are confronted by administrative pressure to only provide services for those individuals who show return to work potential. With decreased Federal funding for VR programs, counselors attempt to be more selective in accepting an individual for services (Combs and Omvig, 1986). Many rehabilitation administrators
have directed counselors to avoid the SSDI beneficiary on the basis that they are a poor risk for returning to work. There is evidence, however, that many of these individuals desire to work and are employable (Report of the SSA Disability Advisory Council, 1988).

Undoubtedly, there is a dilemma in the current rehabilitation selection process. On the one hand, the counselor has to be accountable for the cost-effectiveness of case service expenditures, while on the other hand recent legislative changes have mandated that more severely disabled individuals be given priority in terms of service provision. The recent passage of the Americans with Disability Act (ADA), for example, has major implications for the rehabilitation practitioner (Olsen, 1991). As such, the accurate assessment of an individual's employability will assume even more importance.

To date, counselors have not been effective in selecting candidates for VR services from one of the largest groups of the severely disabled, the SSDI population. Part of this problem may be due to the counselor's difficulty in diagnosing employment potential. Diagnosis can be simply defined as a structured summary of significant case data (Williamson, 1950). This situation is disturbing, since a basic area of competency required of rehabilitation counselors is the ability to diagnose employment potential (Porter, Rubin, and Sink, 1979). Bolton (1974) argued that the central
professional activity in the provision of rehabilitation services is prediction. All decisions, particularly the judgement of client feasibility, are based on the counselor's skill in making predictions about the outcome of services.

Accordingly, research investigating the problem of client selection in rehabilitation is greatly needed. Valid and reliable tools to help make the selection process more objective and accurate will help counselors do their jobs and protect the rights of those entitled to services.

This study implies that the MRTWS does have a limited utility in helping rehabilitation professionals identify appropriate candidates for services among a group of severely disabled persons, the SSDI beneficiary. The "treatment groups" identified on the basis of MRTWS scores (see Chapter II) may be of use in the selection process. It is important to note that the sample used in this study consisted of SSDI beneficiaries, with severe disabling conditions, who demonstrated an interest in attempting to return to work. If we examine the proposed treatment groups generated by MRTWS scores, it is recommended that those who obtain a score of 45 or higher should be considered as candidates for rehabilitation until proven otherwise. Since 86% of the sample obtained a MRTWS score of 45 or above, it appears as though the instrument may be adequate for an initial identification of those who may have rehabilitation potential. Program administrators may want to consider a minimum score of
45 as a method of triggering additional diagnostic evaluations to more thoroughly assess feasibility for services. The discrete and unambiguous nature of the items contained in the MRTWS makes scoring relatively clear and easily computerized. Disability support system personnel such as LTD, workers compensation, and the SSA could rate the individual's MRTWS score by computer at the time of their application for benefits. Those obtaining a score of 45 or above could be evaluated for rehabilitation services.

There is also potential use of the MRTWS for program evaluation purposes. Since in most rehabilitation programs it is not possible, or ethical, to establish a true control group MRTWS scores could be used to evaluate whether or not a person who received services and returned to work actually needed the services. The proposed treatment groups indicate that those who score 55 or higher are most likely to return to work even without rehabilitation assistance. If, for example, rehabilitation had only been provided for those persons scoring 55 and higher, one could be suspect of the real need for interventions. These types of cases, however, would need to be closely reviewed since there may have been other factors which necessitated the provision of services. The MRTWS may have potential use as a tool for developing a "case weighting" system in which more difficult cases are differentiated from less complex ones. Evaluation of counselor performance could, in part, be based on the percentage of difficult cases served
by a particular caseload.

If we apply the program evaluation implications of the MRTWS to the sample used in this study, it is noted that only 20% of those who returned to work scored 55 or above. This lends some credence to the effectiveness of the disability management approach in rehabilitating SSDI beneficiaries.

Due to the limitations of this study, particularly the lack of a control group, these implications are certainly not conclusive. One apparent limitation of the MRTWS is its inability to detect the possible interactive effects of the scale items. It may be that certain scale items, e.g., age and wage replacement ratio, interact and have a combined effect which is not reflected in the total scale score. Future research should consider the possible interaction of scale items and also analyze which items contribute the most to the total scale score. With additional research, however, the MRTWS may prove to be a valuable tool in the complex process of rehabilitation selection.
LIST OF REFERENCES


APPENDIX A

TABLE 12
CONVERSION TABLE FOR DERIVING SCALE SCORES FROM THE PERCENTAGES OF EMPLOYEES WHO RETURN TO WORK
Conversion Table for Deriving Scale Scores From the Percentages of Employees Who Return to Work

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>85%–94%</td>
<td>9</td>
</tr>
<tr>
<td>75%–84%</td>
<td>8</td>
</tr>
<tr>
<td>65%–74%</td>
<td>7</td>
</tr>
<tr>
<td>55%–64%</td>
<td>6</td>
</tr>
<tr>
<td>45%–54%</td>
<td>5</td>
</tr>
<tr>
<td>35%–44%</td>
<td>4</td>
</tr>
<tr>
<td>25%–34%</td>
<td>3</td>
</tr>
<tr>
<td>15%–24%</td>
<td>2</td>
</tr>
<tr>
<td>5%–14%</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX B

SCORING KEY OF MRTWS
Scores for the Menninger RTW Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability</td>
<td>11</td>
<td>04</td>
<td>03</td>
<td>10</td>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>55-</td>
<td>45-</td>
<td>35-</td>
<td>16-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>54</td>
<td>44</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>M</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>≤8</td>
<td>9-</td>
<td>13-</td>
<td>≥17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital St.</td>
<td>O</td>
<td>M</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>C</td>
<td>D,E</td>
<td>B,F</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>≤75</td>
<td>other</td>
<td>≥1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td>S,0</td>
<td>M</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>SSDI</td>
<td>Multi</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage Replacem't</td>
<td>≥1.51</td>
<td>1.01-</td>
<td>.76-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>1.00</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.51-</td>
<td>.50</td>
<td>.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

TABLE 13
PERCENTAGES OF DISABLED EMPLOYEES' OUTCOMES BASED ON EDUCATION WHEN CORRECTED FOR MISSING DATA
Percentages of Disabled Employees' Outcomes Based on Education When Corrected for Missing Data

<table>
<thead>
<tr>
<th>Years of Education</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 8</td>
<td>34%</td>
<td>66%</td>
<td>100%</td>
</tr>
<tr>
<td>9-11</td>
<td>41%</td>
<td>59%</td>
<td>100%</td>
</tr>
<tr>
<td>12</td>
<td>43%</td>
<td>57%</td>
<td>100%</td>
</tr>
<tr>
<td>13-15</td>
<td>61%</td>
<td>39%</td>
<td>100%</td>
</tr>
<tr>
<td>16</td>
<td>59%</td>
<td>41%</td>
<td>100%</td>
</tr>
<tr>
<td>≥ 17</td>
<td>77%</td>
<td>23%</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX D

TABLE 14
PERCENTAGES OF DISABLED EMPLOYEES' OUTCOMES BASED ON
WAGE REPLACEMENT RATIOS WHEN CORRECTED FOR MISSING DATA
Percentages of Disabled Employees' Outcomes Based on Wage Replacement Ratios When Corrected for Missing Data

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; .25</td>
<td>83%</td>
<td>17%</td>
<td>100%</td>
</tr>
<tr>
<td>0.26-0.50</td>
<td>67%</td>
<td>33%</td>
<td>100%</td>
</tr>
<tr>
<td>0.51-0.75</td>
<td>49%</td>
<td>51%</td>
<td>100%</td>
</tr>
<tr>
<td>0.76-1.00</td>
<td>35%</td>
<td>65%</td>
<td>100%</td>
</tr>
<tr>
<td>1.01-1.50</td>
<td>23%</td>
<td>77%</td>
<td>100%</td>
</tr>
<tr>
<td>≥ 1.51</td>
<td>5%</td>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX E

TABLE 15
LIKELIHOOD OF RETURN TO WORK BASED UPON ADJUSTED PROBABILITIES WITHIN THE SAMPLE POPULATION
<table>
<thead>
<tr>
<th>Scale Scores</th>
<th>Rating</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 39</td>
<td>1</td>
<td>3%</td>
<td>97%</td>
<td>100%</td>
</tr>
<tr>
<td>40-44</td>
<td>2</td>
<td>6%</td>
<td>94%</td>
<td>100%</td>
</tr>
<tr>
<td>45-49</td>
<td>3</td>
<td>24%</td>
<td>76%</td>
<td>100%</td>
</tr>
<tr>
<td>50-54</td>
<td>4</td>
<td>69%</td>
<td>31%</td>
<td>100%</td>
</tr>
<tr>
<td>55-59</td>
<td>5</td>
<td>86%</td>
<td>14%</td>
<td>100%</td>
</tr>
<tr>
<td>60-64</td>
<td>6</td>
<td>96%</td>
<td>4%</td>
<td>100%</td>
</tr>
<tr>
<td>≥ 65</td>
<td>7</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX F

TABLE 16
INTERCORRELATION MATRIX OF THE SCALE ITEMS
### Intercorrelation Matrix of the Scale Items

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>D</th>
<th>A</th>
<th>Sx</th>
<th>Ed</th>
<th>MS</th>
<th>O</th>
<th>R</th>
<th>Em</th>
<th>Sp</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.12</td>
<td>.14</td>
<td>.13</td>
<td>.00</td>
<td>.08</td>
<td>.09</td>
</tr>
<tr>
<td>Age</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.14</td>
<td>.17</td>
<td>.05</td>
<td>.07</td>
<td>.07</td>
</tr>
<tr>
<td>Sex</td>
<td>.14</td>
<td>.14</td>
<td></td>
<td>.30</td>
<td>.08</td>
<td>.41</td>
<td>.19</td>
<td>.33</td>
<td>.17</td>
<td>.13</td>
</tr>
<tr>
<td>Education</td>
<td>.13</td>
<td>.17</td>
<td>.30</td>
<td></td>
<td>.05</td>
<td>.73</td>
<td>.26</td>
<td>.49</td>
<td>.23</td>
<td>.27</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.00</td>
<td>.05</td>
<td>.08</td>
<td>.05</td>
<td></td>
<td>.13</td>
<td>.17</td>
<td>.09</td>
<td>.08</td>
<td>.06</td>
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<tr>
<td>Occupation</td>
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<td>.07</td>
<td>.41</td>
<td>.73</td>
<td>.13</td>
<td></td>
<td>.21</td>
<td>.52</td>
<td>.15</td>
<td>.25</td>
</tr>
<tr>
<td>Residence</td>
<td>.09</td>
<td>.07</td>
<td>.19</td>
<td>.26</td>
<td>.17</td>
<td>.21</td>
<td></td>
<td>.16</td>
<td>.11</td>
<td>.07</td>
</tr>
<tr>
<td>Employer</td>
<td>.13</td>
<td>.14</td>
<td>.33</td>
<td>.49</td>
<td>.09</td>
<td>.52</td>
<td>.16</td>
<td></td>
<td>.21</td>
<td>.03</td>
</tr>
<tr>
<td>Support</td>
<td>.29</td>
<td>.21</td>
<td>.17</td>
<td>.23</td>
<td>.08</td>
<td>.15</td>
<td>.11</td>
<td>.21</td>
<td></td>
<td>.46</td>
</tr>
<tr>
<td>Wage Replacement</td>
<td>.24</td>
<td>.01</td>
<td>.13</td>
<td>.27</td>
<td>.06</td>
<td>.25</td>
<td>.07</td>
<td>.03</td>
<td>.46</td>
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</tr>
</tbody>
</table>
APPENDIX G

TABLE 17
FACTOR LOADINGS
### Items in Group I - Educational Level

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Level</td>
<td>0.891</td>
</tr>
<tr>
<td>Educational Level</td>
<td>0.841</td>
</tr>
<tr>
<td>Type of Employer</td>
<td>0.759</td>
</tr>
<tr>
<td>Sex</td>
<td>0.556</td>
</tr>
</tbody>
</table>

### Items in Group II - Support

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage Replacement</td>
<td>0.809</td>
</tr>
<tr>
<td>Type of Support</td>
<td>0.779</td>
</tr>
<tr>
<td>Type of Disability</td>
<td>0.618</td>
</tr>
</tbody>
</table>

### Items in Group III - Home Life

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>0.887</td>
</tr>
<tr>
<td>Residential Area</td>
<td>0.609</td>
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</table>

### Items in Group IV - Age

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.871</td>
</tr>
<tr>
<td>Wage Replacement</td>
<td>- 0.370</td>
</tr>
</tbody>
</table>
APPENDIX H

TABLE 19
INTERCORRELATIONS AMONG THE GROUPS OF ITEMS
### Intercorrelations Among the Groups of Items

<table>
<thead>
<tr>
<th>Group</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - Education</td>
<td>1.000</td>
<td>0.231</td>
<td>0.236</td>
<td>0.109</td>
</tr>
<tr>
<td>II - Support</td>
<td>0.231</td>
<td>1.000</td>
<td>0.091</td>
<td>0.099</td>
</tr>
<tr>
<td>III - Home Life</td>
<td>0.236</td>
<td>0.091</td>
<td>1.000</td>
<td>0.041</td>
</tr>
<tr>
<td>IV - Age</td>
<td>0.109</td>
<td>0.099</td>
<td>0.041</td>
<td>1.000</td>
</tr>
</tbody>
</table>
APPENDIX I

LETTER OF AUTHORIZATION FOR STUDY
January 22, 1991

Mr. Jerry A. Olsheski
Center for Occupational Health
Holmes, First Floor
Eden & Bethesda Avenues
Cincinnati, Ohio 45267-0458

Dear Mr. Olsheski,

Your request to use the sample involved in the SSA Research and Demonstration Project No. 13-P-10007-5-02 as the data base for your dissertation is approved.

Our research committee reviewed your proposal and are of the opinion that it conforms to proper ethical and methodological standards. As the principal investigator of the project, I look forward to the results of your study. It is a high research priority to develop new and improved methods of identifying SSDI beneficiaries who have rehabilitation potential.

I wish you much success in this endeavor. Do not hesitate to contact me if I can be of any assistance.

Sincerely,

[Signature]

Donald E. Shrey, Ph.D., CRC
Research Associate Professor
University of Cincinnati
Department of Physical Medicine and Rehabilitation
APPENDIX J

PROJECT INTERVIEW FORM
U.C. MEDICAL CENTER - DI PROJECT INTERVIEW FORM

Date: ___/___/____ Referral Source: ____________________________

Interview Location: ____________________________________________

___ Control Group/Date To Become Experimental Group ___/___/

___ Experimental Group

NAME ______________________ TELEPHONE #: ________________

ADDRESS ______________________________________________________

______________________________________________________________ Zip:

SS# _____________ Date of Birth ___/___/____

Sex: ______ Race: ______ Marital Status: _______________________

# Dependent Children: ______ Do You Currently Drive? ______

MEDICAL/DISABILITY INFORMATION

Medical Diagnosis: __________________________________________

Functional Limitations: _______________________________________

______________________________________________________________

Date Disabled ___/___/____

WHO IS YOUR TREATING PHYSICIAN? ____________________________

Address:_____________________________________________________

SPECIALIST? _______________________________________________

Address:_____________________________________________________

WHAT MEDICATIONS ARE YOU TAKING AND WHAT ARE THE SIDE EFFECTS THAT LIMIT YOUR ABILITY TO DRIVE, OPERATE MACHINERY, CONCENTRATE, AND WORK? ________________________________

________________________________________________________________

________________________________________________________________
EMPLOYMENT BACKGROUND: (List last job first)

Employer __________________________________________________________________________

Job Title __________________________________________________________________________

Duties ____________________________________________________________________________

Dates of Employment (From) ___________ (To) ___________  
Wages: Starting: $ ___________ /mo. Ending: $ ___________ /mo.

Reason Left Job ____________________________________________________________________

Employer __________________________________________________________________________

Job Title __________________________________________________________________________

Duties ____________________________________________________________________________

Dates of Employment (From) ___________ (To) ___________  
Wages: Starting: $ ___________ /mo. Ending: $ ___________ /mo.

Reason Left Job ____________________________________________________________________

Employer __________________________________________________________________________

Job Title __________________________________________________________________________

Duties ____________________________________________________________________________

Dates of Employment (From) ___________ (To) ___________  
Wages: Starting: $ ___________ /mo. Ending: $ ___________ /mo.

Reason Left Job ____________________________________________________________________

Primary Occupation Prior To Disability: ________________________________________________

Primary Occupation Post-Disability: ________________________________________________
PRESENT/PAST REHABILITATION SERVICES RECEIVED

Have You Received Rehabilitation Services From Other Agencies In
The: Last 6 Month Period? ___ YES ___ NO

If YES, What Services: ________________________________

Who Were The Providers: ________________________________

Prior To The Last 6 Months? ___ YES ___ NO

DO YOU CURRENTLY HAVE AN OPEN CASE WITH BVR/BSVI? ___ NO ___ YES

ORSC COUNSELOR: ________________________________ Status Code ___

SOCIAL SECURITY DISABILITY INSURANCE INFORMATION

Date SSDI Began: ___/___/___ Used Attorney? ___ YES ___ NO

BENEFITS/INCOME RECEIVED: ($ AMOUNT)

___ SSDI ($ _____ .00/Mo.) ___ WORKERS' COMP. ($ _____ .00/Mo.)
___ SSI ($ _____ .00/Mo.) ___ LTD ($ _____ .00/Mo.)
___ SPOUSE EMPLOYED? ($ _____ .00/Mo.)
___ OTHER ($ _____ .00/Mo.) Specify ________________________________

EDUCATIONAL BACKGROUND

No. Years of Education Completed: __________________ GED _____

Degrees/Certificates Completed: ________________________________

Name of School/Location: ________________________________

Other Training/Skills: ________________________________

Military Experience: ________________________________

Hobbies/Activities at Home: ________________________________

CURRENT JOB GOAL: ________________________________

No. of Job Applications Since Obtaining DI Benefits? __________

No. of Job Interviews Since Obtaining DI Benefits? __________
APPENDIX K

VOCATIONAL INFORMATION DATA COLLECTION FORM

125
VOCATIONAL INFORMATION DATA COLLECTION FORM

Name: ________________________________
Initial Interview Date: ___/___/___

DEMOGRAPHIC INFORMATION:
1. Social Security No.: _____/_____/_____
2. Sex: (1=M, 2=F): _____
2a. Race: _____ 1 = C, 2 = B, 3 = O, 4 = W, 5 = A
3. Age at time of Interview: _____
4. Education: (# of Years): ______
   Note: GED = 12
5. Marital Status: _____
   1 = Married 3 = Divorced
   2 = Single 4 = Other
6. No. of Dependent Children at Home: _____
7. Medical Diagnosis (Use SSDI Code): ______
8. Date Awarded SSDI: ____/____
   MO  YR
9. SSDI Income Per Month (To Nearest Dollar): _______
10. Any Other Income? (1=Y, 2=N): ______
11. Sources of Other Income: ____/____/____
    1 = Spouse 3 = LTD
    2 = WC8 4 = SS1
    5 = Other
12. Amount of other income per month (to nearest dollar): _____

VOCATIONAL
13. Last Job Held:
   Title: __________________________
   DOT Code: _______ _______
   No. of months worked in last job: _____
Monthly wages for last job (To nearest dollar):________

15. Primary Occupation Prior to Disability:
   Title:__________________________________________
   DOT Code: _____, _____ - ______
   No. of months worked in this job:_______
   Monthly wages for this job (To nearest dollar):_______

15b. Primary Occupation Post-Disability (If Applicable)
   Title:__________________________________________
   DOT Code: _____, _____ - ______
   Note: If not specified, put in 000.000 - 000
   No. of months worked in this job:_______
   Monthly wages for this job (To nearest dollar):_______

15c. Current Job Goal (If Available)
   Title:__________________________________________
   DOT Code: _____, _____ - ______
   Note: If not specified, put in 000.000 - 000

17. BVR Involvement with beneficiary in past? (1=Y, 2=N):_____

18. BVR Current involvement? (1=Y, 2=N):_____

19. Other agency(s) involved after disability for vocational assistance? (1=Y, 2=N):_____

20. Name(s) of other agency:__________
    1 = Goodwill
    2 = JVS
    3 = Other
    4 = None

21. Attorney used for acquiring/maintaining SSDI? (1=Y, 2=N):_____

22. Does beneficiary currently drive? (1=Y, 2=N):_____

23. No. of Job Interviews since obtaining SSDI benefits:_____

24. No. of Job Applications since obtaining SSDI benefits:_____

25. No. of Trial Work Period Months Worked since obtaining SSDI benefits:_____

26. Vocational Training received since receiving SSDI?
    (1=Y, 2=N):_____

27. No. of months of vocational training since beginning SSDI?_____

28. Was vocational training completed? (1=Y, 2=N):_____

29. Was vocational training completed? (1=Y, 2=N):_____


APPENDIX L

MENNINGER RETURN TO WORK SCALE
SUBJECT SCORING SHEET
Menninger Return to Work Scale

Subject Scoring Sheet

<table>
<thead>
<tr>
<th>SUBJECT I.D.#</th>
<th>GROUP #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PSY-SCORE</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>1) AGE;</td>
<td></td>
</tr>
<tr>
<td>16 to 34</td>
<td></td>
</tr>
<tr>
<td>35 to 44</td>
<td>Medium</td>
</tr>
<tr>
<td>45 to 54</td>
<td>Low</td>
</tr>
<tr>
<td>55 to 64</td>
<td></td>
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</tbody>
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<thead>
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</thead>
<tbody>
<tr>
<td>2) SEX:</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>

<p>| |</p>
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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>3) EDUCATION:</td>
</tr>
<tr>
<td>Less than or equal to 8 years</td>
</tr>
<tr>
<td>9 to 11 years</td>
</tr>
<tr>
<td>12 years of education</td>
</tr>
<tr>
<td>13 to 15 years of education</td>
</tr>
<tr>
<td>16 years of education</td>
</tr>
<tr>
<td>More than or equals to 17 yrs.</td>
</tr>
</tbody>
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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>4) MARITAL STATUS:</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Other</td>
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</tbody>
</table>

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>5) PLACE OF RESIDENCE:</td>
</tr>
<tr>
<td>Rural</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Metro</td>
</tr>
<tr>
<td>Urban</td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>6) FORMER OCCUPATION:</td>
</tr>
<tr>
<td>A) Managerial and Professional</td>
</tr>
<tr>
<td>B) Technical, Sales, Administrative Support</td>
</tr>
<tr>
<td>C) Service Occupations</td>
</tr>
<tr>
<td>D) Precision, Production, Craft, Repair</td>
</tr>
</tbody>
</table>
Subject ID ________

E) Operators, Fabricators, Laborers ______
F) Farming, Forestry, Fishing ________

SCORE ________

7) TYPE OF DISABILITY:
03 Cardiovascular ______
04 Pulmonary ______
05 Gastrointestinal ______ or Other ______
10 Musculoskeletal ______
11 Neurological ______

SCORE ________

8) TYPE OF EMPLOYER:
A) Small Employer (under 100 empl.) ______
B) Major Employer (100 or more empl.) ______
C) Self Employed ______
D) Public Employer ______

SCORE ________

9) WAGE REPLACEMENT RATIO:
Value ______

SCORE ________

10) SOURCES OF DISABILITY SUPPORT:
1) None ______
2) Workers Comp. ______
3) SSDI, Only ______
4) LDT ______
5) Other ______
6) Multiple ______
   (more than one) ______

SCORE ________

TOTAL SCORE: ________

Comments: ______________________________________
______________________________

Scorer I.D. ________