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PREDICTION OF VOCATIONAL OUTCOME USING THE PERSONALITY RESEARCH FORM

By

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B.A., Stanford University, 1975

Presented in partial fulfillment of

the requirements for the degree of

Master of Arts

UNIVERSITY OF MONTANA

1978

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12-7-78

Date

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Winegardner, Jill, M.A., December 15, 1978 Psychology

Prediction of Vocational Outcome Using the Personality Research Form
(66 pps)

Director: Herman A. Walters

The purpose of this study was to examine the efficacy of the Personality Research Form (PRF) (Jackson, 1967) in predicting vocational rehabilitation. Sixty-one physically disabled persons seen for work evaluation at the Missoula Crippled Children and Adults Rehabilitation Center were administered the PRF; in addition, information concerning the age, educational level, and intelligence of each subject was collected. The outcome criterion, employment or school attendance at follow-up, was determined at an average of eight months after the subjects were seen for evaluation. Five hypotheses were tested: 1) age is negatively correlated with rehabilitation outcome; 2) educational level is positively correlated with rehabilitation outcome; 3) intelligence is positively correlated with rehabilitation outcome; 4) certain PRF scales can predict rehabilitation outcome; and 5) a combination of all variables through multiple regression is the best predictor of rehabilitation outcome. A significant correlation was found between educational level and outcome, a nonsignificant correlation was found between intelligence and outcome, and no correlation between age and outcome was found. Univariate regressions were computed for each PRF scale on the outcome measure, and the Achievement scale was significantly and positively correlated with rehabilitation outcome. While the multiple correlation derived from the regression equation for the initial sample was significant, that for the cross-validation sample was not. The average PRF scores for this physically disabled sample were compared to the norms, and this sample was found to score significantly higher on Achievement, Endurance, Harmavoidance, and Nurturance, and significantly lower on Aggression, Dominance, Exhibition, Play, and Social recognition. Personality characteristics of physically disabled persons are discussed, and implications for remediation of nonrehabilitants are proposed. Finally, the sensitivity and utility of the PRF in vocational rehabilitation settings are discussed.

TABLE OF CONTENTS

ABSTRACT i

Chapter

I INTRODUCTION 1

II REVIEW OF THE LITERATURE 5

III HYPOTHESES 37

IV METHOD 39

Subjects 39
Procedure. 39
Independent variables. 40
Dependent variables 41

V RESULTS. 42

VI DISCUSSION 46

VII SUMMARY. 59

REFERENCES 61

APPENDIX A 67

CHAPTER I

INTRODUCTION

The purpose of the proposed study was twofold. First, it attempted to identify those variables routinely collected during psychological evaluation of physically disabled persons which predict the vocational outcome of those persons. Second, the efficacy of the Personality Research Form in predicting vocational outcome was assessed.

The majority of the research in the area of vocational rehabilitation has been done under the auspices of state rehabilitation agencies. The groundwork for this research was laid in 1954 with the passage of the Vocational Rehabilitation Amendments, which provided the Research and Demonstration Grant program. Although this federal support and encouragement spurred a few states to establish formal research programs, there are still major obstacles which hinder the development of a consistent, organized body of research (McDaniel, 1965).

The chief obstacle to research is the lack of a logically consistent theory of vocational rehabilitation. McDaniel (1965) complained that "there are many 'philosophies' but no 'theories' in the sense of attempting to explain and describe the process." Indeed, the field of rehabilitation suffers the same malady as many areas in psychology: there exist scores of experiments directed at specific details but no general theoretical framework within which to compare and generate ideas. Bolton (1972) stated that the goal of future prediction research "should be the

development of models of the rehabilitation process which integrate client characteristics and process variables in a statistical equation which 'explains' the variability among clients on relevant criterion measures."

More specifically, one of the primary goals of the researcher as well as of the professional rehabilitation counselor is prediction (Bolton, 1972). Rehabilitation programs are asked to serve increasingly diverse and growing groups of people, but lack sufficient funds to serve every applicant (Kunce, Cope, Miller, & Lesowitz, 1973; Novis, Marra, Rosse, & Tooles, 1961). From the moment the client first enters the realm of rehabilitation, he or she must pass through several stages of the process, from the initial screening of applicants to acceptance for services to completion and follow-up. Since a certain percentage of clients drop out of the program at each stage, and since funds and personnel are limited, it is important to select for services those persons most likely to benefit. Of course, ideally, the field of rehabilitation should attempt to discover ways of helping all applicants; but until such funds and capabilities are available, it is necessary to proceed in a more pragmatic manner.

Because prediction is such a vital part of rehabilitation, recent years have seen dozens of research articles concerning prediction in rehabilitation settings. These studies run the gamut of methodological sophistication, from failure to employ statistical methods at all to the use of multivariate analyses. Many studies have flaws severe enough to considerably weaken the findings, and it is not surprising that the field abounds in inconsistencies.

Bolton (1972) reviewed more than forty prediction studies in the rehabilitation literature and arrived at the following conclusions:

1) prediction studies are fairly popular in rehabilitation; 2) the majority of studies use biographical variables as predictors, with standardized tests a distant second place; 3) the average correlation of predictor composites of biographical data is estimated to be in the low .40's, and generally exceeds chance levels; 4) the predictor composite accounted for as much as one-half of the criterion variance in none of the reviewed studies, a finding not unusual in applied psychological research; and 5) prediction studies in rehabilitation are generally not comparable due to lack of adequate description of samples and procedures. Bolton concluded that research on prediction of rehabilitation outcomes is currently conducted at a rather primitive stage, and offers several suggestions for improvement.

The greatest single need, according to Bolton, is standardization of research procedures and uniformity of reporting format. First of all, research samples should be described in detail in order for predictive studies to be comparable and thus provide a basis for data accumulation and verification and cross-validation of findings. Second, the problem of establishing adequate standardized criteria must be tackled. Bolton recommends the collection of multiple criteria data and assessment of the accuracy of prediction for each criterion alone and for a few selected combinations. Standardization of predictors could be achieved through the use of standardized research personality tests and of a catalogue of biographical items prepared by APA Division 14. Bolton stresses that multivariate analysis of predictor data should never be omitted, and that results should be reported in detail. Finally, to guarantee the accumulation of information and refinement of techniques, a "validity studies exchange" is sorely needed. Prediction studies remain scattered

as a result of the current situation regarding publication. Accordingly, Bolton suggests that one of the academic rehabilitation journals should publish a periodic volume of abstracts of prediction studies.

The present study attempted to follow some of the guidelines delineated by Bolton. Full descriptions of the sample, predictor and criterion variables, statistical procedures, and results were provided in order to permit replication and generalization of the findings. Predictors included biographical data and estimates of intelligence as well as scores from the Personality Research Form (PRF) (Jackson, 1967). The PRF is a psychometrically sophisticated research personality test based on Murray's theoretical framework of needs and presses. Bardach (1968), in fact, recommended the use of Murray's theory to integrate and interpret psychological assessment data for rehabilitation clients. Data were examined by means of a multivariate analysis.

The following literature review was organized into two parts. First, those studies using personality tests, intelligence estimates, and biographical data as predictors of rehabilitation outcome were reviewed and criticized. Next, the area of outcome criteria was explored. It was seen that the criticisms presented by Bolton (1972) are substantiated in this review, and that others were added to his list.

CHAPTER II

REVIEW OF THE LITERATURE

Various personality measures have been used in attempts to predict rehabilitation outcomes. Results, as with other predictors, are mixed. Of the studies reviewed here, approximately half found no predictive ability at all with personality measures, while in the remainder, the results are often questionable.

A number of studies using the Minnesota Multiphasic Personality Inventory (MMPI) as a predictor of outcome reported no correlation between the MMPI and the outcome criteria. In a frequently cited study by Ayer, Thoreson, and Butler (1966), the authors collected demographic data and MMPI scores from the case files of 79 state Division of Vocational Rehabilitation (DVR) clients in an attempt to predict occupational level, upward mobility, and closure status. The predictors were combined in a multiple regression analysis; the multiple correlation coefficients for the three equations approached significance. The authors report five significant correlations between independent and dependent variables. However, this study has several serious methodological problems. First, the 25 independent variables and three dependent measures result in a possible 75 correlations. It would be expected on the basis of chance alone that a few correlations would be significant. Since specific a priori predictions were not made, the few significant correlations that were attained should be viewed with great caution.

The authors do not report whether raw scores or standard scores are used in the analysis, making it difficult to compare the results to those of other studies, Finally, an n of 79 is insufficient for a regression analysis using 25 variables (Nunnally, 1967). These methodological shortcomings result in an extremely weak study. That writers in the rehabilitation field cite Ayer, Thoreson, and Butler's study regularly in their reviews (e.g., Gressett, 1969; Krauft & Bolton, 1976; Perlman & Hylbert, 1969) seems to exemplify a lack of appropriate criticality of the research.

A variety of methods for comparing MMPI scores have been used. For example, Perlman and Hylbert (1969) attempted to develop a predictive model to identify potential dropouts from vocational training in a comprehensive rehabilitation center. The records of 285 dropouts and 285 graduates were combed for 10 demographic variables, the Army General Classification Test (AGCT) scores, and MMPI raw scores with K correction factors. They evaluated the mean MMPI profiles of the two outcome groups through the use of t-tests of significance, and found no significant differences.

Drasgow and Dreher (1965) used the MMPI as well as other psychological tests to predict both success and failure of rehabilitation outcome of psychiatric patients. MMPI profiles were diagnosed as "sick" (psychotic, severe neurotic, or psychopathic) or "passable" (normal to mildly neurotic). Results indicated that these two classifications yielded a 20% overlap between groups. Unfortunately, neither the number of subjects used nor the method of classifying the MMPI profiles was specified, so the adequacy of the study cannot be evaluated.

In an attempt to measure the psychological change in clients which

can be attributed to their experience in a rehabilitation center, Copeland, Kauppi, and Walker (1966) administered the MMPI as a pre- and post-measure to 79 experimental clients who received services and to 62 control clients who did not receive rehabilitation services at 5 week intervals. Changes in the MMPI profiles and scale scores were analyzed by three different methods. While several MMPI scales were significantly related to employment outcome for the initial sample, these results were not replicated in a cross-validation sample. The authors concluded that neither MMPI results nor changes in MMPI scores predicted outcome.

Gressett (1969) used a single scale from the MMPI, the Hs (hypochondriasis) scale with K correction, along with a measure of intelligence and several demographic variables, to predict the vocational rehabilitation success of 40 male cardiac patients. The score on this scale was found to be significantly related to job success after heart attack, job success being defined as employed versus unemployed at a four-month follow-up.

A short version of the MMPI, the Mini-Mult (Kincannon, 1968) was used in conjunction with the Tennessee Self-Concept Scale and the Sixteen Personality Factors Questionnaire in predicting employment of 148 vocational rehabilitation clients by Krauft and Bolton (1976). Rather than determining the predictability of each of these personality measures separately, the authors factor analyzed the 29 variables from the inventories reducing to seven the number of reliable dimensions. Factor scores were then correlated with the criterion, both for the total sample and for the mentally disabled and physically disabled subsamples. None of the seven psychological factors was found to be significantly related to the outcome criterion. An uncontrolled source

of variance in this study stemmed from lack of uniform treatments for clients; the authors suggest that treatment differences may have obscured the predictive ability of the psychological inventories.

Kunce and Worley (1970) included two special scales of the MMPI, the ego strength scale and the low back pain (Lb) scale, in a group of variables in order to predict rehospitalization and employment in a group of 84 psychiatric patients in a halfway-house program. An unspecified shortened formof the MMPI was used. Neither measure was significantly correlated with either outcome criterion.

Lester, Narkunski, Burkman, and Gandica (1975) attempted to predict which ex-addicts would complete a vocational training program through the use of a battery of psychological tests including among others the MMPI, Edwards Personal Preference Schedule, and the Career Maturity Inventory. Raw scores on MMPI and EPPS scales were not related to program completion. Only scores on the Career Maturity Inventory differentiated dropouts from graduates of the program.

As can be seen, the MMPI has been used extensively in a variety of rehabilitation settings. The majority of studies concluded that it is ineffective in predicting vocational outcome. However, methodological inadequacies abound: practices such as failure to describe the sample, procedures, and results, improper use of statistical procedures, and lack of cross-validation are common. In addition, there is little cross-study consistency; in fact, no two studies reviewed used the same method of comparing and analyzing scores. Instead, some used raw scores and others used standard scores; some compared individual scales and others used profile analyses; some used only one scale and others compared groups of scales. In conclusion, while many studies have

attempted to predict vocational outcome through the use of the MMPI, the many flaws in these studies make any firm conclusions difficult to draw.

Several studies have evaluated the ability of the Edwards Personal Preference Schedule (EPPS) (Edwards, 1959) to predict vocational success with various populations. Goss, Morosko, and Sheldon (1968) compared EPPS scores of alcoholic neuropsychiatric patients in a vocational rehabilitation program with the scores of Edwards' general adult sample, and found no differences. The study also compared the scores of patients labeled "successes" (discharged from the hospital with suitable employment) with those labeled "failures" (all others). Two EPPS variables, Deference and Succorance, discriminated the two groups. However, the sample consisted of only 18 patients and no cross-validation was done.

Goss (1969) hypothesized that vocationally successful clients would score higher than unsuccessful clients on EPPS variables Affiliation, Intraception, and Nurturance and lower on Succorance. No support for these hypotheses was found with a sample of 58 male psychiatric patients. Rather, the success group was found to have a higher score on Succorance and a lower score on Deference. Goss also developed a predictive model, based on score information, with which he attempted to place patients in success or failure groups at a rate better than the population base rate. He concluded that predictions above the base rate are possible for both the total group and for the four diagnostic categories into which the patients fell. However, while Goss reported the percentages for the groups and for base rate, he failed to report tests of significance that would indicate whether such results could be expected on the basis

of chance alone.

Distefano and Pryer (1970) evaluated the ability of the EPPS to predict vocational success with psychiatric inpatients in a vocational rehabilitation program using the predictive model developed by Goss (1969). Success was defined as satisfactory adjustment on a job for at least one month after discharge from the hospital. No differences were found when individual scale scores were compared between groups. Further, in contrast to Goss' study, the predictive model failed to predict vocational success better than the population base rate.

As previously mentioned, Lester et al. (1975) found that EPPS scores did not predict completion of a vocational training program by ex-addicts. In another attempt to predict program completion, Gross and Nerviano (1973) administered the EPPS, the Sixteen Personality Factor Questionnaire, and the Personality Research Form to inpatient alcoholics in an alcoholism treatment program. For each scale of each inventory, univariate F ratios were computed between dropouts and completers. No significant differences between groups were found for any scale of any inventory.

Pool (1965) examined the relationship of the EPPS to vocational outcome in a rather indirect fashion. He first determined that a group of 25 male patients in a VA hospital showed significantly greater reality of vocational choice after vocational counseling than 25 patients who did not receive counseling. The EPPS scores of patients who received counseling were compared, and it was found that for patients for whom counseling was ineffective, lower scores on Intraception and Endurance and higher scores on Succorance and Autonomy were achieved. However, a small sample was used, a priori predictions were not made, and no

cross-validation was done, and thus the results must be considered tentative at best.

As with the MMPI, the EPPS has been found generally ineffective in predicting vocational outcome. Similar weaknesses are found in the studies using the EPPS, insufficient sample sizes and lack of cross-validation chief among them. While the EPPS does not appear to be an efficient predictor, again the results thus far can only be considered as tentative.

The Rorschach test has been much less frequently used than its more objective cousins. Neff (1955) assessed the efficacy of the Rorschach in evaluating the employability of 32 persons deemed unemployable by several social agencies and enrolled in a sheltered workshop for an 8 week adjustive work experience. Clients were administered the Rorschach at the beginning and again at the end of the 8 week session. In addition, supervisor judgments of movement made in the workshop and of final employability were obtained. Results suggested that the maladjustment scores calculated from the Rorschach do not differentiate between rehabilitable and nonrehabilitable persons when the test is initially administered, but do differentiate the two groups when the test is repeated at the end of the workshop experience. In other words, Neff states that while the Rorschachs of those who benefit from the training session tend to improve, those of persons who fail to benefit tend to worsen. He concludes that the Rorschach is related to employability when it is given at the end of an adjustive work experience, but it is not an efficient predictor of vocational rehabilitation.

Drasgow and Dreher (1965) also used the Rorschach as a predictor of vocational outcome. Of several Rorschach signs hypothesized to differentiate

success from failure groups, only percentage of D responses was able to do so. However, the failure to report statistical tests of significance can be added to previously mentioned criticisms of this study.

Stotsky and Weinberg (1956) developed a sentence completion test designed to tap nine ego strength dimensions that are presumed to be related to successful adjustment to work demands. Eighty mentally disturbed patients in a VA hospital were administered the test, which consists of 69 work-relevant sentences and 12 filler items. Outcome criteria included staff ratings of work performance and outcome of treatment at a six month follow-up. All but one of the nine ego strength variables was found to be significantly related to work performance ratings and eight variables were found significantly related to treatment outcome. The authors conclude that the test validly measures certain personality variables presumed to be related to successful work performance and to outcome.

Conners, Wolkon, Haefner, and Stotsky (1960) attempted to extend the results of the study by Stotsky and Weinberg (1956) by administering the test to mentally disturbed patients in a halfway-house type of program. Patients in the program worked, received pay, and lived unsupervised on the hospital grounds. Those patients who succeeded in the program (i.e., completed the program and obtained employment for six months following discharge) obtained significantly higher scores than the failure group on four of eight variables. Four of eight variables also significantly predicted occupational adjustment of successful patients at six months after discharge.

Another measure of ego-strength, Barron's Ego Strength Scale (Barron, 1953) was used by Danielson (1965) to predict scores on a rating scale

of vocational rehabilitation potential. It was found that degree of disability was the best predictor, but Barron ES scores also were significantly related to potential. However, it is unknown whether these subjective ratings of vocational potential were actually related to rehabilitation outcome.

Initial research has been done on a scale designed to measure self-concept, the Social Vocabulary Index (SVI), and its relation to vocational outcome. MacGuffie, Janzen, Samuelson, and McPhee (1969) administered two subscales, the self-concept and ideal self-concept subscales, to 320 applicants for vocational rehabilitation services. Of these applicants, 167 were accepted for services and 153 failed to return for services after making application. The accepted cases obtained significantly higher self-concept scores and ideal self-concept scores than did the "investigators," or those who failed to return. Further, those clients both accepted for rehabilitation and closed rehabilitated obtained significantly higher scores than clients accepted for services but closed not rehabilitated, suggesting that rehabilitation success is related to a high self-concept. MacGuffie (1970), using the same sample as MacGuffie et al. (1969), found a multiple correlation between SVI scores, another scale designed to measure client-counselor interaction, and rehabilitation success to be statistically significant but nevertheless low and not clinically significant. On the basis of this finding, MacGuffie recommends that these scales not be used in attempts to predict rehabilitation success. Clayton (1970) also recommended revision of the scales before further use.

In summary, while studies using personality tests in attempting to predict rehabilitation outcome are plentiful, firm conclusions are few.

The MMPI, the EPPS, the Rorschach, and several less well-known measures have all been used. The majority of studies reviewed suffer serious flaws, ranging from inadequate sample sizes to improper statistical procedures. At this stage, it can only be said that those personality measures so far utilized do not appear to be promising predictors of rehabilitation outcome.

The inclusion of intellectual factors in prediction of vocational outcome has yielded somewhat more promising results than that of some personality and demographic variables. Most frequently used intelligence tests are the Revised Beta Examination and the Wechsler Adult Intelligence Scale (WAIS). The WAIS appears to be a better predictor than the Revised Beta Examination in these studies. The two tests were compared in a study by Woods and Myers (1963) and found to correlate highly when used with a population of 32 rehabilitation clients. The small sample size in the study dictates that caution be used in generalizing from the results. Further, Watson and Cahoon (1964) reanalyzed the Woods and Myers data, concluding that the two tests were not as closely related as Woods and Myers had stated.

Two studies using the Revised Beta Examination failed to reveal ability to predict vocational outcome in ex-addicts (Lester, et al., 1975) or in chronic hospitalized psychotics (Stotsky, 1955). Of studies using unspecified measures of intelligence, three found no relationship between intelligence and outcome (Ayer, Thoreson, & Butler, 1966; Cook, 1976; Mitchell, 1975) and one found that IQ alone did not predict success but that it was an important variable in the regression equation (Kunce, 1971).

Two studies (Distefano & Pryer, 1970; Drasgow & Dreher, 1965) found no differences between the WAIS scores of successful and unsuccessful psychiatric patients in a vocational rehabilitation program. Gressett (1969) found that the WAIS Full Scale IQ score did not significantly correlate with job success after heart attack in male cardiac patients, nor did it play a significant role in a regression equation predicting success.

Heilbrun and Jordan (1968) examined demographic and intellectual correlates of vocational outcome with 185 socially disadvantaged clients. Estimates of intellectual functioning were obtained from the WAIS. The authors found that successfully rehabilitated females had higher Verbal and Performance IQ scores than unsuccessful females. Successful Caucasian males had higher Verbal IQ scores than unsuccessful Caucasian males. In general, successfully rehabilitated clients were brighter as a group than unsuccessful clients. In another study, Kunce and Worley (1970) found that WAIS Verbal IQ and Performance IQ scores were significantly related to employment outcome at six months following discharge in a psychiatric population.

Nadler (1957) attempted to predict the sheltered workshop performance of 53 older severely disabled persons with the WAIS Verbal and Performance IQ scores. Results suggested that the Verbal and Performance scores predicted job performance equally well, and that intellectual factors appeared to account for as much as 25% of the variance with this sample.

A short form of the WAIS was developed by Schofield and Kunce (1971) which was designed to predict behavioral ratings of employability as accurately as Full Scale IQ's. A group of workshop clients including

89 physically disabled, 140 mentally retarded, and 111 emotionally disturbed persons served as the developmental group. After three weeks of workshop evaluation, each client was rated on ten scales on behaviors such as motivation, quality of work, and quantity of work. A total score for each client was obtained by summing the scores. For each of the three subgroups, correlations between employability ratings and scores on each WAIS subtest were obtained. Subtests which showed the most consistent patterns of correlations across the three subgroups were retained in the new short form of the WAIS. These subtests included Similarities, Comprehension, Digit Symbol, and Block Design. For validation purposes, two cross-validation samples were used in addition to the original sample. Scores on the short form (called the Adaptability Scale) were correlated with Full Scale IQ, race, sex, age, and employability for the three subgroups of the original sample and for the two cross-validation samples. In addition, an alternative short form developed by Doppelt (1956) was correlated with the above measures and compared to the Adaptability Scale. The Adaptability Scale achieved correlations ranging from .88 to .94 with the Full Scale IQ across the five groups, and significant correlations ranging from .27 to .59 with employability measures in all five groups. Neither the Full Scale IQ nor the Doppelt short form correlated as highly with employability measures. Schofield and Kunce (1971) report that a study by Gilbert and Lester (1970) also found that the same four subtests yielded higher significant relationships to vocational success than other WAIS subtests.

In summary, then, although as usual the results are still inconclusive, intellectual factors do appear to influence vocational outcome. The

WAIS seems to be a better predictor than the Revised Beta Examination in this capacity.

Demographic variables have been the most frequently used predictors of rehabilitation outcome, likely because of their ready availability, since such information is routinely collected when clients apply to vocational rehabilitation agencies. Study after study includes all of these variables regardless of previous research indicating consistent inability to predict outcome for some of these variables. For example, marital status has been found to be generally ineffective in predicting vocational rehabilitation in such diverse populations as probation clients (Mitchell, 1975), socially disadvantaged clients (Heilbrun & Jordan, 1968; Henke, 1976), psychiatric patients (Kunce & Worley, 1970), and rural welfare recipients (Cook, 1976), as well as vocational rehabilitation clients (Ayer, Thoreson, & Butler, 1966; DeMann, 1963). Kunce and Miller (1972) employed marital status as one of twelve predictors, and while it was significantly related to outcome, the relationship was nominal and marital status was eliminated from further analyses as one the the two weakest predictors. A study by Ettinger (1968), however, found that persons with epilepsy who were married were more likely to attain satisfactory vocational results than those who were unmarried. The particular disability examined in this study, however, makes generalization to other samples difficult.

Similarly, race of the client has generally been found to be ineffective in predicting outcome in rehabilitation agencies (DeMann, 1963), in poverty settings (Cook, 1976; Henke, 1976), with probation clients (Mitchell, 1975), and with mentally retarded individuals (Kunce, 1971).

Heilbrun and Jordan (1968) examined interactions among predictors and found that while race by itself did not predict outcome, the interaction between race, sex, and intelligence was predictive of rehabilitation success. Similarly, Aiduk and Langmeyer (1972) found a significant interaction relationship among race, education, and closure status for 292 vocational rehabilitation clients, while race alone was not significantly related to outcome. A study by Kunce and Miller (1972) found race to be significantly related to closure status in a sample of 6099 state rehabilitation agency clients. However, since 90% of the sample was placed into competitive or sheltered employment, the utility of race as a predictor is questionable.

Another demographic variable with apparently little predictive ability is sex. Studies by Aiduk and Langmeyer (1972), Ayer, Thoreson, and Butler (1966), Cook (1976), DeMann (1963), and Mitchell (1975) found no relationship between sex and rehabilitation outcome. On the other hand, Perlman and Hylbert (1969) found that sex had predictive utility in determining graduation versus dropping out from a comprehensive rehabilitation center, suggesting perhaps that graduation from a program is not equivalent to rehabilitation success as an outcome criterion. Heilbrun and Jordan (1968), as previously mentioned, found an interaction effect among sex, race, and rehabilitation success but no predictive ability for sex alone.

In general, the literature suggests that persons suffering from a mental disability either as the main disability or secondary to physical disability are less likely to become successful vocationally than those with only a physical disability (Gay, Reagles, & Wright, 1971). For example, Ettinger (1968) found that epileptics with mental disorders

were less likely to achieve satisfactory vocational results than those free of mental disorder. Presence of a physical disability rather than a mental disability was related to higher occupational level as defined by the Dictionary of Occupational Titles in the study by Ayer, Thoreson, and Butler (1966), although type of disability was not related to closure status or a measure of upward mobility. Upward mobility was determined by three criteria: further schooling, salary increase, and increase in occupational level. In a study by Bolton, Butler, and Wright (1968), which examined prediction of rehabilitation in a sample of all clients accepted for vocational rehabilitation services in one year for a state, fewer successful clients were in the "emotionally disturbed" category. They concluded that emotionally disturbed clients were less predictable as a group and their inclusion with the physically disabled likely reduced the accuracy of prediction. However, investigating the predictability of graduation versus dropping out from a rehabilitation center, Perlman and Hylbert (1969) found no differences for type of disability (mental vs. physical). Reagles, Wright, and Butler (1971) found that client disability type (physically or mentally disabled versus culturally disadvantaged) interacted with demographic variables in predicting rehabilitation gain.

For psychiatric patients, further separation into diagnostic categories does not appear to aid prediction of vocational outcome (Aiduk & Langmeyer, 1972; Balinsky, 1947; Distefano & Pryer, 1970; Kunce & Worley, 1970). Fewer studies have examined specific types of physical disability, although DeMann (1963) reported that in his study more nonrehabilitants were deaf and more rehabilitants had suffered pulmonary tuberculosis, while Kunce, Cope, Miller, and Lesowitz (1973) found a

sample of blind rehabilitation clients to be less successful vocationally than a general caseload of rehabilitation clients. Kristeller (1968) reported that persons whose injuries were visible showed the least employment potential. In this study it also appeared that less successful individuals were more psychologically disturbed. Kunce and Miller (1972) found that persons with more than one physical disability were significantly less likely to be closed successfully rehabilitated, to be employed competitively, or to be earning a high salary than those with only one identified physical disability. For years, a controversy raged in the literature around the question of the relationship of personality and disability type. General consensus currently holds that the two are not related (Shontz, 1971), suggesting that type of disability does not interact with personality measures in determining vocational outcome.

The use of work experience in predicting outcome has resulted in mixed findings. It has been found ineffective in the following populations: hospitalized psychiatric patients (Balinsky, 1947), disabled homebound adults (Kristeller, 1968), mentally retarded individuals (Kunce, 1971), and rural welfare recipients (Cook, 1976).

On the other hand, measures of work experience have proven to be effective predictors of outcome in yet other studies. For example, Mitchell (1975) found significant differences between successful and unsuccessful probation clients in a vocational rehabilitation program in number of months of longest previous employment. DeMann (1963) reported that the variable of employment history approached significance at the .05 level when related to outcome, and was therefore included in a subsequent multivariate analysis which proved quite effective in

predicting rehabilitation outcome. Similarly, Perlman and Hylbert (1969) found that number of years of work experience was one of four variables which added significantly to a multiple regression equation. Individuals in a study by Kunce and Miller (1972) who were employed at the time of acceptance by a state rehabilitation agency were significantly more likely to be closed rehabilitated and to be employed competitively than those who were unemployed at acceptance.

Henke (1976) employed a variety of variables assessing vocational background. Of these, he found that acceptance by Selective Service, non-participation in other federal programs, and more time employed were significantly correlated with success at training and employment for 150 unemployed public assistance recipients. On the other hand, variables which did not correlate significantly with outcome measures included veteran status, previous job training, weeks unemployed during latest layoff, and weeks unemployed during last twelve months. This study illustrates the danger inherent in the tendency of many rehabilitation researchers to combine variables which they assume are measuring the same thing, when in fact those apparently similar variables assess subtle but different aspects of rehabilitation. Their combination, then, makes interpretation of results difficult, if not meaningless. A related problem is the failure of many researchers to precisely define their variables, making cross-study comparisons and replication impossible. Such practices have meant that rehabilitation research, while producing a plethora of studies, has advanced at a snail's pace.

Another variable related to vocational history is occupational level. Gressett (1969) utilized previous vocational level along with

other factors to predict vocational success for cardiac patients. Vocational levels were unskilled, semiskilled, skilled, or professional. The results indicated that previous vocational level was not correlated with the outcome measure, nor did it add significantly to a regression equation. Similarly, Miller and Allen (1966) found that previous occupational level did not significantly contribute to a multiple correlation procedure designed to predict both acceptance to versus rejection from a state rehabilitation agency and rehabilitation success of those accepted. Further, Perkins and Miller (1969), attempting to predict the level of independence in living attained and the degree of occupational success achieved by psychiatric patients after one year following hospitalization, found that the variable of occupational level could be eliminated from the multiple correlation procedure without significant loss of predictive accuracy. That the two studies by Miller and Allen (1966) and Perkins and Miller (1969) used the same definition of occupational level and also used similar procedures strengthens their finding that occupational level does not appear to be a good predictor of vocational outcome.

In contrast to most of the predictors just reviewed, the variable of age seems to hold some promise of being able to predict rehabilitation outcome, both singly and in conjunction with other variables in regression equations. As always, however, the research is inconsistent, and those studies reporting no findings for age as a predictor will be reviewed first.

Two studies which reported that age was not correlated with rehabilitation outcome were carried out by Kunce (1971) and Cook (1976). In both studies, however, clients were quite young. In the study by

Kunce, the mean age of the clients was approximately 18; Cook reported that 75% of his sample was 20 years of age or younger. Differences would be surprising, given the narrow range of ages in these samples. Most rehabilitation centers have caseloads of clients who vary considerably in age.

Other studies reporting no relationship between age and outcome include Balinsky (1947), DeNour and Czaczkes (1975), Distefano and Pryer (1970), Kristeller (1968), and Mitchell (1975). None of these studies reported means of classifying age, whether continuous, dichotomous, or in categories. Balinsky (1947) and DeNour and Czaczkes (1975) failed even to report the statistical procedures used.

Both Gressett (1969) and Henke (1970) correlated age in years with rehabilitation outcome and found no relationship between the two. Gressett's sample consisted of only 40 patients and the results were not cross-validated, which limits the generality of his findings. Kunce and Worley (1970) found that age, when dichotomized as 25 years and under versus 26 years and above, did not predict either rehospitalization or occupational adjustment for 84 psychiatric patients.

While the utility of age as a predictor of rehabilitation outcome does not receive unequivocal support in the literature, age does appear to be one of the more consistently effective variables used. For example, Perlman and Hylbert (1969), using age as a continuous variable in a stepwise multiple regression designed to identify potential dropouts at a rehabilitation center, found it to add significantly to prediction. The results of this study were not cross-validated. While most studies (e.g., Ayer, Thoreson, & Butler, 1966; DeMann, 1963) found age to be negatively correlated with

successful rehabilitation, Heilbrun and Jordan (1968) found that age was positively correlated with outcome. They speculate that this finding may have been linked to the specific nature of their assessment program, which was geared to socially disadvantaged unemployed persons who fell within grossly normal physical and mental ranges.

Instead of considering age as a dichotomous variable, several studies have categorized it, each study defining its own intervals. For example, Aiduk and Langmeyer (1972) classified age groups as follows: 1) 24 years or less, 2) 25 to 34 years, 3) 35 to 44 years, and 4) 45 or more years. A chi square analysis suggested that the variable age approached significance in determining closure status, with clients in the 35 to 44 age range being most likely to be rejected for service. No explanation of why this middle group differed somewhat from the others was offered. Ettinger (1968) found that epileptics in the age range of 15 to 26 years were more likely to achieve apparently satisfactory vocational results than those older in age.

In two studies by Miller (Miller & Allen, 1966; Perkins & Miller, 1969), age intervals were specified differently. Miller and Allen (1966) found age to be the most important variable in a multiple correlation designed to predict the success of vocational rehabilitation clients. Furthermore, this effect was found in both initial and replication samples. In this study, age was negatively related to successful outcome. The age distribution categories were as follows: 1) 40 and under, 2) 41 to 54 years, 3) 55 to 60 years, and 4) 61 years and over. Perkins and Miller (1969) felt that this distribution would not discriminate adequately among people aiming for employment since it was felt that the majority of job-bound individuals would be under the age

of 40. Consequently, they modified the age distribution as follows: 1) trial work period, 16-24 years; 2) establishment period, 25-34 years; 3) late establishment period, 35-44 years; 4) maintenance period, 45-54 years; and 5) decline and retirement, 55 and up. Using this distribution, they found age to be an unimportant factor in the vocational outcomes of psychiatric patients.

Kunce and Miller (1972) used age intervals similar to those used by Miller and Allen (1966); specifically, the ranges were as follows: 1) less than 40 years; 2) 40 to 54 years; and 3) greater than or equal to 55 years. Age was found to be significantly correlated with rehabilitation outcome, work status at closure, and earnings per week at closure for state rehabilitation agency clients. A stepwise regression analysis demonstrated that age was one of the most important variables in accounting for work status and weekly earnings.

The variable of education, like that of age, has resulted in mixed but generally positive findings. As usual in the rehabilitation literature, cross-study results are difficult to compare because the methodology varies widely from study to study and is often inadequately reported so that replication is impossible.

In two studies investigating the possibility of predicting vocational outcome for socially disadvantaged clients (Cook, 1976; Heilbrun & Jordan, 1968), education was found to be ineffective as a predictor. The range of years of education in Heilbrun and Jordan's study was from 0 to 13 years, with a mean of 8.8 years. This mean is quite low, and may have accounted for the lack of significant findings. Although Cook failed to describe the educational backgrounds of his subjects, it could be speculated that these rural welfare recipients had a similarly

narrow range and low mean educational level. DeNour and Czaczkes (1975) found that educational level did not predict vocational success for hemodialysis patients, and their sample too was characterized by low education--76% had not finished high school.

Kunce (1971) found no predictive ability for education in assessing the vocational adjustment of mentally retarded individuals. While no descriptive data were provided concerning the education of these persons, it can again be suggested that with such a population the educational level would be quite low and the range limited. Other studies (Miller & Allen, 1966; Perkins & Miller, 1969; Perlman & Hylbert, 1969) with similar findings concerning the inability of educational level to predict vocational criteria also similarly fail to describe the educational level of their samples.

Of studies finding a relationship between educational level and rehabilitation outcome, several can be criticized for failure to report the average level of the sample (e.g., Aiduk & Langmeyer, 1972) or failure to specify precisely the manner in which the variable was defined (e.g., Ayer, Thoreson, & Butler, 1966). No study reviewed included both specifications. Furthermore, no two studies defined the intervals in the same way, making cross-study comparisons difficult.

Gressett (1969) correlated number of years of education with job success after heart attack and found a correlation of .33, significant at the .05 level. DeMann (1963) reported that there was a greater proportion of high school graduates among the rehabilitants of a state vocational rehabilitation agency, but failed to report any further details. When dichotomized into categories of 12 or more years and

under 12 years, educational level correlated significantly with employment outcome in a population of psychiatric patients (Kunce & Worley, 1970). While Aiduk and Langmeyer (1972) found only a trend toward significance between education and vocational success for psychiatric patients receiving rehabilitation services, they found a significant interaction between education, race, and success. Barney (1974) dichotomized educational level into 10 years or more and less than 10 years. A chi square analysis indicated that less educated work evaluation clients were significantly less successful in securing training or employment than better educated clients.

Kunce and Miller (1972) divided educational level into three intervals: 12 or more years, 7 to 11 years, and 6 or less years. Education was found to be significantly related to rehabilitation outcome, work status at closure, and weekly earnings at closure for clients of two state rehabilitation agencies. It was considered an important variable in a regression equation predicting salary, but was not included in other regression equations.

Henke (1970) looked at not one but several facets of education and academic achievement, including highest grade completed, literacy and several scores on the Metropolitan Achievement Test. All of these variables were related positively and significantly to completion of training and subsequent employment of disadvantaged rehabilitation clients.

In summary, the literature in vocational rehabilitation is replete with studies attempting to predict outcome of rehabilitation treatment. The most commonly used predictors are biographical in nature, in spite of the apparent lack of predictive utility of most of these variables.

Two of these variables, age and education, do seem to hold promise as predictors. WAIS estimates of intelligence also seem to have some predictive utility, although such conclusions remain tentative. Of personality measures reviewed, none were consistently useful in predicting outcome, with the exception of Stotsky and Weinberg's sentence completion test. The ineffectiveness so far reported may be due to serious flaws in many of the studies which have been published rather than to the actual inability of the tests to predict outcome. The answer to this question must await a series of well-designed, replicated studies which can be compared with each other. Weaknesses in these studies seem to reflect a lack of sophistication in research design and reporting. Failure to provide adequate descriptions of samples, variables, and procedures used was appalling and often prevented further consideration of the merits of particular studies. A further indication of the lack of sophistication in the area was a widespread tendency to cite as classic and exemplary studies several articles with very serious flaws. Inadequate sample size, unsound statistical procedures, and lack of cross-validation characterize much of the rehabilitation literature. As a result, few conclusions concerning the prediction of rehabilitation outcome are currently available.

A major issue of controversy in the rehabilitation literature has been the use of appropriate outcome criteria. The majority of studies have used criteria established by the Vocational Rehabilitation Administration (Aiduk & Langmeyer, 1972; Walls & Tseng, 1976), and these criteria have received severe criticism. Rehabilitation outcome in state agencies is generally reported as either Status 26 or Status 28 or 30. Status 26 refers to cases in which a plan of vocational

rehabilitation services has been made and completed as far as possible, with counseling and one or more other services provided, and the client has been suitably employed for at least 30 days. Status 28 and Status 30 consist of clients who withdrew or were terminated from rehabilitation services and were thus considered unsuccessful. Objections to this simple dichotomous criterion are legion.

In order to appear statistically successful, rehabilitation agencies have been accused of focusing on the number of closures rather than quality of services, accepting only noncomplex cases requiring the least counselor time, closing cases prematurely in order to meet quotas, and failing to recognize effort expended in cases closed nonrehabilitated (Viaille, 1968). In other words, satisfaction of the outcome criterion becomes an end in itself to the detriment of the clients (Hawryluk, 1972). Hawryluk (1972) further accuses the traditional criterion of being too crude in that it permits only gross distinctions, categorizing clients as temporarily either totally successful or totally unsuccessful, rather than permitting degrees of improvement. Conley (1973) states that the employed-unemployed criterion is too limited, arguing that vocational functioning is but one aspect of total rehabilitation. He suggests that such factors as increases in homemaking or volunteer work; improved mobility, social skills, physical condition, capacity for self-care, family life, and home environment for children of clients; reduced public dependency; and increased client and family happiness and self-respect should also be considered. McCoy and Rusk (1953) further criticize the tendency to emphasize only economic consequences of rehabilitation. Studies using this administratively oriented outcome criterion include Aiduk and Langmeyer (1972), DeMann

(1963), Distefano and Pryer (1970), Drasgow and Dreher (1966), Miller and Allen (1966), Salamone (1972), and Tosi and Vesotsky (1970). Other studies (Goss, 1968, 1969; Goss, Morosko, & Sheldon, 1968; Gressett, 1969; Heilbrun & Jordan, 1968; Krauft & Bolton, 1976; Neff, 1955) have used an unspecified employed-unemployed dichotomy as the only outcome criterion.

Research assessing prediction of vocational success with rehabilitation clients has not been alone in the use of inadequate outcome criteria. Studies investigating slightly different aspects of the rehabilitation process have also used minimal criteria. For example, the use of a dropout-graduate criterion has been used in studies attempting to predict program completion (Gross & Nerviano, 1973; Henke, 1976; Lester, et al.,1975; Perlman & Hylbert, 1969). Cook (1976) was interested in the effectiveness of rehabilitation services with welfare clients, and described his outcome groups as "employed and off welfare," "employed but still on welfare," and "unemployed and on welfare." While he included an additional dimension in his study, welfare status, the employment criterion is still not adequately delineated. Similarly, Kunce and Worley (1970) included rehospitalization as well as employment as criteria but they too failed to define employment as more than "vocationally and socially independent" after six months. De-Nour and Czaczkes (1975) assessed the vocational rehabilitation of chronic hemodialysis patients but used only a 4-point scale of the available hours per week that the patient worked as the criterion, a measure which appears certain to miss important aspects of post-dialysis functioning.

A number of studies have combined several criteria into a single

overall measure. For example, Nadler (1957) used a composite rating scale representing Job Performance in a sheltered workshop setting for severely handicapped individuals. The scale was composed of six equally weighted elements: the number of different jobs the patient could perform, productivity, steadiness of work habits, attendance and punctuality, independence from supervision, and quality of work. It seems that much information was lost by looking only at the composite score rather than examining the components individually as well. Similarly, Eber (1966) included work status, job code, weekly earnings, and closure status in a weighted composite score of vocational adequacy. Stein, Bradley, and Buegel (1970) composed an 11-step composite criterion using current job status, length of time on longest job, and number of jobs held to tap overall work adjustment. A single-score instrument measuring both vocational functioning and personal-social adjustment was developed by Reagles, Wright, and Butler (1970). The combining of several criteria into one measure seems somewhat premature.

Bolton (1974), in discussing the question of whether vocational and nonvocational measures of client change should be combined to form a single criterion, claims that the basic issue is dimensionality. That is, it is first and foremost necessary to determine whether in fact the various measures used are related to each other closely enough so that a meaningful concept is formed by combining them, or whether they are in fact unrelated and their combination would be unjustified. To clarify this question, Bolton (1974) used two personality measures, the Mini-Mult and the Tennessee Self-Concept Scale, to measure psychological adjustment, and three variables, work status, weekly earnings, and

vocational success, to assess vocational change in 70 vocational rehabilitation clients. The change scores from these variables were factor analyzed and rotated to oblique simple structure, resulting in the following three factors: improved vocational functioning, decreased psychosis, and decreased neurosis. Importantly, it was found that vocational functioning was almost completely unrelated to the other two factors, suggesting that vocational and psychological adjustment are different aspects of rehabilitation. Bolton cautions against excessive generalization of these findings for two reasons: first, the fact that psychological adjustment was assessed by self-report rather than objectively may have affected the results; and second, while vocational improvement was rationally coded, psychological adjustment was quantified through the use of residual change scores. The separation of the dimensions may have been in part due to these different procedures.

Not only does it appear questionable to combine vocational and nonvocational measures of rehabilitation into one overall criterion, but the results of several studies suggest that combining different aspects of vocational outcome may also be misleading. For example, Ayer, Thoreson, and Butler (1966) used occupational level and upward mobility as well as closure status as dependent variables. Occupational level was dichotomized as either professional-clerical occupations or all other occupations. The criteria for upward mobility included further schooling, a salary increase, and an increase in occupational level. Closure status was defined as employed and successfully trained or unemployed and/or unsuccessfully trained. The importance of the use of multiple criteria is highlighted by the results of this study, for different predictors correlated with each dependent variable. However,

as discussed earlier, this study suffers from several methodological flaws and the results should be viewed with caution.

Kunce, Cope, Miller, and Lesowitz (1973) used three outcome criteria--placement into competitive employment, job salary, and closure status--with both a general caseload of vocational rehabilitation clients and a special group of blind rehabilitation clients. While both groups attained an equal rate of closure in Status 26 (client rehabilitated), fewer blind clients than general caseload clients found competitive work or earned salaries of more than $60 per week. Kunce et al. (1973) conclude that the use of closure status alone does not adequately reflect the difficulties involved in the rehabilitation process.

Another study using these three criteria was done by Kunce and Miller (1972). The regression equations for the three criteria indicated that different variables were important in each, suggesting that the outcome criteria were measuring different aspects of vocational adjustment.

Miller, Kunce, and Getsinger (1972), using vocational rehabilitation clients with hearing loss as subjects, attempted to predict a variety of outcome measures, including employment at disposition, employment at follow-up, job level at follow-up, employment persistence, job tenure, and job stability. Results indicated that the relationships of variables to the shorter and longer term criteria were significantly different. The authors suggest that discrepancies in findings concerning relationships of personal characteristics to outcome may be due to this length of follow-up factor. Further, as in other studies, the predictor variables were differentially related to the specific type of job success. For

example, the simpler criteria of employment at follow-up and job level discriminated less well than employment persistence. The study also illuminates the difficulty of making cross-study comparisons when different outcome criteria are used.

Finally, Stein, Bradley, and Buegel (1970) reported that a comparison of a simple employed-unemployed criterion with a more complex counseling success criterion revealed that the counseling success criterion was somewhat more sensitive in assessing such aspects of counseling as number of counseling contacts, length of counselor experience, and intercounselor variability. However, no details were reported as to precisely how the employed-unemployed criterion was used, nor were specific results reported.

In summary, while the use of multiple outcome criteria appears valuable, their combination into a single composite score may be premature. Suggestions for improvements in outcome criteria have not been restricted to advocacy of multiple and extra-vocational criteria. Kerr (1970) proposes that mere placement of clients in convenient positions be distinguished from good client placement, as defined by initial salary. Kerr found that clients given good placements were more likely to remain employed and to be economically successful than were other clients. Neff (1969) proposed that the traditional criterion is too short-term and should be replaced with one considering continuity of employment as an important factor. Bruel (1964) suggested that the maintenance of self-sufficiency be used to determine rehabilitation success. Both Kerr (1970) and Harward (1967) write that occupational mobility should also be considered as an outcome criterion. A more complex criterion called "work adjustment" was proposed by Betz and Weiss

(1966). This criterion measures both client satisfaction with a job and his or her performance as an employee.

McCoy and Rusk (1953) assessed improvement in the client's "ability to function" as indicated by general social characteristics, mobility status, employment status, ability of an individual to carry on daily activities and/or employment relative to how he or she was doing upon arrival, and an overall "rehabilitation rating." Spencer (1967) suggested the concept of "dependency reduction" as a criterion especially useful in poverty settings. The concept refers primarily to social dependency, or dependency upon extra-familial sources of income.

Hawryluk's (1972) measure of rehabilitation gain is based on one initially constructed at the University of Wisconsin. The Wisconsin scale is composed of 20 items assessing work status, income, dependence on welfare agencies, hours worked, social and recreational activities, psychological and physical well-being, and occupational expectations. Hawryluk's shortened scale consists of nine items which measure hours spent on the job or in training, economic independence, and self-esteem. This scale differs from most outcome criteria in that it is multi-dimensional rather than focusing exclusively on employment, and it measures incremental changes in a client's status.

As can be seen, the area of outcome criteria in rehabilitation is rapidly expanding. While the conventional employed versus unemployed criterion still predominates the literature, recent years have seen appropriate criticism of its use and excellent suggestions for improvement. Hopefully, writers in the rehabilitation field in the future will be encouraged to discard inadequate measures and use others designed to specifically answer their particular research questions and to be broad

enough to allow replication and generalization of the results. Only in this manner will the complex interactions among predictors, outcome criteria, and particular settings be elucidated.

CHAPTER III

HYPOTHESES

The proposed investigation was designed to explore the relationship between several predictor and outcome measures of physically disabled persons referred to a comprehensive work evaluation center. Predictors included demographic, intellectual, and personality variables, while the outcome criterion was employment or school entrance. The outcome criterion was chosen to reflect the needs and interests of the particular setting involved as well as to provide more general information.

Hypothesis One

In keeping with prior research, it was hypothesized that the variable of age would be negatively correlated with rehabilitation outcome. Age was measured in years and was considered a continuous variable, since there is no evidence that categorization of age provides more reliable results.

Hypothesis Two

As with the first hypothesis, on the basis of the literature review it was hypothesized that educational level was positively correlated with rehabilitation outcome. Educational level was measured in years and was also treated as a continuous variable. Again, the research to date fails to provide evidence that categorization of levels of education would yield more reliable results.

Hypothesis Three

Again, since previous research provides tentative support for the efficacy of intelligence estimates as predictors of vocational outcome, it was hypothesized that WAIS Full Scale IQ estimates would correlate positively with rehabilitation outcome criteria.

Hypothesis Four

It was hypothesized that those persons considered to achieve a successful outcome would attain significantly different PRF scores from those persons whose outcome is considered unsuccessful. Since this investigation was essentially exploratory with regard to the PRF, no specific scale differences were hypothesized, nor was the direction of the differences hypothesized.

Hypothesis Five

It was hypothesized that a combination of demographic, intellectual, and personality variables would account for a significant portion of the total variance in predicting outcome. Further, it was hypothesized that this combination would account for more of the total variance than any individual predictor alone.

CHAPTER IV

METHOD

Subjects

Subjects were drawn from the population of clients seen for psychological evaluation as part of a total work evaluation process at the Missoula Crippled Children and Adults Rehabilitation Center, Missoula, Montana. The sample of 61 included 51 males and 10 females, who ranged in age from 17 to 60 years and averaged 35.7 years. The mean educational level was 11.3 years, with a range from 7 to 16 years. The average intelligence quotient was 105.6, and ranged from 83 to 131. All but four of the subjects were Caucasian, the others being Native Americans, and all resided in the northwestern part of Montana. All subjects were referred to the Rehabilitation Center because of a physical disability which restricted their ability to work. These disabilities ranged from serious burns to brain injury, but the majority involved back, leg, and knee injuries. The subjects had been employed primarily as loggers, mill workers, or factory workers prior to their injuries. The group consisted of clients seen for psychological evaluation between June, 1977, and June, 1978. All clients were seen by a clinical psychologist or a graduate student in clinical psychology for an individual evaluation consisting of an interview, intellectual assessment, and personality testing.

Procedure

Each subject was in attendance at the Rehabilitation Center for a one

week evaluation session. In general, they were referred by Workmen's Compensation, insurance companies, or vocational rehabilitation counselors. The evaluation consisted of a physical examination, physical therapy in most cases, evaluation of work interests and abilities, an interview with the Job Placement Specialist, and a psychological evaluation. More specifically, the psychological evaluation was conducted by a clinical psychologist or by a graduate student in clinical psychology. The evaluation consisted of an interview in which the demographic variables, age and educational level, were collected, and administration of the WAIS and the PRF. In addition, each subject was administered the MMPI and certain projective personality tests.

Independent variables

Independent variables included demographic, intellectual, and personality factors. Demographic variables included age in years and educational level in number of grades completed, except that those who had attained a G.E.D. were credited with a high school education.

The Wechsler Adult Intelligence Scale was used to provide estimates of intellectual ability. Since many of the available scores were prorated estimates of intelligence, only Full Scale IQ scores were used. Subtests always used include Information, Comprehension, Similarities, Vocabulary, Digit Symbol, Picture Completion, and Block Design. Arithmetic and Digit Span were occasionally omitted, while Picture Arrangement and Object Assembly were usually omitted.

The Personality Research Form (form A) was used in an effort to explore the utility of this instrument in outcome prediction with a group of physically disabled persons. In contrast to previously utilized personality

measures, the PRF demonstrates excellent psychometric properties (Anastasi, 1972; Kelly, 1972; Wiggins, 1972). It is multi-dimensional, has standardized norms, and appears free from demand characteristics (Mungas, Trontel, Winegardner, Brown, Sweeney, & Walters, in press), since it was constructed so as to minimize the influence of social desirability (Jackson, 1967). Furthermore, the PRF has been shown to predict behavioral criteria in other settings (Mungas, et al., in press).

Dependent variable

The dependent variable was collected from two to fourteen months after the subject was seen for evaluation. The average length of follow-up was eight months. The Job Placement Specialist at the Rehabilitation Center and four vocational rehabilitation counselors served as the sources of follow-up information. The outcome criterion was employment or school attendance or vocational training at the time of follow-up versus unemployment. The choice of the criterion, as previously mentioned, was guided by the nature of the referral questions asked of the Rehabilitation Center evaluation team.

Although it was initially planned to collect a total of four outcome criteria, practical considerations made it impossible to gather information on the remaining three criteria. These criteria had included salary increase, total time since the evaluation spent employed, and amount of time spent before an attempt to find work or enter school was made.

CHAPTER V

RESULTS

Pearson product-moment correlations were computed between each of the three demographic and intelligence variables and rehabilitation outcome (defined as employment or school attendance versus unemployment). The significance of the resulting correlations was assessed by means of *t*-tests. The results were as follows: age, $r=0.09$ ($t(59)=0.694$, $p>.05$); educational level, $r=0.33$ ($t(59)=2.685$, $p<.05$; and intelligence ($r=0.22$ ($t(45)=1.513$, $p>.05$).

The relationships between each PRF variable and the outcome measure were assessed by a series of univariate regressions (Nunnally, 1967). One PRF scale, Achievement, was significantly and positively correlated with successful rehabilitation outcome ($F(1,39) = 4.28$, $p<.05$) (see Table 1).

A stepwise multiple regression procedure (Nunnally, 1967) was used to determine the combination of demographic and PRF variables which would best predict rehabilitation outcome. The total sample was first divided into an initial sample of 41 subjects on whom the regression equations were derived and a second sample of 20 subjects to be used for cross-validation. The division of subjects was accomplished by assigning every third subject seen for evaluation to the cross-validation sample in order to assure that date of evaluation was equivalent for both samples. The first step in the regression involved computing univariate regressions for each independent variable on the dependent variable, and then retaining that variable which accounted for the greatest amount of

the variance. Next, that variable was combined with all of the other independent variables individually, and the two-variable combination which accounted for the greatest amount of the variance was retained. This process of adding the best variable to the combination of variables was continued until no variable added to the equation could contribute significantly to the amount of variance accounted for. The following regression equation was thus derived: $Y=(0.016039)X_1 + (-0.016118)X_2$, where

Y = Rehabilitation outcome
X_1= Achievement
X_2= Age.

This equation resulted in a multiple correlation of 0.20 (F (2,38)=4.50, $p<.025$).

The equation derived from the first sample was then applied to the cross-validation sample. A correlation was computed between the predicted score resulting from application of the regression equation to this sample and the actual score. A correlation of 0.08 was found (r (18)=0.08, $p>.05$).

In order to provide a comparison of a sample of physically disabled persons with the normative sample (mean=50, standard deviation=10), means and standard deviations were computed and Z scores calculated between the two groups (see Table 2). The present sample consisted of 69 physically disabled subjects seen at the Missoula Rehabilitation Center. Nine of the fourteen PRF scales differentiated at a significant level between the two groups, the disabled group being significantly lower than the normative sample on Aggression, Dominance, Exhibition, Play, and Social recognition, and significantly higher on Achievement, Endurance, Harmavoidance, and Nurturance.

TABLE 1

PRF Scale	Value of F (1,39)
Achievement	4.28*
Affiliation	0.47
Aggression	0.80
Autonomy	0.28
Dominance	0.05
Endurance	0.05
Exhibition	1.35
Harmavoidance	2.65
Impulsivity	1.58
Nurturance	0.00
Order	0.63
Play	1.50
Social recognition	0.05
Understanding	0.01

*$p < .05$

Univariate regression F values for the regression of each PRF scale on the dependent variable, with 1 and 39 degrees of freedom.

TABLE 2

Variable	Mean	Standard Deviation	Z
Achievement	55.246	11.254	4.3577*
Affiliation	48.696	10.836	-1.0832
Aggression	43.812	10.273	-5.1401*
Autonomy	49.551	9.462	-0.3730
Dominance	44.696	9.104	-4.4058*
Endurance	56.580	9.796	5.4658*
Exhibition	41.725	11.147	-6.8737*
Harmavoidance	57.174	8.956	5.9592*
Impulsivity	47.188	10.666	-2.3358
Nurturance	56.000	9.247	4.9840*
Order	51.130	8.959	0.9386
Play	44.203	8.560	-4.8154*
Social recognition	43.826	7.717	-5.1285*
Understanding	47.478	8.406	-1.8059

*$p < .05$

Means, standard deviations, and Z values reflecting the degree of departure from the normative sample mean of 50 for each PRF variable.

CHAPTER VI

DISCUSSION

The results of this study indicated that certain demographic and personality variables can be effectively used to predict the vocational rehabilitation outcome of physically disabled persons. In addition to findings concerning the prediction of rehabilitation outcome, some rather unexpected information regarding the personality characteristics of this group of physically disabled people was uncovered. The following discussion addresses the implications for prediction and those concerning personality characteristics in turn.

Prediction. Of the three demographic variables, the variable of educational level was most highly correlated with rehabilitation outcome. This finding is consistent with previous literature in the area (e.g., Henke, 1970; Kunce & Miller, 1972), and indicates that physically disabled persons are more likely to find work or return to school if they are relatively well-educated. Since job requirements often include a certain level of education such as high school completion, it is not surprising that persons who meet these minimal requirements are more likely to be employed. In addition, it can be speculated that persons with more education have had more ability and interest in school than those who quit early, and would thus be more likely to return to school when they become physically incapable of performing their previous jobs, as compared with those who do not consider school to be a desirable or possible option.

Intelligence achieved a low to moderate correlation with rehabilitation outcome. Again, it is not surprising that more intelligent persons would be somewhat more likely than less intelligent persons to find work or return to school, since greater intelligence implies better problem-solving abilities and a higher likelihood of success in school. The range of intelligence quotients extended from 83 to 131. Certainly, those at the higher end would have many more options for work or school than those with low scores, who may simply not have the requisite abilities for further school or for work which is other than physical labor. That the correlation was relatively low may be due to the fact that most of the subjects both had had and later returned to jobs involving primarily physical labor, and thus intelligence may have been a less crucial factor in acquiring or maintaining a job for many of them.

No relationship between age and rehabilitation outcome was found in the present study when age was considered as a single predictor. The reasons for this negative finding are not likely to be inherent in the sample or procedures, since both the sample size and the range of ages were quite adequate. Rather, it is more likely that for the particular population studied, the relationship between the two is not direct but is, rather, complex. Indeed, age added significantly to the predictive ability of the multiple regression equation in the initial sample. Future studies should keep in mind this suggested complexity when examining the effects of age on rehabilitation outcome.

The multiple regression procedure was found to yield significant results for the initial sample. That is, a combination of the PRF scale Achievement and age proved to be an effective predictor. However, when the equation was applied to the cross-validation sample, these results were

not born out. Thus, the hypothesis that a combination of variables would prove to be the most useful predictor was not supported. In this study, the small size of the sample may account for the lack of significant findings. In any case, these results stand as an example of the absolute necessity of the use of cross-validation. Very few studies have used a cross-validation sample, and the generally idiosyncratic pattern of results in the rehabilitation field may be due to such errors in methodology.

The hypothesis that scores on the PRF would differentiate persons with successful outcomes from those who failed to find work or enter school received some support in this study. One of the fourteen PRF scales, Achievement, was found to be positively and significantly related to rehabilitation outcome. That is, persons with successful outcomes were more likely to fit Jackson's description of a high scorer: "aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; willing to put forth effort to attain excellence." Indeed, that persons with such characteristics would be likely to go out and find work or go to school in spite of physical injury or other restraints makes eminently good common sense and requires little in the way of explanation. In fact, the Achievement scale seems designed to tap precisely those qualities for which vocational rehabilitation counselors search in their clients. It differentiates the industrious, hard-working, ambitious and capable people from those who are perhaps lazier and less inclined to diligently search for meaningful occupations. High scorers on Achievement are also described as self-improving; it can be speculated that this scale would not only differentiate between vocational success and failure but also might be related to post-rehabilitation

receipt of a higher salary or more advanced position within the job market. In any case, the utility of this variable looks promising and should be further explored in future research.

The present results, in fact, have implications both for the utility of the PRF in vocational rehabilitation and for its predictive and discriminant validity. Should future research corroborate the predictive ability of the PRF, it could be used as a standardized, easily administered instrument which provides not only prediction but also description of many quite relevant aspects of each client's personality. The PRF is likely to be more useful than tests such as the MMPI, since it describes normal characteristics rather than similarity to pathological groups. As such, it may point to strengths on which to capitalize rather than merely highlighting weaknesses. In addition, that the Achievement scale predicts just that--vocational Achievement--and discriminates nonrehabilitants from rehabilitants is substantial evidence for the predictive and discriminant validity of this scale of the PRF. In summary, then, the PRF appears to offer numerous advantages over other predictive devices in the rehabilitation field: it is a standardized, well-designed instrument; it measures relevant and useful characteristics; and the predictive validity of one scale has been established. Future research is required to substantiate these findings and to further explore the utility of the PRF in these settings.

Personality. The most interesting and surprising findings in the present study were drawn from the comparison of the PRF scores of a sample of physically disabled persons with those of the normative sample. The two groups differed significantly on nine of the fourteen PRF scales. For the purpose of clarity, the description of the present sample with relation

to the mean of the normative sample can be presented concisely as follows:

HIGH:	Achievement	LOW:	Aggression
	Endurance		Dominance
	Harmavoidance		Exhibition
	Nurturance		Play
			Social recognition

The following discussion consists of speculations concerning the possible personality configuration of physically disabled persons, based on both empirical evidence and clinical experience gained from working with these people. These results suggest that the personality of physically disabled persons is distinguishable from that of healthy individuals in many respects. The present results suggest that the physically disabled person would seem to be characterized as a long-suffering, hard-working, timid, shy person whose perseverence and drive to achieve his goals are constantly in conflict with his great concerns about both real physical danger and also the psychological danger of assertively confronting other people, particularly those in whose presence he feels submissive, overpowered, and weak. This latter group might include not only present and prospective employers, but also vocational rehabilitation counselors and evaluators. Physically disabled persons may perhaps be seen, then, as individuals who must overcome their unassuming shyness and desire to be "invisible" to others in order to be as steadily productive, determined, and accomplishing as they would like to be.

In fact, it appears that these individuals' strengths may lie in their ability to be self-determined; that is, if allowed to function without the involvement of others, their own tendency to steadfastly and unfalteringly direct their energy toward becoming resourceful and productive may permit them to approximate the high goals which they have set for themselves. Their high scores on the Achievement and Endurance scales certainly

support this contention. Indeed, that approximately half of the persons in the present sample did find work or enter school in spite of a physical handicap and other barriers (such as lack of job skills or loss of financial benefits) indicates considerable stamina and drive. Furthermore, the low Play score rounds out the picture of work-oriented individuals who do not feel comfortable engaging in leisure activities even when employed. Perhaps, then, enforced "leisure" is particularly distasteful to this group of people.

Physically disabled persons' weaknesses, then, may lie more within the interpersonal sphere. Their low scores on Aggression, Dominance, Exhibition, and Social recognition suggest that they are shy and timid, and prefer to receive little attention from others. They are unassertive, and thus are likely deficient in social skills, feeling uncomfortable more in business or other professional situations than in purely social, friendly situations. In fact, these people see themselves as especially helpful, encouraging, and charitable to those in need of their aid, particularly those less able than they. It can be speculated, then, that their interpersonal deficits revolve around contacts with persons in authority; here, their resolve wavers, uncertainties and fears arise and they retreat into shyness.

This social inhibition may have the immediate practical effect of making the disabled person an undesirable job candidate. Coupled with a physical handicap, a social handicap may be more than a prospective employer is willing to accept. The socially self-conscious and shy may not only fail the employment interview but also be eliminated from jobs involving contact with the public. As their options grow fewer and their goals remain distant, they may become more withdrawn and discouraged,

perhaps developing psychological symptoms of distress. At this point, psychological intervention may be necessary to restore equilibrium. If potential problem areas are recognized early enough, however, many of these possible pitfalls may be avoided. Recommendations for prevention measures are made in a later section of this paper.

Because the present study was correlational in nature, no attribution of causality can be postulated to indicate whether persons with this personality configuration will be more likely to become physically disabled or whether the physical injury itself is such a traumatic event that the personality is changed. Of course, those who hold to the view of personality traits as relatively immutable would likely espouse the first possibility. This position might then argue that persons who are low on Aggression, Dominance, and Social recognition would be unlikely to be in positions of leadership. They would instead be the followers, those involved in the physical labor rather than in managerial positions, and thus more likely exposed to danger. Ther high Achievement and Endurance and low Play needs would drive them to work harder and longer than others, again exposing them to more dangerous situations. And, finally, their high level of Harmavoidance may make them more anxious and less self-confident in potentially dangerous situations, and they would be more likely to then panic and hurt themselves than would persons who can remain calm and less afraid.

On the other hand, those who would view these "traits" as characteristics which can be modified by important life events might say that serious physical injury involves a traumatic change in both lifestyle and self-perception, and could be expected to lead to changes in personality. An argument could then be made that following a serious physical injury, a person would become more Harmavoidant as a result of learning. Particularly

for those with visible injuries, a new self-awareness may arise which is accompanied by a preference to stay "out of the limelight," a sense of embarrassment due to the injury. The person's self-esteem may lower as a consequence of both the injury and the change from the status of an employed breadwinner to that of an unemployed burden on others (Neff & Weiss, 1965; Wright, 1960). As a result, the measures of Aggression, Exhibition, Dominance, and Social recognition become lower. Because he experiences a severe difficulty, his sense of being "long-suffering" may develop and he comes to view himself as having a great deal of endurance. He realizes what it means to be unemployed and unoccupied, and comes to value work more. This results in high Achievement and low Play scores. Finally, by falling in need of help himself, his empathy and compassion for others increases and his Nurturance score likewise increases.

A study by Linkowski and Dunn (1974) has implications for the present work. They found that for college students with physical disabilities, acceptance of disability was significantly and positively correlated with two aspects of self-concept: self-esteem and satisfaction with social relationships. The latter concept, satisfaction with social relationships, seems related to the difficulty and discomfort in certain interpersonal situations which was suggested by the low scores on Aggression, Exhibition, Dominance, and Social recognition. While again no causal attributions can be made, it can be speculated that increased acceptance of disability may lead to both increased self-esteem and increased satisfaction with social relationships. In any case, the PRF does seem to be quite sensitively measuring aspects of the self-concept of the physically disabled person.

Whereas considerable research has been devoted to society's view of the physically disabled, few writers have addressed the disabled person's

view of himself. Weinberg-Asher (1976) found that, contrary to theory which suggests that disabled persons introject society's perceptions of them as different and come to devalue themselves, disabled persons perceived themselves in much the same way as did able-bodied persons on a number of self-rated personality traits and attitudes. However, in comparing the disabled persons' self-ratings and society's image of the disabled, she found many discrepancies. Society viewed the disabled as lacking in social interaction skills, lacking in self-confidence, more courageous, more moral, less popular, less aggressive, less enjoyable to be with, less likeable, and less relaxing to be with than able-bodied persons. However, her samples of physically disabled and able-bodied college students gave themselves the same ratings on these items.

Weinberg-Asher's findings are in direct opposition to the present findings. Indeed, the PRF scores of this sample may be considered to lend initial support to the notion that the physically disabled introject society's perceptions to a significant degree. Almost all of the descriptors listed by Weinberg-Asher were used to describe the current sample of physically disabled persons. A possible explanation for these apparently contradictory findings may lie in the nature of the samples used. Weinberg-Asher examined college students at a reputable university; it can be speculated that these students were relatively bright and aware of society's expectations, and were successful at combatting the stereotype of the physically disabled. On the other hand, the present sample consisted primarily of older, less well-educated physical laborers who may have more readily accepted the stereotype. Here again, the PRF gives some promise of sensitivity in tapping these dimensions of the personality of the physically disabled. Certainly,

further research is needed to clarify the reasons for the apparent discrepancies between these two studies.

Beyond description and speculations about the etiology of the personality characteristics of physically disabled persons, more crucial are the implications for the social and vocational future of these people as well as for avenues of remediation. In fact, the PRF scale scores offer some leads to those aspects of the personalities of the physically disabled which will require highlighting as strengths as well as those aspects necessitating treatment procedures to eliminate deficits.

Specifically, it is speculated that such persons are likely to have particular difficulties in just the types of interpersonal situations in which newly unemployed people find themselves; namely, in the offices of vocational rehabilitation counselors and evaluators, insurance representatives, potential employers, and school personnel. In such situations, their shy, timid unassertiveness may well camouflage their tendencies to persevere and succeed, leading employers and others to overrate their interpersonal weaknesses and underestimate their strengths. Indeed, that the Achievement score was positively related to successful outcome may indicate that high scorers on Achievement were able to tip the balance in favor of their resourcefulness and desire to achieve.

Remediation directed toward increasing the overall rehabilitation success rate could conceivable follow two routes, the first involving an attempt to increase strengths and the second comprising efforts to attenuate weaknesses. Since the newly physically disabled person's first contact is likely to be a vocational rehabilitation counselor, counselors should be well-trained not only to assess their clients' attributes but also to discuss them in an encouraging manner with the clients. Counselors should

be trained to look past the perhaps missing interpersonal skills of the client, instead focusing upon the discovery of the client's own strong inner resources. Indeed, rehabilitation writers are currently stressing the importance of teaching such skills (Saxon, 1977).

Several specific approaches to the amelioration of the weaknesses which physically disabled persons are suggested to present are available. First, social skills training designed to teach them to be more comfortable, self-assured, and assertive in a variety of threatening interpersonal situations would help them more easily face job interviews and other situations in which they are being evaluated. Additionally, for those with visible impairments, either individual or group counseling directed at such newly encountered problems as the reactions of others to their disability or the many compensatory skills they may need to acquire may help increase their self-confidence and decrease their self-consciousness. Programs specifically designed to take people step by step through the process of getting a job, from filling out applications to going on interviews, are available in some commuunties (for example, World of Work in Missoula). These programs would be ideal for those clients who are very interested in working but whose poor interpersonal skills prevent them from completing successful personal interviews. Indeed, physically disabled people are often required to be especially effective interpersonally in order to convince employers to hire them in spite of their disabilities. Programs designed to improve job seeking skills should then be particularly successful in increasing the number of employed physically disabled persons. Outcome research evaluating the effectiveness of such programs would greatly contribute to our knowledge of "what works" in increasing vocational rehabilitation.

For some, an intermediate step between unemployment and full employment

may be necessary, particularly if there has been a long period of recuperation and much residual damage still exists. In these cases, partial employment or a sheltered type of environment might be appropriate in satisfying the individual's need to be productive, thus enhancing his preferred view of himself as a persevering, hard-working person. In addition, if he is working as much and as soon as is feasible, he will be less likely to become discouraged and come to see himself as lazy and useless.

The present study, then, has directly addressed two vital aspects of vocational rehabilitation: prediction and general personality characteristics. In addition, this study was designed to minimize or eliminate weaknesses frequently found in previous rehabilitation literature (Bolton, 1972). That is, the procedures and sample were adequately described so that replication and comparison with other studies are possible. A standardized and psychometrically sound personality inventory was used, and multivariate analysis of the data was conducted.

Future prediction research should include not only the improvements in design and analysis noted above but also should attempt to include multiple outcome criteria. Weaknesses of the present study included the lack of multiple outcome criteria and a relatively small sample size. A larger sample would have permitted the inclusion of a calibration sample in the multiple regression procedure. Further use of educational level and intelligence in predicting vocational rehabilitation appears warranted, as does use of the PRF Achievement score. Research designed to apply these measures to diverse groups of physically disabled persons is necessary to further ascertain the generalizability of the current findings. These findings suggest that physically disabled people have personality characteristics

quite different from those of able-bodied samples. The sensitivity of the PRF to these personality differences most certainly warrants further investigation. In addition, the suggested implications for avenues of remediation should be carefully examined. In particular, a study which examines the vocational outcome of physically disabled persons given specific treatment to improve their self-confidence and skills in threatening interpersonal situations as compared with that of a no-treatment group is necessary to determine the practical utility of the current findings with regard to vocational rehabilitation.

CHAPTER VII

SUMMARY

This study was designed to examine the ability of selected demographic, intellectual, and personality variables to predict the vocational rehabilitation of 61 physically disabled subjects seen for a work evaluation at the Missoula Crippled Children and Adults Rehabilitation Center. In particular, the study was designed to test the efficacy of the Personality Research Form in predicting rehabilitation outcome. Other predictor variables, chosen on the basis of their apparent utility in previous prediction research, included age in years, educational level, and intelligence. The dependent variable was employment, school attendance, or vocational training at the time of the follow-up, which was conducted from two to fourteen months following the work evaluation.

Correlations were computed between the outcome measure and each of the three independent variables, age, educational level, and intelligence, in order to test the hypotheses of relationship between the dependent variable and each independent variable. Univariate regressions were computed for each PRF scale on the dependent measure to test the predictive ability of these scales. Next, a stepwise multiple regression procedure was used to see if a combination of variables would prove to be the best predictor of outcome. Regression equations initially derived from two-thirds of the sample were then applied to the remaining one-third in order to provide cross-validation. Finally, the average PRF scores for this sample were compared to those of the normative sample and Z scores computed between the two.

The results provided support for several of the hypotheses. While age was not correlated with rehabilitation outcome, educational level was significantly and positively correlated with outcome. In addition, intelligence achieved a low to moderate but nonsignificant correlation with outcome. The PRF Achievement scale was significantly and positively related to rehabilitation outcome, a finding which provided considerable support for the predictive and discriminant validity of this scale. The multiple regression procedure yielded the weighted combination of two variables, Achievement and age, as the best combination of variables to predict outcome. While this combination was able to significantly predict outcome for the initial sample, it did not predict outcome for the cross-validation sample. The comparison of average scores for this physically disabled group and those of the normative sample indicated that the present sample scored significantly higher on Achievement, Endurance, Harmavoidance, and Nurturance, and lower on Aggression, Dominance, Exhibition, Play, and Social recognition.

A speculative description of the personality of these physically disabled persons was offered. In addition, avenues of remediation of nonrehabilitants were proposed based on the hypothesized personality strengths and weakness of these people. Finally, the sensitivity and utility of the PRF in the field of vocational rehabilitation were discussed and suggestions for future research made.

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APPENDIX A

APPENDIX A

PERSONALITY RESEARCH FORM SCALE DESCRIPTIONS (JACKSON, 1967)

Scale	Decription of High Scorer	Defining Trait Adjectives
Achievement	Aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; willing to put forth effort to attain excellence.	Striving, accomplishing, capable, purposeful, attaining, industrious, achieving, aspiring, enterprising, self improving, productive, driving, ambitious, resourceful competitive.
Aggression	Enjoys combat and argument; easily annoyed; sometimes willing to hurt people to get his way; may seek to "get even" with people whom he perceives as having harmed him.	Aggressive, quarrelsome, irritable, argumentative, threatening, attacking, antagonistic, pushy, hot-tempered, easily-angered, blunt hostile, revengeful, belligerent, retaliative.
Dominance	Attempts to control his environment, and to influence or direct other people; expresses opinions forcefully; enjoys the role of leader and may assume it spontaneously.	Governing, controlling, commanding, domineering, influential, persuasive, forceful, ascendant, leading, directing, dominant, assertive, authoritative, powerful, supervising.
Endurance	Willing to work long hours; doesn't give up quickly on a problem; persevering, even in the face of great difficulty; patient and unrelenting in his work habits.	Persistent, determined, steadfast, enduring, unfaltering, persevering, unremitting, relentless, tireless, dogged, energetic, ha stamina, sturdy, zealous, durable.
Exhibition	Wants to be the center of attention; enjoys having an audience; engages in behavior which wins the notice of others; may enjoy being dramatic or witty.	Colorful, entertaining, unusual, spellbinding, conspicuous, exhibitionistic, noticeable, expressive, ostentatious, immodest, demonstrative, flashy, dramatic, pretentious, showy.

Harmavoidance	Does not enjoy exciting activities, especially if danger is involved; avoids risk of bodily harm; seeks to maximize personal safety.	Fearful, withdraws from dang self-protecting, pain-avoida careful, cautious, seeks saf ty, timorous, apprehensive, precautionary, unadventurous avoids risks, attentive to danger, stays out of harm's way, vigilant.
Nurturance	Gives sympathy and comfort; assists others whenever possible, interested in caring for children, the disabled, or the infirm; offers a "helping hand" to those in need; readily performs favors for others.	Sympathetic, paternal, help- ful, benevolent, encouraging caring, protective, comforti maternal, supporting, aiding ministering, consoling, char itable, assisting.
Play	Does many things "just for fun;" spends a good deal of time participating in games, sports, social activities, and other amusements; enjoys jokes and funny storkes; maintains a light-hearted, easy-going attitude toward life.	Playful, jovial, jolly, merr pleasure-seeking, laughter- loving, joking, frivolous, prankish, sportive, mirthful fun-loving, gleeful, carefre blithe.
Social recognition	Desires to be held in high esteem by acquaintances; concerned about reputation and what other people think of him; works for the approval and recognition of others.	Approval seeking, proper, we behaved, seeks recognition, courteous, makes good im- pression, seeks respectabili accommodating, socially prop seeks admiration, obliging, agreeable, socially sensitive desirous of credit, behaves appropriately.