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A COMPARATIVE STUDY OF MMPI VARIABLES AND THEIR RELATIONSHIP TO SUCCESSFUL ALCOHOLIC REHABILITATION

by

Verl G. Prestwich

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

UTAH STATE UNIVERSITY
Logan, Utah

1977

ACKNOWLEDGMENTS

No doubt at the conclusion of each of his twelve labors, Hercules paused to catch his breath and thank those who made his success possible. I do not pretend to have done the impossible in writing this thesis, nevertheless, I think I know how Hercules must have felt.

There are those who helped me fight discouragement (if not despair) in the completion of this "labor." I wish to express my appreciation to Dr. Roland Bergeson who willingly chaired my committee and saw the work through to the end. Dr. Michael Bertoch, Dr. David Stone, and Dr. Whorton Allan, committee members, gave valuable technical and stylistic suggestions: Dr. Reid Morrill taught me much and guided me in choosing the subject of the thesis. Drs. Sisson and Checketts solved the statistical problems that otherwise would have made the study invalid.

Last, but by no means least, I am grateful to my wife, Leola, whose help and confidence in me enticed me to finish, and to my family and friends who gave me much encouragement.

Verl G. Prestwich

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ABSTRACT

A Comparative Study of MMPI Variables and

Their Relationship to Successful

Alcoholic Rehabilitation

by

Verl G. Prestwich, Master of Science

Utah State University, 1977

Major Professor: Dr. Roland Bergeson
Department: Psychology

This study was designed to determine whether the Minnesota Multiphasic Personality Inventory could successfully predict the outcome of rehabilitative treatment given 84 racially mixed male alcoholics having a mean age of 42.2 years who were admitted to the Wyoming State Hospital between September 1, 1965, and September 1, 1966. The subjects were given the MMPI before receiving 16 weeks of treatment consisting of education, group and individual psychotherapy, alcoholics anonymous, routine "ward treatment," disulfiram (antibuse), special ward unit, and special program without ward. After their release from hospital, the subjects were evaluated yearly for five years by relatives, employers, and themselves concerning vocational and familial responsibilities, sobriety, AA attendance, and drinking.

Multiple regression analysis, a multivariate statistical technique was utilized to analyze the data from a systematic follow-up

questionnaire. At the end of five years 32 of the original 84 subjects could be located. The study concluded that the MMPI cannot be used to predict successful treatment of alcoholics at Wyoming State Hospital.

(73 pages)

CHAPTER I

INTRODUCTION

Alcoholism is a serious personal and social problem for millions of people. It disrupts countless homes and families, increases the crime rate, contributes to half of all highway fatalities, and causes society to establish costly institutions. Although people who are alcoholics may receive help from various sources depending on the intensity of their problems, there are many alcoholics who never receive aid for their illness. With assistance from clergy, friends, psychologists, and other professionals, some alcoholics are able to function in society, but others cannot perform adequately in society and are of necessity institutionalized.

Alcoholics are defined as

> Those excessive drinkers whose dependance upon alcohol has attained such a degree that it shows a noticeable mental disturbance or an interference with their bodily and mental health, their interpersonal relations and their smooth social and economical functioning, or show the prodromal signs of such developments. (Zweling & Rosenbaum, 1959, p. 623)

Alcoholics and patients with related alcoholic disorders make up 15% of all new admissions to state psychiatric institutions (Moore & Buchanan, 1966). Since some patients who complete treatment programs are not helped towards long range sobriety and adequate social functioning while others are, it seems that the staffs of treatment institutions need a way of predicting which individuals can be successfully helped by which treatment program.

Statement of Problem

The problem addressed in this study was that conflicting data existed on the usefulness of the MMPI as an instrument which could be used to produce success in alcoholic rehabilitation. Essentially the study attempted:

1. To determine if the MMPI overall profile patterns could be employed to identify alcoholic patients having the best prognosis for treatment.

2. To determine if there are specific scales of the MMPI which are better than others in predicting successful treatment of alcoholics.

3. To determine if a regression equation could be developed to predict the success in alcoholic rehabilitation.

Hypotheses

The problem suggests three major hypotheses:

HO_1 The overall profile pattern of the MMPI cannot be used to predict successful treatment of the alcoholics at the Wyoming State Hospital.

HO_2 There are no scales on the MMPI which can be used to predict the successful treatment of alcoholics at the Wyoming State Hospital.

HO_3 Using the Evanston follow-up scale, a prediction equation cannot be developed for predicting success in alcoholics after treatment, by using scales of the MMPI.

The purpose of this study was to determine whether the MMPI would be a feasible means of predicting the outcome of alcoholics

treated with a definable set of treatment techniques. It was hoped that the MMPI could be used to stimulate further work in assigning alcoholics to specific treatment programs which would be the most beneficial.

Definition of Terms

Minnesota Multiphasic Personality Inventory

The MMPI is a frequently used instrument for the measurement of personality characteristics and was designed by Hathaway and McKinley (1967) to assess the traits of psychological abnormality. The inventory consists of 556 items which are answered "true," "false," or "cannot say," by the subject. The MMPI's item content covers the following areas:

> Health, psychosomatic symptoms, neurological disorders, and motor disturbances, sexual, religious, political, and social attitudes; educational, occupational, family, and marital questions; and many well-known neurotic or psychotic behavior manifestations such as obsessive and compulsive states, delusions, hallucinations, ideas of reference, phobias, and sadistic and masochistic trends. (Anastasi, 1968, p. 440)

The MMPI provides 10 clinical scales and 4 validity scales: (a) Clinical Scales: Hypochondriasis, Depression, Hysteria, Psychopathic Deviate, Masculinity, Femininity, Paranoia, Psychoesthenia, Schizophrenia, Hypomania, and Social Introversion; (b) Validity Scales: Question, Lie, Validity, and Correction (Hathaway & McKinley, 1967).

Bender (Visual Motor) Gestalt Test

The Bender-Gestalt test is a test of visual motor coordination, useful for both children and adults. It was originally designed in 1938 by Lauretta Bender for evaluating maturational levels in children.

The test consists of nine designs which are presented one at a time to the subject and he is to replicate the design. The most frequent use of the test is with adults where it is used for measuring organic brain defects. The clinician, in evaluating the profiles, looks for rotation of designs, closure problems, and distortions (Freedman, Caplian, & Sadock, 1975).

Disulfiram

Disulfiram sulphate is the basic ingredient in Antabuse. Antabuse is a chemical that if ingested within 72 hours prior to drinking alcohol, will make a person sick. The average dose is 10 milligrams daily for the first 5 days and then 5 milligrams for maintenance. The subject cannot drink any amount of alcohol in any form and be comfortable; his or her blood pressure doubles, heart rate increases 60-70%, and she or he becomes nauseous and disoriented (Joseph, 1976).

Alcoholics Anonymous

This is a group of persons who have problems due to their drinking and also drink because they have problems. They get together once a week to: (a) discuss their problems with others; (b) tell their story of how they have been able to stop drinking; (c) receive support from others; (d) study the 12 steps of Alcoholic Anonymous (insight,

surrender, decision, introspection, confession, submission, acceptance, humility, inventory, restitution, reorganization, spirituality, and charity); (e) have social functions together; and (f) share faith, hope and strength.

AA groups are unstructured in that there is no therapist. Someone is in charge to see that they stay working on their short range goal (studying the 12 steps). He is a lay person and must be a recovered alcoholic. The program's long range or main objective is to help the members to maintain total abstinence. AA groups can be found in almost every community and anyone can attend (Joseph, 1976).

Treatment

The types of treatment techniques used in this study are: Alcoholics Anonymous (AA), Group Psychotherapy (conducted by a lay therapist), Individual Psychotherapy (conducted by a lay therapist), Routine "Ward Treatment," Special Program Without a Ward, Special Ward Unit, Disulfiram, and Alcoholic Education. The three treatments to be used most extensively are Alcoholic Education and Group Psychotherapy, and Alcoholics Anonymous.

Success

Since most recent research is suggesting that drinking behavior alone is not a completely effective method of measuring success; drinking behavior along with vocational, familial, social behaviors will be the determinents for measuring success in this study. If the subjects are functioning adequately and not drinking or drinking minimally then they will be considered "successfully treated."

Evanston Follow-up Rating Scale

Follow-up ratings showed patients to be in five categories:

1. Persons maintaining vocational and familial responsibilities, sustaining sobriety one year, having no social problems and attending AA meetings regularly or occasionally (rated one).

2. Persons maintaining vocational and familial responsibilities with only one lapse followed by abstinence in past year, having no social problems and attending AA meetings occasionally (rated two).

3. Persons drinking periodically, but having no outstanding community problems and maintaining vocational and familial responsibilities (rated three).

4. Persons drinking to the extent their vocational and familial responsibilities are not maintained, becoming social problems and coming to the attention of the community for drinking in the past year (rated four).

5. Persons reinstitutionalized due to inability to function outside of the hospital setting (rated five) (Karn, 1964).

CHAPTER II

REVIEW OF LITERATURE

The purpose of this review is to deal with three considerations which underlie the statement of the problem and purpose in the previous section. The first consideration is the process of treatment including techniques; the second consideration is the meaning of successful treatment and choosing appropriate treatment goals; thirdly is the problem of identifying the different methods of predicting successful treatment and selecting a predicting and outcome instrument.

Review of Alcoholic Treatment Procedures

Institutions are using numerous treatment techniques. One survey by Moore and Buchanan (1966) revealed that eight common treatment techniques were used by 75% of the hospitals listed by the American Psychiatric Association. The treatments and the percentages of use by hospitals are listed in Table 1.

Einstein, Wolfson, and Gecht (1970) conducted a survey of various treatment professionals in the field of treating alcoholics to determine their approaches in treating the alcoholic. They found the treatments and percentages to be as listed in Table 2.

The differences between the findings of Moore and Buchanan (1966) and those of Einstein et al. (1970) may be due to the four years between studies and also because the second study included hospital settings

Table 1

Treatment Techniques Used by Hospitals

Techniques	Percent
Alcoholics Anonymous	88
Group Psychotherapy	75
Routine "Ward Treatment"	68
Individual Psychotherapy	57
Disulfiram	22
Alcoholic Education	38
Special Ward Unit	31
Special Program Without Ward	20

Table 2

Treatment Approaches Used by Professionals

Approaches	Percent
Group Therapy	87
Individual Therapy*	97
Behavioral Therapy	29
Drug Therapy *	70
Shock Therapy	40
Alcoholics Anonymous	87
Milieu	47
Couple Therapy	55
Family Therapy	50
Hypnotherapy	3
Psychodrama	16
Antabuse Therapy	79
Other	68

*14% of those people using Behavior Therapy and 29% of those people using Shock Therapy found it not necessary.

as well as other types of treatment centers. Even though there are differences, strong similarities remain.

Gerard, Saenger, and Wile (1962) suggested that the present treatment programs are mostly inadequate and contended that abstinence from alcohol rarely comes about as a result of insight into problems or from supportive therapy. They maintained that abstinence comes from a "change in the alcoholic's attitude toward the use of alcohol based on his own experience which took place outside of any clinical situation" (p. 635).

Smart (1970), in his evaluation of alcoholic treatment programs, indicates that the generally accepted treatment methods give a medium of success which is not much greater than the spontaneous recovery rate. Success was based on total sobriety.

In contrast, authors contend that the present treatment methods are more than adequate. Pokorny, Miller, and Cleveland (1968) investigated the use of group therapy, occupational therapy, and recreational therapy. They followed-up for one year and found 54% success rate.

Kissen, Platz, and Su (1970) in their research, used a variety of types of individual treatment groups and a group receiving combined treatments. The treatments were: drug therapy, psychotherapy plus adjunctive drug therapy, inpatient rehabilitation and a control group. The success rate per treatment was: controls, 4.9%; dropouts, 11.2%; drug therapy, 21.2%; psychotherapy, 35.5%; rehabilitation, 15.2%.

Psychotherapy was most effective, with a significant difference between the control group and the psychotherapy group. Because of

the difference between the control group and the dropout group, the study suggests the clinical impression that designating people as controls may create a feeling of rejection and lower the natural recovery rate.

Other research reported by Kish and Hermann (1971) indicates 48% success after 12 months of follow-up. The treatment program consisted of 8 weeks of group and individual therapy with all therapy being done by lay alcoholism counselors.

Rossi (1970) conducted research on a holistic alcoholism treatment program consisting of lectures, films and group discussions presenting the basic facts about alcohol, physiological effects, social and vocational consequences, information about the acquisition and maintenance of habitual drinking, group therapy, and Alcoholics Anonymous meetings. A follow-up one year later showed 71% improved with 48% completely abstinent and 23% drinking occasionally.

Recent research findings by Price and Curlee-Salisbury (1975) indicate alcoholic education (lectures, films, and group discussions) and group therapy to be more effective in treating alcoholism than was individual therapy, free time, family nights, family counseling, and studying the 12 steps of Alcoholics Anonymous.

Emrick (1973) reviewed 260 studies from 1952 to 1971 and found 41 studies where subjects were randomly assigned to two or more treatment groups. Only eight reported significant interpretable differences between groups. He concludes that an alcoholic treatment program should include several different treatments due to the differences in the personalities of alcohol abusers.

In summary, most professionals treating alcoholics have found that certain types of treatments yield better results, that several treatment methods are needed for treating the total population of alcoholics, and these treatment methods are now being used more extensively than the less effective methods.

The Concept of Success

Total Abstinence

Researchers have believed for years that treatment of the alcoholic was unsuccessful if the alcoholic continued to drink after the treatment. Williams (1959) indicated that people who became addicted to alcohol can never again drink normally. He called this "a most basic fact that no amount of discoursive verbiage can obscure." Most definitions of success are stated in terms of sobriety (Davis, 1962). Pattison, Headley, Gleser, and Gottschalk (1968) agreed with Davis' statement. Sobriety is defined by most authors as the complete abstinence from the use of alcohol (Pattison, 1966).

Einstein et al. (1970) surveyed 39 professionals in the field of treating alcoholics. The personnel represented disciplines of psychiatry, internal medicine, psychology, social work, and nursing. These professionals had been involved in treating alcoholic patients for an average of 16 years. Einstein et al. (1970) found that 94% of the professionals used abstinence as a treatment goal and considered "abstinence the important and relevant factor" in treating problem drinkers (Einstein et al., 1970, p. 53).

There are many unanswered questions pertaining to using abstinence as a goal. They are:

1. How long does a person have to abstain before he is considered "abstinent"? Professionals using abstinence as their goal in treating alcoholics do not agree as to how long a person must maintain abstinence before he can be considered successfully treated (Einstein et al., 1970).

2. Is abstinence an attainable goal for alcoholics? Abstinence is not, and never has been, a readily achievable goal for many if not most problem drinkers (Einstein et al., 1970). The percent of alcoholics who maintain sobriety after treatment is minimal. Bacon (1963) reviewed the success ratio of various alcoholism treatment programs and found that few had success rates greater than 35%. Success was defined as total abstinence for two years. He found recovery rate with formal treatment to be about 20%. It seems that goals should be achievable if they are to be personally meaningful. If they are not meaningful to the individual, will there be sufficient motivation to achieve them?

3. Why should they be abstinent? Most of the professionals who use abstinence as their treatment goal believe that alcoholism is a disease and that alcoholics have a physiological craving for alcohol which once created is never totally extinguished (Jellinek, 1960). Lloyd and Salzburg (1975) did an extensive review and found that there is no substantial evidence to support the idea that after becoming pharamacologically dependent on alcohol, one has a physiological craving for alcohol.

Motivation for Drinking

Some authors are suggesting that many treated alcoholics can drink moderately. Vogler and Caddy (1973) found 25 studies indicating that a significant percent of treated alcoholics were drinking without becoming intoxicated. Pokorny et al. (1968), after treating 88 alcoholics and following-up after one year, found 25 (28%) abstinent and 23 (26%) drinking minimally without becoming intoxicated. Lloyd and Salzburg (1975) found that abstinence is not necessary for all alcoholics in order for them to maintain their vocational and social responsibilities. They recommend that most alcohol abusers be taught how to drink moderately.

Healthy Life Style

Emrick (1973) reviewed 260 studies on the success of alcoholics from 1952 to 1971 and found 31.8% abstinent and 33.4% improved. The alcoholics were measured in terms of drinking behavior, physical condition, work adjustment, and family relationships. Pattison (1966), Pattison et al. (1968), and Davis (1962), after extensive reviews of the literature dealing with measuring success for alcoholics, also found research to indicate that some alcoholics can return to minimal drinking. Pattison et al. (1968), in their research on 252 discharged alcoholics, used a follow-up schedule developed by Gerard (Pattison, 1966) which assessed physical health, interpersonal health, and vocational health. They concluded that abstinence is only one of the variables which should be taken into consideration in measuring

improvement in alcoholics, and that patients may achieve a healthy life style without total abstinence.

According to Pattison and others cited in this section, it seems that other variables besides a degree of sobriety should be used as criteria for success. It is important in selecting criteria for successful treatment of alcoholics to identify the variables which hinder him from adjusting and cause him to be institutionalized. Variables such as physical health, social life, psychological adjustment and vocational functioning along with the degree of drinking should be used in measuring the outcome of treatment. Abstinence as the sole criterion of successful treatment can often be misleading.

Predictive Instruments

Although many different disciplines have attacked the problem of alcoholism progress has been slow in understanding its determinents. Better methods are needed for identifying and classifying the alcoholics into one or more personality types. This might lead to an understanding of the causes of alcoholism and treatment of existing alcoholics.

Classifying Alcoholics

Several of the methods which have been used are: (a) projective tests (Rorschach Test, and the Thematic Apperception Test), (b) measurement of brain waves, (c) intelligence tests, (d) MMPI, and (e) other tests, such as, Humm-Wadsworth, Temperament Scale, Strong Vocational Interest Test, and the Willoughby Emotional Maturity Scale (Sutherland, Schroader, & Tordella, 1950).

Projective Techniques

Projective techniques are instruments which require the subject to respond to a standard set of stimuli and permit a wide variety of individual responses. The projective instruments seem sensitive to unconscious motions and conflicts. The Rorschach test consists of 10 inkblots. Responses to the 10 inkblots are scored in terms of location, determinant, content and originality. The Thematic Apperception test consists of 20 pictures, each representing a different situation. This test makes use of fantasy behavior in that the person is asked to invent a story based on each picture, and the stories usually reveal certain basic themes characteristic to him (Kendler, 1963).

Sutherland et al. (1950) indicated that projective tests are not able to consistently differentiate alcoholics from non-alcoholics or classify alcoholics into subgroups.

Brain Waves

The measurement of brain waves is the process of using the electro-encephalogram to measure brain waves and then correlating electrical brain behavior to personality patterns as identified by psychological tests and overt behavior. Despite the quantities of research, alcohol's action on the brain has not yet been spelled out because the brain's reaction to alcohol is very complex (Fergusen, 1973).

Intelligence Tests

Intelligence tests used for prognosis or prediction enable the researcher to compare the intellectual performance of a person to a reference group (Wechsler, 1955). Heilbrum (1971) found that intelligence does have an effect on treatment success and that those alcoholics with IQ's above 103 have better prognosis than those with lower IQ's.

Other Tests

The tests listed by Sutherland et al. (1950) on page 14 of this paper have been used on a very limited basis in trying to identify alcoholic populations and sub-groups. According to Sutherland et al., these are only marginally useful.

Minnesota Multiphasic Personality Inventory

The MMPI is a frequently used instrument for the assessment of personality characteristics and was designed by Hathaway and McKinley (1967) to assess the traits of psychological abnormality. The inventory consists of 556 items which are answered "true," "false," or "cannot say" by the subject (Anastasi, 1968). The MMPI's item content covers the following general areas:

> health, psychosomatic symptoms, neurological disorders, and motor disturbances; sexual, religious, political, and social attitudes; educational, occupational, family, and marital questions; and many well-known neurotic or psychotic behavior manifestations, such as obsessive and compulsive states, delusion, hallucinations, ideas of reference, phobias, and sadistic and masochistic trends. (Anastasi, 1968, p. 440)

Specifically, the MMPI includes 10 clinical scales and 4 validity scales: (a) Clinical Scales: Hypochondriasis, Depression, Hysteria, Psychopathic Deviate, Masculinity-Femininity, Paranoia, Psychoesthenia, Schizophrenia, Hypomania, and Social Introversion; (b) Validity Scales: Question, Lie, Validity, and Correction (Hathaway & McKinley, 1967).

The result reliabilities on normal and abnormal adult populations have ranged from the 50's to 90's with time intervals between retests ranging from one week to over a year (Hathaway & McKinley, 1967).

Relative to validity, a high score on a scale has been found to predict positively the corresponding final clinical diagnosis, or to approximate the final diagnosis in more than 60% of new psychiatric admissions. This percentage is derived from differentiation among various kinds of clinical cases which is considerably more difficult than mere differentiation of abnormal from normal individuals groups. Even in cases in which a high score is not followed by a corresponding diagnosis, the presence of the trait to an abnormal degree in the symptomatic picture will nearly always be noted (Hathaway & McKinley, 1967).

The major method of classifying alcoholics and the one which has proven to be the most effective is the MMPI, with primary emphasis upon (a) identifying traits that will distinguish alcoholics from other people and (b) grouping or subgrouping the alcoholic population into major personality patterns.

> Employing the multivariate correlational group technique on MMPI profile, Goldstein and Linden (1969) identified four types: (a) psychopathic personality and emotional instability, (b) psychoneurosis with severe alcoholism, (c) alcoholism primarily with a secondary psychopathic personality, and (d) alcoholism with secondary characteristic of drug addiction and paranoid features. (Skinner, Jackson, & Hoffman, 1974, p. 658)

Other recent investigations by Whitelock, Overall, and Patrick (1971) using the MMPI found four patterns, three of which are very similar to those of Goldstein and Linden's (1969). Also Skinner et al. (1974) was able to classify a sample of alcoholics into eight common types by the use of the MMPI and the Differential Personality Inventory (DPI).

Another way alcoholics have been classified is by using the MMPI to separate them from non-alcoholics. The best method has been by using alcoholic scales developed from items of the MMPI. Several authors have developed scales; the most effective is the MacAndrew alcoholism scale (Apfeldorf, 1974). It consists of 49 MMPI items and has, according to Rhodes (1969) who repeated the study and confirmed the usefulness of the MacAndrew alcoholism scale, a 75% correct classification.

Predicting

Primarily two types of variables have been used to predict success. They are demographic and psychological.

Demographic variables. Although many demographic variables have been used in an attempt to predict alcoholics treatment success, the one variable that has been used most successfully is Marital Status (Davis, Shepard, & Meyers, 1956; Gillis & Keet, 1969; Kish & Herman, 1971; Kurkland, 1968; Mindlin, 1959). Those who are married

are most successfully treated. The other significant demographic variable which correlates highly with successful treatment is 12 or more years of education (Heilbrum, 1971).

Psychological variables. A significant psychological variable is intelligence (103 and above), 59 or less on the SC scale and 53 or less on the Ma scales of the MMPI (Heilbrum, 1971).

Several personality types have been identified with successful treatment. Williams and Long (1968) empirically divided alcoholics into four general personality types using the MMPI. They were those with good basic personalities, neurotics, psychotics, and psychopaths.

The recovery rate for those individuals in the good basic personality group was 80% and for those in the neurotic group, 30%. The other groups were not successfully treated.

Price and Curlee-Salisbury (1975) designated three groups using the MMPI. They included the sociopathic-emotionally unstable, depressed-neurotic, and depressed-psychophysiologic. They concluded that treatment programs for alcoholics should include a variety of methods in that all alcoholics do not respond to the same treatments. Research with several tests, in relation to predicting success, has indicated varied results.

Wilkinson, Prado, Williams, and Schnadt (1971) correlated the Shipley-Hartford test, Kuder Preference Record, Allport-Vernon Scale, Worchel Self-activity Inventory, Edwards Personal Preference Schedule and the MMPI with the length of stay in an alcoholism treatment program. The MMPI was the most useful for measuring significant

improvement in personal adjustment. It was felt by these investigators that tests like the Worchel and the MMPI show the most promise as prognosticators of treatment success because they enhance the opportunity for self-disclosure.

Gatschenberger (1974) investigated the relationship between 18 psychometric and personal-social variables and the degree of successful rehabilitation as determined by one year of follow-up. The MMPI variables were part of the psychometric variables. After using a multiple regression analysis, he concluded that a significant relationship (Alpha = .05) does not exist between the composite predictor and successful rehabilitation of alcoholics.

Muzekari (1965), Aiken (1969), and Kish and Hermann (1971) found none of the scales of the MMPI to have significance in predicting the outcome of treating alcoholics. Muzekari (1965) and Kish and Hermann (1971) used as their criterion for success, degrees of sobriety. Aiken's (1969) measure of success was classification of rehabilitated and non-rehabilitated on the basis of vocational rehabilitation.

Projective tests like the Rorschach Psychodiagnostic Test, Murray Thematic-Apperception Test, and the Bender-Gestalt yield little or no specific information for predicting successful treatment of the alcoholic population (Syme, 1957). Results obtained often contradict the findings of other investigators.

It appears from the related search that the attempts using psychometric techniques for predicting the success of alcoholics are varied but that the MMPI has proven to be the most effective of the current instruments available.

In summary, this review found that: (a) the eight treatment approaches most widely used by hospitals are effective, (b) successful treatment must be global (including drinking behavior, vocational, social and familial), and (c) many means have been used for determining the outcome of treated alcoholics and of these the MMPI has proven to be the most reliable.

CHAPTER III

METHODOLOGY

This chapter includes a discussion of how the research was conducted, what resources were used to obtain the data, and how the data was analyzed.

Overview of Design

The research staff at the Wyoming State Hospital observed that some alcoholic patients seemingly related better to some treatment than others, and wondered if MMPI profiles could be of use in predicting positive response to treatments.

Male alcoholics entering the Wyoming State Hospital over a one-year period were tested with the MMPI before receiving a 16-week treatment program. The treatment included the eight treatment techniques listed by Moore and Buchanan (1966). The subjects were then followed-up for 5 years. Success in this study at the Wyoming State Hospital was defined as a person maintaining vocational and familial responsibilities, having no social problems, remaining completely sober for one year or may be drinking periodically but not getting drunk, and attending AA regularly, occasionally, or not at all. See follow-up ratings 1, 2, and 3 in chapter three. Subjects who (a) were drinking to the extent that their vocational and familial responsibilities were not maintained, (b) were a social problem, (c) had come to the attention of the community for drinking in the past

year rated a four, and (d) were unable to function outside of the hospital setting were considered to be unsuccessfully treated. See follow-up ratings 4 and 5 in chapter three. The subjects were all followed-up for 5 years. Multiple regression analysis, a multivariate statistical technique was utilized to analyze the relationship between the MMPI profiles and the degree of successful rehabilitation as determined by the systematic follow-up questionnaire.

Subjects

The subjects for this study were 84 male alcoholics admitted to the Wyoming State Hospital between September 1, 1965, and September 1, 1966. The subjects included all male alcoholic patients admitted other than those diagnosed by the admitting psychiatrist as too organically or psychiatrically impaired to evaluate. The subjects had a mean age of 46.2 and the ages ranged from 22 to 69 years of age. They were a racially mixed group, made up of Spanish Americans, American Indians, Anglo-Americans, and Blacks.

Subject Selection Procedure

Prior to being officially admitted to the alcoholics unit the subjects were given a physical examination by the admitting physician and, if needed, were detoxified and treated with appropriate medication. The admissions counselor collected an intake history which included information provided by the patient, spouse, parents, and other close relatives, and employers.

All subjects were tested by the admitting psychologist and received a Bender-Gestalt. At the discretion of the admitting psychologists, some subjects were given an IQ test (usually a WAIS). As a result of these tests some alcoholics were found to be too organically or psychologically impaired to be included in the alcoholic unit. From this information the staffing psychiatrist made a temporary placement. Within 21 days, but usually from 4 to 7 days after admission, all information was completed and presented at an admissions conference. At the conference it was decided whether the subject was to remain with the alcoholism unit or be transferred to another unit.

Those in attendance at the conference were the staffing psychologist, unit physician, nursing supervisor, counselor assigned to the patient, alcoholic unit coordinator, secretary from alcoholic unit, and the unit psychologist.

Procedure

1. Upon admission to the alcoholism unit of the hospital, each alcoholic was administered the MMPI by a psychologist. The booklet form was used with necessary materials and was hand scored. The standardized procedures for administering the test were followed. The unit physician obtained a medical history and a mental status.

2. After evaluation, the alcoholics were placed in a 2-phase, 16-week treatment program.

Phase I

The participants were given 8 weeks of education including formal lectures, films, guided discussions, and other audio and visual presentations of the many facets of alcoholism--intended to help the patient recognize his problem. There were 16 one-and-one-half hour classes covering the symptomatology, physiological effects, metabolic rates, vocational and social psychological consequences of excessive drinking. A detailed description of the development and stages of alcoholism was presented, and alcoholism was described as a learned behavior, maladaptive in nature. The general purpose of the education phase was to help the subject identify with the illness and overcome the denial syndrome, i.e. claiming he really is not an alcoholic.

Phase II

Following the education phase were 8 weeks of group and individual therapy designed to make the patient aware not only of his conflicts, i.e., problems with community, family relationships, etc., but also to help him develop techniques to deal effectively with his problems.

Group Psychotherapy

The group psychotherapy at the Wyoming State Hospital was an intrapersonal model--each person working mostly on understanding himself, his own problem, and what was getting in his way to prevent him from being successful and happy. Little time was spent on interpersonal problems. Very little emphasis was placed on drinking, but the subjects were urged to identify their specific problems and

determine what they were going to do about them. The counselors were not degreed in social work or psychology but were recovered alcoholics and had been through the same treatment program at the Wyoming State Hospital. The group therapy started the second 8 weeks of treatment and was conducted for one and one-half hours twice a week for 8 weeks. Assignment to a group with a maximum of 10 members was subjective and was determined by which group would be most advantageous to the patient.

The individual therapy was a 45-60 minute session with a therapist once a week. The sessions were intrapersonal in nature and had some variation because of different techniques used by different therapists. The same basic philosophy and treatment objectives were observed by the therapists. The therapist was generally a lay person who had been through the same alcoholic program. The patients were assigned to a lay therapist upon entering the hospital. They were counseled by this counselor for the first 8 weeks and until they were assigned to their group therapist.

Each subject was required to attend two separate classes during the first 4 weeks of treatment one hour in length to expose him to Alcoholics Anonymous; one Alcoholics Anonymous meeting per month at the hospital which was also open to non-alcoholics; one Alcoholics Anonymous meeting per month in the town of Evanston, Wyoming; and one Alcoholics Anonymous meeting per week which the alcoholics themselves conducted.

Sometimes it was felt that a subject should receive therapy in addition to the regular treatment. If this was determined by the subject's counselor and the unit psychologist and unit coordinator, the subject was assigned to group therapy and individual therapy with a clinical psychologist. This group would meet once a week for one to one and one-half hours. The individual therapy with the clinical psychologist was minimal and not held on a regular basis.

Every patient had to work 8 hours a day 5 days per week, but they were excused if necessary from work for the time they were to attend prescribed treatment, group meetings and individual therapy sessions. Their work detail was in the ward or the grounds depending on their pass.

The Wyoming State Hospital ward was set up with a merit pass system. Different passes provided the holder certain privileges. The passes were earned by exhibiting appropriate behavior.

Once a week all members of the ward met together to vote on passes. A person could put in a request for an increase in pass privileges and have it voted on. Misbehavior was also reported at the meeting and a person could lose privileges.

The ward had a chairman and a ward council. They would plan socials such as dances or movies and would assign work duties in the ward.

Special Programs Outside Ward

Many alcoholics function adequately or semi-adequately in some aspects of their lives. As their pass privileges increased, they were released from the ward to go to other parts of the hospital to work or to participate in social activities.

The Alcoholic Unit of the Wyoming State Hospital is considered a special ward unit. All subjects who are part of the Alcoholic Unit receive relatively the same prescribed treatment. There are also times when they all meet together for treatment while in the ward.

After the fifteenth week a utilization and service conference was held by the alcoholic unit admissions committee to determine if the subject should be discharged or retained another two months. Approximately 15% were kept the additional time. During the extension period the treatment consisted of a repeat of phase II.

After being released from the hospital, each patient was involved in an extensive follow-up program during which he was contacted through a questionnaire (see Appendix D) 90 days after discharge and yearly from the date of discharge for 5 years. After the questionnaire was mailed to the subject, he had 3 weeks to respond. If at the end of the third week he had not returned the questionnaire, separate questionnaires (see Appendix E) were sent to his nearest of kin, employers from whom he had previously worked, his church group, and social services agencies in the area. The information received from them was used to rate him in place of his unanswered questionnaire. In order to corroborate the alcoholic's reliability for self-evaluation

other persons, including family members, neighbors and clergy were contacted.

Follow-up ratings showed patients to be in five categories:

1. Persons maintaining vocational and familial responsibilities, sustaining sobriety one year, having no social problems and attending AA meetings regularly or occasionally (rated one).

2. Persons maintaining vocational and familial responsibilities with only one lapse followed by abstinence in past year, having no social problems and attending AA meetings occasionally (rated two).

3. Persons drinking periodically, but having no outstanding community problems and maintaining vocational and familial responsibilities (rated three).

4. Persons drinking to the extent their vocational and familial responsibilities are not maintained, becoming social problems and coming to the attention of the community for drinking in the past year (rated four).

5. Persons reinstitutionalized due to inability to function outside of the hospital setting (rated five) (Karn, 1964).

The questionnaires were subjectively scored by the coordinator of the alcoholic unit (a clinical psychologist) and were given a rating of 1, 2 . . . 5.

Statistical Methods

In order to measure the magnitude and nature of the relationship between the independent variables or scales of the MMPI and the

follow-up ratings for years one through five, a step-wise multiple regression was employed. The programs were MDCR-SWMR (Multivariable Data Collection Revised and Step-Wise Multiple Regression) on the Utah State University Statpac Library. This technique deletes one at a time the independent variables that offer the least unique contribution to the total variability explained by the model, and provides a regression equation which can be used for prediction. The independent variables are compared with the dependent variables in a manner to see how much variability in the dependent variable is explained by the independent variables (see Table 3).

The sum of the coefficients times the independent variables plus the constant provide a prediction equation which can be used for predicting individual subjects follow-up scores.

The multiple regression equation is: $Yc = a + b_1x_1 + b_2x_2 \ldots + b_kx_k$ (Hamberg, 1970).

Each year was statistically analyzed separately and then was compared for relationships.

Eighty-four subjects were treated for alcoholism at the Wyoming State Hospital and follow-up data were collected on these subjects for five years. The scales of the MMPI were compared to the follow-up rating scale using a step-wise multiple regression. A prediction equation was developed to predict a follow-up rating score for a given subject.

Table 3

Independent and Dependent Variables

Code	Description
Independent Variables	
L	Lie Scale
F	Validity
K	Correction
Hs	Hysteria
D	Depression
Hy	Hypocondriases
Pd	Psychopathic Deviate
Mf	Masculinity-Femininity
Pa	Paranoia
Pt	Psychoesthenia
Sc	Schizophrenia
Ma	Hypomania
Si	Social Introversion
Dependent Variables	
Y1 (Year one)	Follow-up rating scale scores for Y1
Y2 (Year two)	Follow-up rating scale scores for Y2
Y3 (Year three)	Follow-up rating scale scores for Y3
Y4 (Year four)	Follow-up rating scale scores for Y4
Y5 (Year five)	Follow-up rating scale scores for Y5

CHAPTER IV

RESULTS

The results of this research are presented in this order: (a) subjects located, (b) hypothesis tested, (c) regression analysis by year, including the coefficients, (d) best individual independent variables and predictors by year, (e) regression equation for prediction.

Forty-four subjects were unaccounted for at the end of the 5 years. At the end of the first year, 72 subjects were located, one had expired, and 11 were not located. Thirty-two were accounted for at the end of 5 years and 8 had expired (see Table 4). Many subjects were accounted for and then were lost for a few years and relocated. Table 5 shows those subjects who were rated all 5 years. Only 26 were located and interviewed successively on each of the 4 years. Nineteen were successfully located each of the 5 years, and of these, one was hospitalized and one was drinking heavily. Nine were drinking but were able to maintain their social and occupational functions. Eight were not drinking. Five of the subjects who were in the Year 1 and 4 sample were either drinking heavily or were hospitalized. Eight were drinking moderately, and 13 were not drinking (see Table 5).

The procedures under investigation in the present research include the relationship between the scales of the MMPI and follow-up scales after the treatment of alcoholics and development of a prediction equation.

Table 4

Follow-up Rating of 84 Subjects, by Year, Indicating the Number and Percent Located

End of Year	# Located	% Located	Follow-up Ratings #					Follow-up Ratings %					Expired #	Expired %
			1	2	3	4	5	1	2	3	4	5		
1	72	86	25	12	23	4	8	30	14	27	05	10	1	01
2	61	73	22	7	21	7	4	26	08	25	08	05	3	04
3	51	61	22	3	20	6	2	26	04	24	07	02	6	07
4	34	41	10	4	9	4	7	12	05	11	05	08	8	10
5	32	38	12	0	12	4	4	14	00	14	05	05	8	10

Note. Percents were rounded to two decimal places.

Table 5

Number and Percent of 84 Subjects Located by Year[a]

End of Year	# Located[b] minus years incomplete	% Located minus years incomplete	# Subjects[c] w/h years incomplete	% Subjects w/h years incomplete	# Sobriety Ratings 1	2	3	4	5	% Sobriety Ratings 1	2	3	4	5	Unknown[d] #	%	Expired #	%
1	72	86	0	00	25	12	23	4	8	30	14	27	05	10	11	13	1	01
2	59	70	3	04	21	7	21	7	3	25	08	25	08	04	19	23	3	04
3	44	52	9	11	19	3	15	5	2	23	04	18	06	02	25	30	6	07
4	26	31	9	11	9	4	8	2	3	11	05	10	02	04	41	49	8	10
5	19	23	15	18	8	0	9	1	1	10	00	11	01	01	42	50	8	10

Note. Percents were rounded to two decimal places.

[a]Some subjects could not be located and then on subsequent years were found. This table only indicates subjects who were never lost to follow-up.

[b]Only those located in all prior years are counted.

[c]Refers to subjects located in any given year but not located in at least one previous year.

[d]The subjects who were not located.

The first null hypothesis states that the overall pattern of the MMPI cannot be used to predict successful treatment of the alcoholics at the Wyoming State Hospital. This hypothesis is accepted by the results (See Tables 6, 7, 8, 9, 10, and 11). These tables show 13 F ratios per year for 5 years and, of these 65 F ratios, only one F ratio value (psychopathic deviate) for a single year (Year 3) was significant at the .05 level.

The percent of variation (R^2) explained by year 1 was (.1787), year 2 (.3329), year 3 (.3373), year 4 (.4948), and year 5 (.4052). These are the amount of the total variability which can be accounted for by all of the MMPI scales combined.

The second null hypothesis states that there are no individual scales on the MMPI which can be used to predict the successful treatment of alcoholics at the Wyoming State Hospital. This hypothesis is accepted by the results (see Table 9). Through deleting the least significant variables, one at a time, several independent variables can be eliminated and the remainder still account for the most of the variation explained by all 13 independent variables. When the variable did not account for at least 5% of the variability, it was not included as one of the more significant independent variables. Variable F, for year 5 explained more of the variability than any other variable, yet it only accounted for 20% of the variability.

The third null hypothesis states that a prediction equation cannot be derived for predicting success of alcoholics after treatment. This hypothesis is accepted. Equations for predicting a

Table 6

Regression Analysis Comparing MMPI Scales With Alcoholic Sobriety Rating for Year One

Source	df	Mean Squared	Coefficient[a]	F Ratio[b]
Total	72	1.7199	2.1282	
Lie Scale	1	1.7238	.1021	1.0000
Validity	1	3.7155	- .0760	2.1555
Correction	1	4.3015	- .0933	2.4955
Hysteria	1	.3336	- .0230	.1935
Depression	1	.2391	.0197	.1387
Hypochondriasis	1	.4169	- .0263	.2418
Psychopathic Deviate	1	.4072	.6227	.2362
Masculinity-Femininity	1	1.6472	- .0354	.9556
Paranoia	1	3.7337	.0985	2.1661
Psychoesthenia	1	2.4253	.0577	1.4070
Schizophrenia	1	.5780	.0260	.3353
Hypomania	1	.0089	- .0038	.0052
Social Introversion	1	3.4883	- .0501	2.0237
Residual error	59	1.7237		

Note. The percent of variation explained by those independent variables accounts for only .1787 of a possible 100%.

[a] b values in regression equation: i.e. $b_0 = 2.1282$, $b_1 = .1021$, etc.

[b] No F ratios were significant at the .05 level.

Table 7

Regression Analysis Comparing MMPI Scales With Alcoholic Sobriety Rating for Year Two

Source	df	Mean Squared	Coefficient[a]	F Ratio[b]
Total	61	1.5917	2.1394	
Lie Scale	1	1.6272	.1135	1.2058
Validity	1	.5007	- .0318	.3710
Correction	1	.0454	.0107	.0336
Hysteria	1	1.3509	.0633	1.0011
Depression	1	1.7451	.0610	1.2932
Hypochondriasis	1	1.1244	- .0448	.8333
Psychopathic Deviate	1	1.4977	.0511	1.1099
Masculinity-Femininity	1	3.9784	- .0580	2.9483
Paranoia	1	5.1232	.1274	3.7966
Psychoesthenia	1	.7353	.0338	.5449
Schizophrenia	1	1.8149	- .0580	1.3449
Hypomania	1	3.0787	.0794	2.2815
Social Introversion	1	.1115	.0101	.0826
Residual error	48	1.3494		

Note. The percent of variation explained by those independent variables acting on the dependent variables accounts for only .3329 of a possible 100%.

[a] b values in regression equation: i.e., $b_0 = 2.1394$, $b_1 = .1135$, etc.

[b] No F ratios were significant at the .05 level.

Table 8

Regression Analysis Comparing MMPI Scales With Alcoholic Sobriety Rating for Year Three

Source	df	Mean Squared	Coefficient[a]	F Ratio
Total	51	1.5184	.0418	
Lie Scale	1	.3616	.0585	.2677
Validity	1	.0732	-.0137	.0542
Correction	1	.6785	-.0457	.5024
Hysteria	1	1.0430	.0561	.7723
Depression	1	.1146	.0171	.0848
Hypochondriasis	1	3.8931	-.0943	2.8827
Psychopathic Deviate	1	6.8053	.1119	5.0392*
Masculinity-Femininity	1	.3642	-.0193	.2696
Paranoia	1	.6076	-.0451	.4499
Psychoesthenia	1	.7179	.0369	.5316
Schizophrenia	1	.8558	-.0123	.0633
Hypomania	1	2.5035	.0781	1.8538
Social Introversion	1	.7528	-.0282	.5575
Residual error	38	1.3504		

Note. The percent of variation explained by those independent variables acting on the dependent variables accounts for only .3373 of a possible 100%.

[a] b values in regression equation: i.e. $b_0 = .0418$, $b_1 = .0585$, etc.

* $p < .05$

Table 9

Regression Analysis Comparing MMPI Scales With Alcoholic Sobriety Rating for Year Four

Source	df	Mean Squared	Coefficient[a]	F Ratio[b]
Total	34	2.2050	-1.2076	
Lie Scale	1	.0618	.0321	.0343
Validity	1	3.7012	.1134	2.0524
Correction	1	3.5898	.1275	1.9906
Hysteria	1	.3503	.0536	.1942
Depression	1	4.3400	.1397	2.4066
Hypochondriasis	1	4.1862	- .1292	2.3213
Psychopathic Deviate	1	1.0916	.0687	.6053
Masculinity-Femininity	1	2.4141	- .0664	1.3387
Paranoia	1	2.4456	- .1442	1.3561
Psychoesthenia	1	.2519	- .0309	.1397
Schizophrenia	1	.0310	- .0128	.6172
Hypomania	1	1.3647	.0829	.7567
Social Introversion	1	1.2069	.0483	.6692
Residual error	21	1.8034		

Note. The percent of variation explained by those independent variables acting on the dependent variables accounts for only .4948 of a possible 100%.

[a] b values in the regression equation: i.e. $b_0 = -1.2076$, $b_1 = .0321$, etc.

[b] No F ratios were significant at the .05 level.

Table 10

Regression Analysis Comparing MMPI Scales With Alcoholic Sobriety Rating for Year Five

Source	df	Mean Squared	Coefficient[a]	F Ratio[b]
Total	32	1.9886	2.0215	
Lie Scale	1	.3617	.0876	.1816
Validity	1	1.3762	.0774	.6908
Correction	1	.0739	- .6188	.0371
Hysteria	1	1.3975	- .0888	.7015
Depression	1	.6318	.0570	.3171
Hypochondriasis	1	.0616	- .0190	.0309
Psychopathic Deviate	1	4.6866	.1224	2.3527
Masculinity-Femininity	1	4.6326	- .0948	2.3255
Paranoia	1	4.0666	- .1735	2.0414
Psychoesthenia	1	1.5970	.0801	.8017
Schizophrenia	1	.1139	.0204	.0571
Hypomania	1	.0489	- .0147	.0245
Social Introversion	1	.9064	- .0340	.4550
Residual error	19	1.9920		

Note. The percent of variation explained by those independent variables acting on the dependent variables accounts for only .4052 of a possible 100%.

[a] b values in the regression equation: i.e. $b_0 = 2.0215$, $b_1 = .0876$, etc.

[b] No F ratios were significant at .05 level.

Table 11

Variables Selected for Each Year Based on Step-wise Deletion Procedure (Explaining Variations for Dependent Variables Y1, Y2, Y3, Y4, Y5)

Dependent Variables	Most Significant Independent Variables Included	% Variation Explained
Year 1	Pa, F, K, Pt, Sc	.1383
Year 2	L, Mf, Ma, Pa, D	.2839
Year 3	Hy, Pd, Pa, Hs, Ma	.3119
Year 4	Mf, F, K, Pa, D, Hy, Pd	.4639
Year 5	Pa, F, Mf, Hs, Pd, Pt	.3719

Significant Independent Variables	# of Years It Appears
Pa	5
F, Mf, Pd	3
K, Pt, Ma, D, Hy, Hs	2
Sc, L	1

first, second, third, fourth, or fifth year follow-up score for a given individual can be derived from the year desired by multiplying a subject's scale scored by the coefficient weightings for each scale and then summing these with the constant. However, since this prediction equation is adequate for only a limited percentage of cases and in view of the acceptance of null hypotheses one and two, the

third null hypothesis must also be accepted. The prediction equation for year 5 would by $Y = 2.022 + .088X_1 + .077X_2 - .089X_4 + .057X_5 - .019X_6 + .122X_7 - .095X_8 - .173X_9 + .080X_{10} + .020X_{11} - .015X_{12} - .034X_{13}$.

As part of the regression analysis of variable 14, each variable (1 through 14) was correlated with all other variables. The Pearson product moment correlation coefficients for years 4 and 5 are included in this chapter (see Tables 12 and 13). Tables for years 1, 2, and 3 are found in Appendix C, D, and E, respectively. The five tables indicate the amount of variability which the variables have in common on a pair-wise basis. The most powerful variables for years 4 and 5 have high intercorrelations, except K. They correlate with at least two other independent variables at either .01 or .05 level of significance.

The results of this study find that the scales of the MMPI can account for up to 49% (see Table 9) of the variation, that some scales correlate higher with follow-up ratings than do others, and that a prediction equation, if used, has little value in determining a follow-up rating score for a subject. Since null hypotheses one and two were accepted, it follows that a prediction equation derived from the coefficients of the multiple regression would be unacceptable.

Table 12

All Possible Correlations for Year Four (Pearson Product Moment Correlation Coefficients)

Variable / Variable Name	1 L	2 F	3 K	4 Hs	5 D	6 Hy	7 Pd	8 Mf	9 Pa	10 Pt	11 Sc	12 Ma	13 Si	14 14	
1	L	.1401	.5262**	.1305	.2379	.1367	.3472*	.1578	.3234	.1909	.0751	.3129	.0045	.2231	L
2	F		.3268	.3847	.2490	-.0059	.3621*	.0155	.6265**	.5427**	.7150**	.4853**	.3415*	.4549**	K
3	K			.0926	.1566	.3116	.1536	.3143	.0802	-.0452	-.1970	-.4838**	-.4861**	-.0448	F
4	Hs				.6022**	.7692**	.5343**	.1517	.3112	.0627**	.6962	.4256	.1465	.1939	Hs
5	D					.5626**	.4193	.3387*	.2818	.6422**	.4143*	.0621	.1877	.3300	D
6	Hy						.5224**	.3352*	.1148	.4282*	.3806*	.2481	-.3537*	-.0938	Hy
7	Pd							.3093	.4775**	.2900	.4564**	.3530*	-.1473	.2374	Pd
8	Mf								.2090	.2376	.1663	-.0831	-.0816	-.1509	Mf
9	Pa									.5630**	.5692**	.2641	.2308	.2097	Pa
10	Pt										.8027**	.3621*	.3961*	.2495	Pt
11	Sc											.6348**	.2989	.2925	Sc
12	Ma				.05	.334	*						-.0063	.1441	Ma
13	Si				.01	.431	**							.2705	Si
14	14				* = Significant at .05 level ** = Significant at .01 level										14

Table 13

All Possible Correlations for Year Five (Pearson Product Moment Correlation Coefficients)

Variable # / Variable Name	1 L	2 F	3 K	4 Hs	5 D	6 Hy	7 Pd	8 Mf	9 Pa	10 Pt	11 Sc	12 Ma	13 Si	14 14	
1	L	.1559	.6590**	.2172	.2598	.2675	.3145	.1935	.4172	.2150	.1632	-.2149	-.1294	.0976	L
2	F		.2476	.2831	.2752	-.1023	.3024	-.0387	.5121**	.5536**	.7012**	.3390	.4322	.4064*	F
3	K			.2486	.1942	.4907**	.2049	.3635*	.1919	.0999**	-.0358	-.3513*	-.4732**	-.1296	K
4	Hs				.6449**	.8000**	.3308	.0681	.2140	.5615	.5867**	.3550*	-.1183	.0650	Hs
5	D					.5204**	.2536	.2616	.2136	.6128**	.3697*	-.0418	.2302	.1514	D
6	Hy						.3427	.2708	.1036	.3546*	.3112	.2525	-.4151	-.0817	Hy
7	Pd							.2128	.4588**	.2112	.4077*	.3795*	-.1844	.2960	Pd
8	Mf								.2349	.1843	-.1337	-.1928	-.0912	-.2455	Mf
9	Pa									.5091**	.5386**	.0722	.1109	.0742	Pa
10	Pt										.7742**	.1987	.3836*	.2400	Pt
11	Sc											.4542**	.2437	.2724	Sc
12	Ma				.05	.344	*						-.0841	.2087	Ma
13	Si				.01	.443	**							.1216	Si
14	14				* = Significant at .05 level ** = Significant at .01 level										14

CHAPTER V

DISCUSSION

The ability of the MMPI scales to predict treatment outcome of alcoholics changes considerably after the first year and again after the third year. There might be a number of reasons for this:

1. The greatest loss of subjects from year 1 to year 5 was among those with follow-up ratings of one, two, and three (see Table 4).

2. Successful subjects may have moved from the area because of receiving better jobs and were thus lost (not found through follow-up questionnaires).

3. Successful subjects may have become tired of filling out questionnaires and others who received questionnaires on the subject may also have deemed it unnecessary to continue filling them out.

4. The size of the sample was small to begin with and when the subjects were lost, it made the sample extremely small. This tends to bias any results and limits generalization to other subjects or groups of subjects.

5. The initial treatment started them on their road to recovery, and subsequent time created a more distinct difference between those who were to remain successfully treated and those who were unsuccessfully treated.

Other researchers have found that variables of the MMPI are not suitable predictors of successful alcoholics rehabilitation. Heibrum

(1971) found the Sc and Ma scales to be the best predictors using a follow-up of only one year. In this study, the writer learned that the Sc and Ma scales are found to be among the most significant predictors during the first two years of follow-up. Not only these two scales correlate as significant scales, but the findings of this study indicate that Pa, F, K, Pt, Sc and Ma scales for year 1 have levels of intercorrelation which are significant at the .01 level (see Appendix C). This seems to indicate that Sc and Ma measure many of the same personality traits as are measured by the Pa, F, K and Pt scales.

According to Dahlstrom and Welsh (1960) many patients who have a high Pd have problems with alcohol, gambling, show poor work records, are unreliable, are rebellious, and their response to treatment is difficult to assess.

Dahlstrom and Welsh cite a study by Guthrie (1949) which indicates that high scores on Pd and Pa indicate a highly anxious individual and the individual may be pre-psychotic. There is usually a history of hypertension and asthma related to regressed hostility. These subjects usually had problems with male-female relationships and work as well as alcohol. Subjects with high scores on Pd and Pt usually violate social and legal restriction, show very little control, and seem not to care about the feelings of others. They later feel a great deal of guilt and remorse. This pattern is often seen in the alcoholic. This study also found that high Pd and Pa scores frequently occurred for those who were not successfully rehabilitated.

In this study, the writer indicates that Pd and Pa are among the six most significant independent variables, thereby indicating a lack of potential for successful treatment. Pd was one of the most significant predictors in three of the five years; Pa was important all five years.

There were 65 *F* tests on the data, but only one was significant at the .05 level (see Table 6). This could be due to chance and should not be considered significant. Thus, none of the scales of the MMPI taken alone should be considered to be significant factors in predicting the outcome of treated alcoholics.

The various studies cited in this review of literature once again indicate that alcoholics have a variety of personality patterns with many variables comprising each pattern. This combined with the numerous techniques utilized in the treatment of alcoholics makes the prediction of rehabilitation potential extremely complicated. The findings of this study confirm that the usefulness of the MMPI as a predictor of successful rehabilitation is limited.

CHAPTER VI

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine if:

1. The MMPI could be used to predict which alcoholics would benefit from treatment at the Wyoming State Hospital.

2. There was a significant relationship between alcoholics' scores on the individual scales of the MMPI and a post-treatment sobriety measure after treatments.

3. A prediction equation could be developed for future use in predicting before treatment, the probable outcome of treated alcoholics.

The hypotheses teated were:

HO_1 The overall pattern of the MMPI cannot be used to predict successful treatment of the alcoholics at the Wyoming State Hospital.

HO_2 There are no scales on the MMPI which are better than others at predicting the successful treatment of alcoholics at the Wyoming State Hospital.

HO_3 Using the Evanston follow-up scale, an equation cannot be developed for predicting success in alcoholics after treatment, by using scales of the MMPI.

Eighty-four males, diagnosed as alcoholics were placed in a general alcoholic treatment program for 16 weeks. All subjects who could be located were evaluated at the end of each of 5 years to

determine their drinking patterns, and were assigned a success rating scale based upon these patterns. Their scores on the MMPI were compared with a success rating scale. A step-wise multiple regression was used to correlate the scores with the ratings.

The highest percentage of variation explained by any one scale was the F scale for years 4 and 5, 21% for year 4, 17% for year 5. For year 4, 46% of the variation is explained by seven scales and for year 5, 37% of the variation is explained by six scales (of which four are the same as in year 4).

Regression equations coefficients for year 4 can predict with 49% accuracy the follow-up ratings for treated alcoholics (see Table 9).

Conclusion

The three hypotheses tested were:

HO_1 The overall profile pattern of the MMPI cannot be used to predict successful treatment of the alcoholics at the Wyoming State Hospital.

HO_2 There are no scales on the MMPI which can be used to predict the successful treatment of alcoholics at the Wyoming State Hospital.

HO_3 Using the Evanston follow-up scale an equation cannot be developed for predicting success in alcoholics after treatment, by using scales of the MMPI.

All three null hypotheses were accepted. The scales of the MMPI taken collectively and individually account for varying amounts of

variability depending on the year of follow-up data examined. The highest amount of variation in sobriety scores explained by the independent variables was 49% for the fourth year. The Mf, F, K, Pa, D, Hy, and Pd scales account for 46 of the 49%.

A follow-up success rating score for a given individual can be derived by multiplying a subjects scale scores by the coefficient weightings for each scale and then summing these with the constant.

It is difficult to determine whether this approach can be used effectively, but it could be implemented and evaluated in current treatment centers.

A very serious problem with this study was the loss of subjects during the follow-up. At the end of 5 years the follow-up staff was only reporting results for 32 out of 84 subjects. Since the sample is small, any conclusions drawn from this research should be accepted with caution. Despite the limitations of this study, it appears from results of the data that the MMPI is not a useful predictor of the successful treatment of alcoholics.

Recommendations

It is recommended that future studies define "success" to include subjects who engage in occasional drinking and maintain employment and family relationships as well as total abstainers (follow-up ratings 1, 2, and 3). "Failure" would be defined to include follow-up ratings 4 and 5. These people are unable to maintain familial or employment responsibilities, come to the attention of the community because of their drinking, or are returned to the hospital.

These definitions would decrease the number of dependent variables, thus decreasing the complexity of the study.

It is recommended that a more extensive study be done using a larger initial sample and a research team that could devote more time to follow-up of the subjects. Follow-up could be greatly improved if subjects were personally contacted and interviewed monthly instead of being contacted by questionnaire once a year.

It is recommended that other researchers use the MMPI to examine the relationship between segments of the alcoholic populations (ethnic groups, women, and various age ranges) and follow-up of treated alcoholics.

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APPENDICES

Appendix A

Patient Follow-up Questionnaire

Date:

Name_____Address_____

Are you presently employed?_____ Employer_____

Present occupation_____Primary occupation_____

Weekly wage_____Date of starting_____

How did you secure your present employment?_____

_____

Employment situation: Improved_____ Same_____ Worse_____

Explain rise or decline of employment_____

_____

Have you had continuous sobriety since leaving the hospital? If not, please explain _____

Do you attend A.A. regularly?_____ Occasionally_____Never_____

Do you attend a church of your choice regularly?_____Occasionally_____

Never_____. Specify religious preference_____

Have you needed psychiatric or medical attention since discharge_____

Explain _____

_____

Do you depend upon tranquilizers, barbiturates, or other drugs? Yes_____

No_____ Explain _____

Marital status: Improved_____Same_____Worse_____

Comments:_____

_____

_____

_____

Appendix B

Relative, Employer etc. Questionnaire

The above named individual participated in our Alcoholic Rehabilitation Program From _____ to _____ and was released by _____.

Continuing research is a most vital function in our efforts to better understand the insidious disease of Alcoholism. It is to this end we should deeply appreciate information relative to the following:

Present Address _____ _____Unknown

Employer_____ _____Unknown

On Welfare _____Yes _____No _____Unknown

Social Status--Arrested since discharge? _____Yes _____No _____Unknown

Supervision Department of Probation and Parole _____Yes _____No

Other _____

Drinking Habits since discharge

_____ Sober _____Drinking Less _____Drinking More _____ Unknown

We realize all the questions might not apply to you; consequently, completion of those items of which you have personal knowledge would be of great help. The individual's last known address_____

_____

Appendix C

All Possible Correlations for Year One

Variable # / Variable Name	1 L	2 F	3 K	4 Hs	5 D	6 Hy	7 Pd	8 Mf	9 Pa	10 Pt	11 Sc	12 Ma	13 Si	14 14
1 L		.1402	.5564**	.1115	.0353	.1578	.1137	.0286	.0809	.1013	.1215	.2768*	.2097	.0382
2 F			.4888**	.5002**	.4528**	.2601*	.4105**	.1362	.6829**	.5567**	.7021**	.5740**	.3052**	.1709
3 K				.0004	.1089	.2170	.0161	.0269	.2700*	.1962	.3012**	.5297**	.4868**	.1883
4 Hs					.6770**	.7872**	.4033**	.1432	.4963**	.6164**	.6477**	.3736**	.0111	.1305
5 D						.5948**	.4273**	.2976*	.5042**	.7162**	.5892**	.2271	.3674**	.1588
6 Hy							.5125**	.2933*	.4254**	.5416**	.5308**	.2999*	.1753	.1115
7 Pd								.2660*	.4904**	.3815**	.5064**	.3290**	.0182	.1668
8 Mf									.3218**	.2545*	.2492*	.1415	.0456	.0281
9 Pa										.5533**	.7146**	.4428**	.1680	.2937*
10 Pt											.7845**	.3685**	.4646**	.2295
11 Sc												.6053**	.2941*	.2584*
12 Ma					.05	.231	*						.0038	.2284
13 Si					.01	.300	**							.03781
14 14					* = Significant at .05 level ** = Significant at .01 level									

Appendix D

All Possible Correlations for Year Two

Variable #	Variable Name	1 L	2 F	3 K	4 Hs	5 D	6 Hy	7 Pd	8 Mf	9 Pa	10 Pt	11 Sc	12 Ma	13 Si	14 14
1	L		.1880	.5294**	.0861	.0685	.1197	.0575	.0269	.1580	.1142	.1514	.3367**	.1726	.0966
2	F			.4786**	.5151**	.4689**	.2261	.4247**	.1887	.6890**	.6115**	.8063**	.5518**	.3479**	.2752*
3	K				.0373	.0410	.2566*	.0345	.0460	.2414	.1857	.2711*	.4755**	.5503**	.0718
4	Hs					.6578**	.7650**	.5249**	.1498	.4870**	.6601**	.7243**	.3571**	.0159	.3775**
5	D						.6004**	.5294**	.2890*	.4710**	.7255**	.6411**	.2262	.3209*	.3932**
6	Hy							.6008**	.2926*	.4115**	.5324**	.5228**	.2564*	.1851	.2735*
7	Pd								.2906*	.4910**	.4193**	.5615**	.4028**	.0474	.3562**
8	Mf									.3392**	.2993*	.2721*	.1695	.0975	.0422
9	Pa										.5706**	.7408**	.4216**	.1133	.3513**
10	Pt											.7984**	.3954**	.4109**	.3478**
11	Sc												.5933**	.2929*	.3398**
12	Ma					.05	.050	*						.0297	.2685*
13	Si					.01	.325	**							.1166
14	14					* = Significant at .05 level ** = Significant at .01 level									

Appendix E

All Possible Correlations for Year Three

Variable #	Variable Name	1 L	2 F	3 K	4 Hs	5 D	6 Hy	7 Pd	8 Mf	9 Pa	10 Pt	11 Sc	12 Ma	13 Si	14 14
1	L		.6897	.6111	.2119	.1388	.1608	.1837	.0787	.1009	.0527	.0525	₹2060	₹1196	₹0056
2	F			₹2578	.4391**	.3862**	.3027*	.6018**	.2553	.6805**	.5356**	.7864**	.4812**	.2600	.2594
3	K				.1225	.0551	.2065	.0129	.1040	₹0695	₹1230	₹1622	₹4349	₹4480**	₹2172
4	Hs					.6397**	.8303**	.3800**	.1235	.3849**	.5456**	.6261**	.2610	₹0206	.1000
5	D						.6619**	.4529**	.3401*	.3988**	.6886**	.5455**	.0817	.2889*	.0594
6	Hy							.4508**	.2605	.3489**	.5116**	.5445**	.2091	₹1347	₹0070
7	Pd								.2960*	.5471**	.4123**	.5768	.3638	.0000	.3507**
8	Mf									.4691	.3688	.3706	.0827	₹0340	₹0531
9	Pa										.5655	.7018	.3222	.1128	.1156
10	Pt											.7556	.2491	.4705	.1174
11	Sc												.5006	.2566	.1999
12	Ma					.05	.273	*						₹1280	.4272**
13	Si					.01	.354	**							₹0311
14	14					* = Significant at .05 level ** = Significant at .01 level									

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

M
Male

Name_____

Address_____

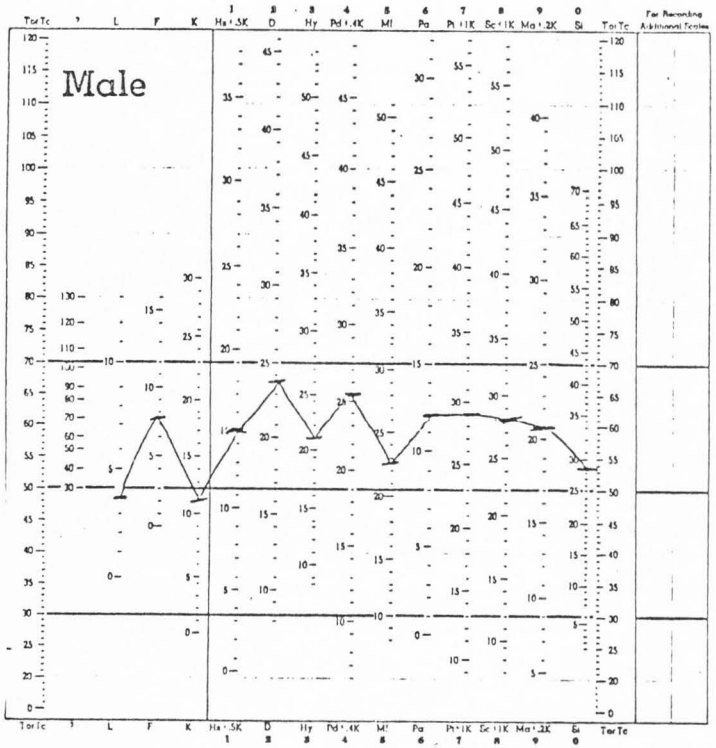
Occupation_____ Date Tested_____

Education_____ Age_____

Marital Status_____ Referred by_____

NOTES

Scorer's Initials_____



Raw Score

K to be added

Raw Score with K

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Signature_____ Date_____

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

M
Male

Name_____

Address_____

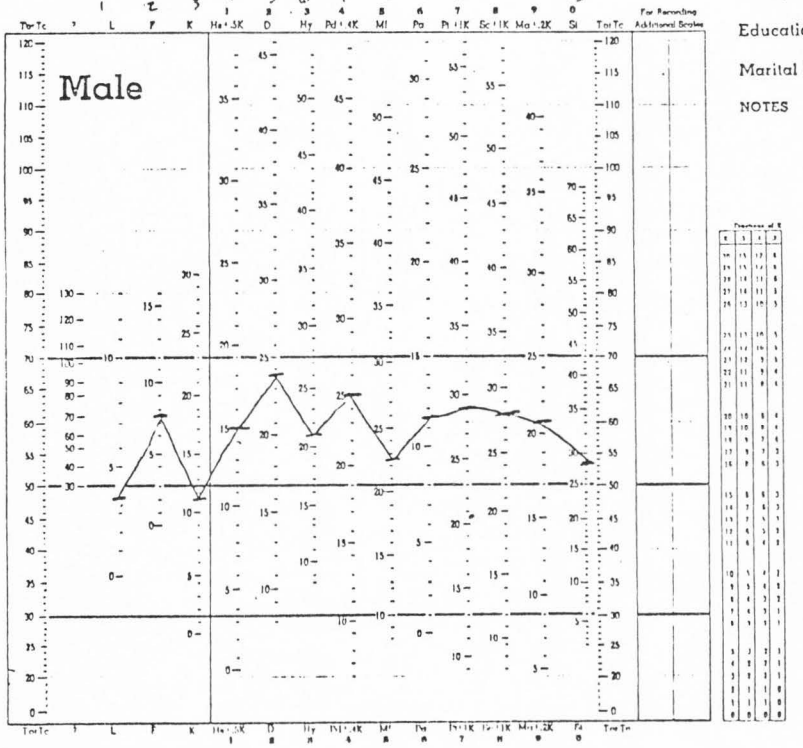
Occupation_____ Date Tested_____

Education_____ Age_____

Marital Status_____ Referred by_____

NOTES

Scorer's Initials_____



Raw Score

K to be added

Raw Score with K

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Signature_____ Date_____

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

Name_____ M Male

Address_____

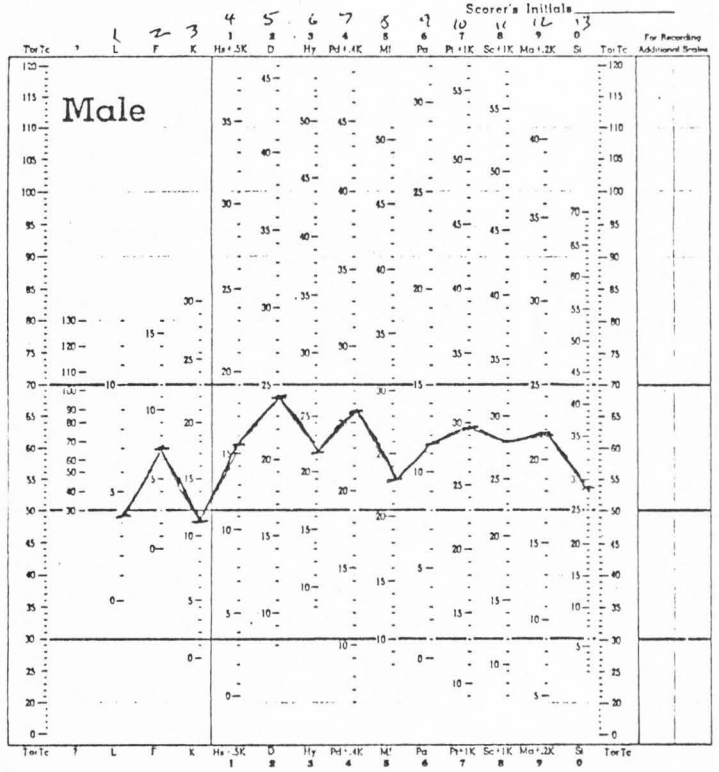
Occupation_____ Date Tested_____

Education_____ Age_____

Marital Status_____ Referred by_____

NOTES

Scorer's Initials_____



	L	F	K	Hs+.5K	D	Hy	Pd+.4K	Mf	Pa	Pt+1K	Sc+1K	Ma+.2K	Si
	1	2	3	4	5	6	7	8	9	10	11	12	13
Raw Score													
K to be added													
Raw Score with K													

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Signature_____ Date_____

Appendix H

Mean Profile for Year Three

Appendix I

Mean Profile for Year Four

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

M
Male

Name_____

Address_____

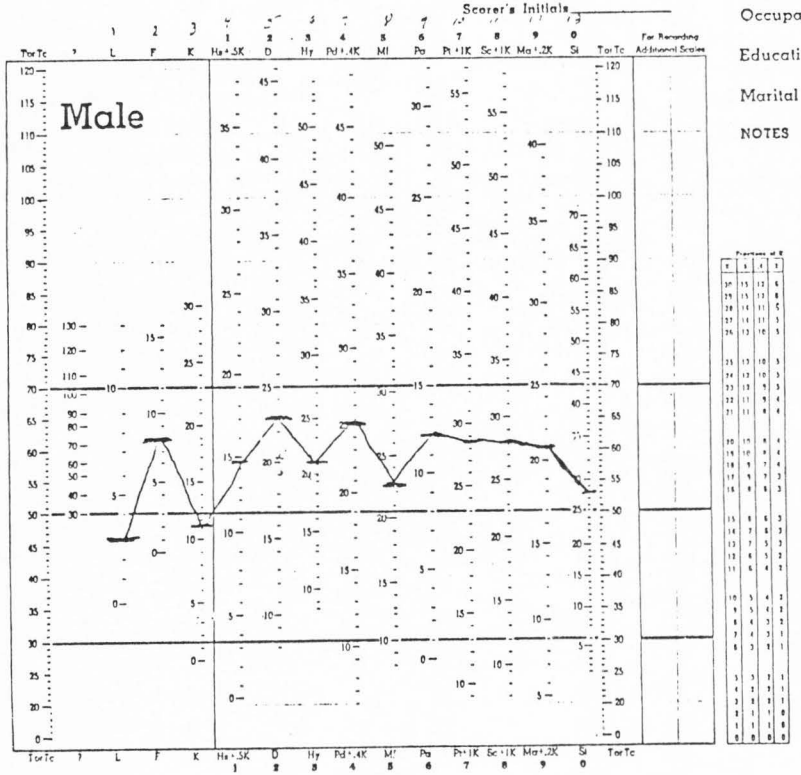
Occupation_____ Date Tested_____

Education_____ Age_____

Marital Status_____ Referred by_____

NOTES

Scorer's Initials_____



| | | |

Profile and Case Summary

The Minnesota Multiphasic Personality Inventory

Starke R. Hathaway and J. Charnley McKinley

M
Male

Name_____

Address_____

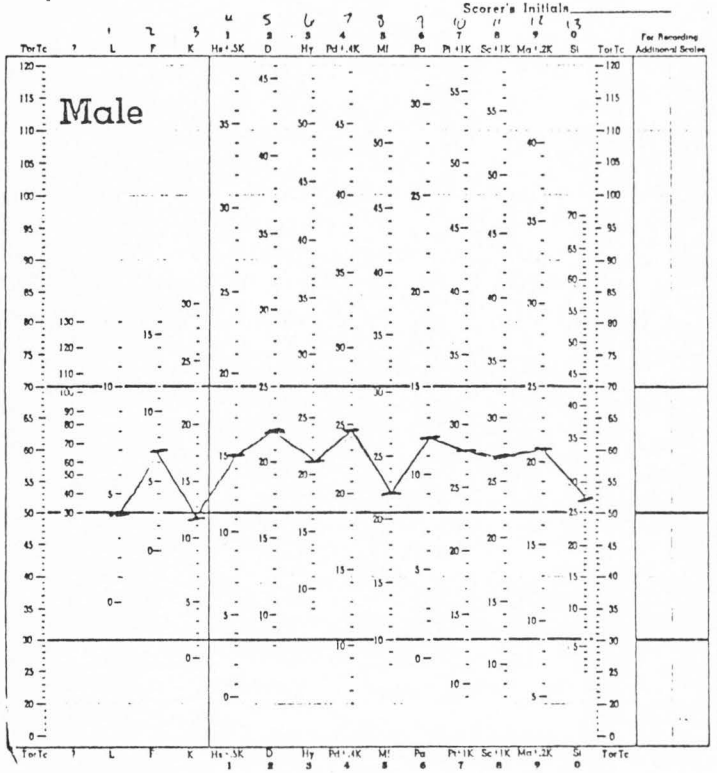
Occupation_____ Date Tested_____

Education_____ Age_____

Marital Status_____ Referred by_____

NOTES

Scorer's Initials_____



Score

K to be added

Raw Score with K

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Signature_____ Date