AN EMPIRICAL METHOD TO DIFFERENTIATE ORGANIC FROM NONORGANIC MEDICAL PATIENTS

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Chapter I

Introduction

> Many a medical man has wished for an easily applicable measuring device which would identify and characterize the psychoneurotic patient with a minimum use of the time consuming interview technique that is conventional in the psychiatric approach. One may not want to deal with the psychoneuroses in one's practice, but the physician or surgeon is indeed insensitive to the problem or very young in the profession who has not been plagued by his inability to assess the role of the neurotic element in some of his patients (McKinley & Hathaway, 1943 p. 161).

The previous quotation was written by McKinley and Hathaway while working on the development of the Minnesota Multiphasic Personality Inventory (MMPI). Burnum (1982) indicated similar difficulties when he reported that 12.6% of his practice of internal medicine could be considered depressed. He also reported the work of Nielsen and Williams (1980) which revealed as many as 50% of depressed

patients are not recognized by their primary care physicians. The study also indicated that depression and other psychological conditions can go unrecognized by both psychiatric and nonpsychiatric physicians. Goldberg and Blackwell (1970) reported a case of a general practitioner, also trained as a psychiatrist, who missed one-third of the problems later identified by a questionnaire used to evaluate psychiatric morbidity in a primary medical care setting. Validated questionnaires to assess psychiatric symptoms have been shown to be more sensitive than physicians in the detection of this kind of pathology (Moore, Silimperi, & Bobula, 1978).

Depression may be seen by the primary care physician as a physical complaint in the form of chronic back pain, headache, fatigue, nervousness, gastrointestinal disorders, irritable bowel syndrome, constipation, anorexia, weight loss, insomnia, job dissatisfaction, obesity, alcoholism, low back pain, sexual dysfunction, and marital disharmony (Cassano, Catrogiovanni, & Conti, 1976). Alternately, organic disorders may be present in the majority of patients having been diagnosed as depressed by their primary care physicians. Organic conditions may include myxedema, thyrotoxicosis, parkinsonism, cancer of the pancreas, aortic stenosis, lupus erythematosus, any one of several endocrine disorders, multiple sclerosis, Huntington's Chorea, alcoholism, or chronic brain syndrome. Some prescription medications may also provoke symptoms which

can mimick depression. These may include corticosteroids, oral contraceptives, digitalis, anti-parkinsonian agents, lipid soluble beta blockers, reserpine, clondine (catapres), methyldopa (aldomet), guanethidine (Ismeline), and anti-psychotics (Burnum, 1982).

Depression unrecognized and unteated commonly has significant effects on patients. The person's performance as a marital partner, parent, and employee is often jeopardized. Dysfunctional families often include one or more members who can be considered depressed (Thornton, 1978). In an effort to discover an etiology for complaints, patients are often subjected to unnecessary, costly, and occassionally physically invasive diagnositc procedures (Beutler, Karacan, Ancy, Salis, Scott, & Williams, 1975). To date, no objective empirical methods have been developed by physicians nor psychologists to make a positive distinction between organic and nonorganic patients with complete accuracy (Anastasi, 1969; Berkow, 1977).

Based on this literature, one may assume the majority of physicians and psychologists would welcome more accurate objective procedures than are now available to make these fine discriminations between organic and nonorganic patients with abdominal pain symptoms. A decision which effects patients' lives so dramatically as to require surgery, psychotherapy, or any other therapeutic regimen must be made with the utmost accuracy and objectivity. Seeking more objectie methods with accurate results will be the aim

of this proposed research.

Statement of the Problem

A review of research (Beutler et al., 1975; Carr, Brownsberger, & Rutherford, 1966; Lair & Trapp, 1962; McKinley & Hathaway, 1943; Schwartz, Osborne, & Krupp, 1972) supported the contention that medical patients with organic difficulty produced different mean profiles on the Minnesota Multiphasic Personality Inventory (MMPI) than did medical patients with nonorganic etiologies for their pain. However, the differences were not of sufficient magnitude to be statistically or practically significant in the ability to identify patients as belonging to either group, organic versus nonorganic. Adding nontest medical history questions and different statistical treatments of the data with computer precision to analyze the data for group and for individuals will be the focus of this research. This research is designed to answer the following: Can organic and nonorganic medical patients be differentiated with the use of the MMPI data and nontest data (medical history)?

Significance of the Study

Conservative medical practice would dictate that inconclusively diagnosed patients should be studied with the rigors of scientific methods and the clinical acumen of the physician to detect any organic pathology responsible for their pain symptoms (Berkow, 1977). Physicians and

psychologists can never be absolutely secure a particular patients' pain is nonorganic. The percentage of patients for whom a diagnosis is inconclusive is small. This is due to the scientific methods for diagnostic use currently available to the physician. Medical tests and psychological tests inherently include a proportion of error (Anastasi, 1969; Kerlinger & Pedhazur, 1973; Berkow, 1977). Medical or psychological diagnosis may be considered acceptable and accurate with the 95% level of confidence (Berkow, 1977). This sounds excellent, unless one is a patient in the 5% which the tests do not accurately identify. If a patient is one of that 5%, then the tests are 100% inaccurate. The proposed method of studying these special patient populations with an inconclusive diagnosis and confusing patterns of symptomatology may add to the precision that professional practice currently is lacking.

Definition of Terms

Abdominal Pain is operationally defined as pain for which a patient has sought the advice and examination of a primary care physician.

Nonorganic Patients are those who have sought the advice and examination of a qualified primary care physician and the physician has been unable to find an objective demonstrable organic condition thought to be responsible for their symptomatology.

Organic patients are those who have sought the advice

and examination of a qualified primary care physician and the physician has been able to find an objectively demonstrable condition thought to be responsible for their symptomatology.

Limitation

Subjects for this study were all patients of one medical clinic. Therefore, no generalization is possible.

Hypothesis

Can a method be derived to differentiate patients with organic versus nonorganic abdominal pain symptoms with the use of the MMPI data and medical history questions?

Organization of the Study

Chapter I included a Statement of the Problem, Significance of the Study, Definition of Terms, Limitation, and Hypothesis. Chapter II is the Review of Literature related to the topic. The Instrumentation and Methodology to be used in the study are delineated in Chapter III. The Results are presented in Chapter IV and Chapter V includes a Summary, Conclusions and Recommendations.

Chapter II

Review of Literature

The literature reviewed includes those studies clearly related to the proposed research. A section of the chapter is devoted to the diagnostic use of the MMPI with medical patients. Another section of the chapter is devoted to discrimination with the MMPI. The chapter ends with a summary describing how the research and the proposed study are interrelated.

Medical Diagnostic Value of MMPI

Hanvik (1951) sought to investigate whether the MMPI could be used to differentiate patients with organic versus nonorganic low-back pain. Subjects were male patients admitted to a primary care hospital with the complaint of lower back pain. There were 30 male organic cases and 30 cases with no distinct organic pathology. Ages of the men were within five years of each other. Subjects were all caucasian and considered to be of the same socioeconomic level, marital status, and intelligence (as measured by the Stanford Binet, Vocabulary sub-test).

The MMPI scales of the two groups were compared for significant differences with the t test. Patterns of

scales also were observed and experienced clinicians were asked to separate the profiles of the groups. The organic versus nonorganic groups were statistically differentiated on six scales of the MMPI. They were: "Hypocondriasis, Depression, Hysteria, Psychopathic Deviate, Psychasthenia, and Schizophrenia" (Hanvik, 1951, p. 353). Mean t scores, when plotted, revealed a neurotic profile of the conversion V type. This profile occurs with an elevation on Hypocondriasis and Hysteria; while the Depression scale is comparitively low. The clinicians sorted the profiles into groups better than could be expected by chance, but specific results were not detailed.

Kamman and Kram (1955) wrote of the value of psychometric examinations to physicians specializing in internal medicine. They reported having used the MMPI in a substantial number of cases and were "convinced of its applicability and usefulness" (p. 556). In addition, they referred to its administrative ease, and the virtue it provided in not wasting time and expense. They reported the test was of value in discriminating psychotic and psychoneurotic aspects of patients. Kamman and Kram quoted Leverenz's (1943) work as indicating the MMPI could help avoid surgery and radical procedures by differentiating medical patients into organic and nonorganic categories.

Lewinsohn (1956) sought to compare medical patients' MMPI profiles and their Rosenzweig Picture Frustration Test

(Rosenzweig, 1944). Subjects were patients at a Veterans Administration Hospital. Four groups with 15 males each, made up the samples. Group I, the Control group, was composed of nonpsychiatric patients who had the diagnosis of hemmorrhoids or hernia. Group II, the Anxiety group, included patients who suffered from neuromuscular tension without evidence of organic pathology. These patients had the diagnosis of depression reaction or anxiety reaction. Group III, the Ulcer group, included those nonpsychiatric patients with an objective diagnosis of ulcer. That is, the ulcer had been demonstrated in x-rays. Group IV, the Hypertensive group, was composed of nonpsychiatric patients with hypertension, but with no other demonstrable organic pathology. All subjects completed the MMPI and the Rosenzweig Picture Frustration Study (PFS). The MMPI K correction factor was not used. The Rosenzweig PFS were scored utilizing the revised standard method (Rosenzweig, 1947).

The Anxiety group scored consistently higher on all scales of the MMPI than did the Control group. "The Ulcer and Hypertension groups had greater mean scores on the Hypocondriasis, Depression, Hysteria, and Psychopathic Deviate scales than did the Control group ($p < .01$)" (p. 296). The mean score of the Hypertension group was significantly greater than the Control group on the Psychasthenia scale of the MMPI ($p < .05$). The Anxiety group had significantly higher mean scores than the Ulcer

group and Hypertension group on the scales of Depression ($p < .05$), Psychopathic Deviate ($p < .05$), Psychasthenia ($p < .01$), Masculinity-Femininity ($p < .01$), Paranoia ($p < .01$), Schizophrenia ($p < .01$), and Hypomania ($p < .01$), but "no significant differences were demonstrated between groups on the Rosenzweig PFS scales" (p. 296).

Lair and Trapp (1962) conducted a study to differentiate medical patients whose somatic symptoms were primarily organic, psychophysiological, or nonorganic with the use of the MMPI. Subjects were selected based on their diagnosis of one of the three groupings. The three groups were made up of 20 neurotics (N), 20 psychophysiologics (PP), and 20 physically ill (PI). Subjects were matched for age, education, and intelligence. The median ages were: N, 42.5 years; PP, 42.5 years; and PI, 41 years. The median I.Q. scores on the Revised Beta Examination (Kellog & Morton, 1931) were: "N, 94; PI and PP, 97" (p. 147). The MMPI was administered to each subject.

Mean scores for all clinical scales of the MMPI were completed for all three groups. An analysis of variance with ranked data was completed. Means and standard deviations for the three groups on the "neurotic triad" of the MMPI were: PP, M. 21.6; S.D. 5.1, on Hypocondriasis; M. 25.2, S. D. 5.6, on Depression; and M. 26.6, S. D. 6.2, on Hysteria; N. M. 25.9, S. D. 5.4, on Hypocondriasis; M. 28.5, S. D. 6.4, on Depression; M. 30.9, S. D. 6.4, on Hysteria; PI, M. 19, S. D. 5.6, on Hypocondriasis; M. 24.6,

S. D. 5.6, on Hysteria. The analysis of variance was listed as providing a probability of .05. The results were not significant. An analysis of individual scores and ranges of variance on the three scales for the three diagnositc categories was conducted. The information obtained was such that individual predictions were of little value.

From these results Lair and Trapp (1962) suggested "the MMPI profile does not appear to be a practical test for making differential diagnoses among neurotics, psychophysioloigcal reactions, and the physically ill" (p. 147). They did propose there is a need for a sensitive instrument to assist the physician with this common diagnostic dilemma.

Carr, Brownsberger, and Rutherford (1966) examined the diagnostic utility of the MMPI in the discrimination of a control group of patients with physically based pain and an experimental group of patients with identical symptoms for which no physical basis could be demonstrated for their symptoms. A total of 20 patients who possessed a clear psychiatric diagnosis of nonorganic sympotmatology on the MMPI were selected. The sample consisted of 14 females and six males, ages 20 to 59, with a wide range of somatic complaints. The control group was matched on sex, race, marital status, admitting service, and major symptom focus. Attending physicians agreed control patients' symptoms were organically based and were free of any

apparent psychiatric disorder. Control and experimental patients were asked to complete the MMPI. Instructions and explanations were consistent with those given to experimental patients except the control groups' instructions explained the use of the test as a survey of attitudes of patients with various physical illnesses. In both instances emphasis was placed on the research nature of the test and that results were impersonally scored.

The MMPI was scored in a standard manner for validity and clinical scales. General Fact Scale A and R developed by Welsch (1956) were also scored. Subscales by Harmon and Weiner (Weiner, 1948) were scored for Depression, Hysteria, Psychopathic Deviate, Paranoia, and Hypomania. MMPI T scores from raw scores K corrected were used for analysis. T scores for control and experimental groups and level of probability between mean scores was done. "Scales Lie, Hypocondriasis, Depression, Depression-Obvious, Hysteria, Hysteria-Obvious, Paranoia, Paranoia-Subtle, Psychasthenia, and Schizophrenia revealed T's significantly different from chance ($p < .05$)" (p. 216).

Gilberstadt and Jancis (1967) sought to differentiate organic from nonorganic medical patients using the 1-3/3-1 MMPI profiles. In their study, 97 male subjects who were nonemergency, willing to participate, and appeared capable of completing the task were included. The MMPI and Cornell Medical Index (Brodman, Erdmann, & Wolff, 1949) were

completed by each subject while they were being admitted to the hospital.

The results revealed the more elevated the 1-3/3-1 scales on the MMPI, the more likely the profile was that of a psychiatric patient rather than of an organic patient. Results revealed a total of 20 items from the Cornell Medical Index that were significant at the .05 level of confidence. A total of 10 items from the Cornell Medical Index were significant at the .01 level of confidence. These results indicated the high incidence of psychological symptoms in the 1-3/3-1 MMPI group of medical patients.

Dodge and Kolstoe (1971) investigated the usefullness of the MMPI in differentiating "early multiple sclerosis and conversion hysteria" (p. 155). Medical, psychiatric, and MMPI data were obtained from the Minnesota Clinic of Psychiatry and Neurology, and the University of Minnesota Hospitals.

Approximately 18,500 cases were reviewed and 27 cases met the standard for inclusion. Multiple sclerosis was diagnosed in 14 of the 27 and 13 were considered to have conversion hysteria based on a physician's neurological examination, laboratory tests, and psychological evaluations.

Mean age of the early multiple sclerosis group was 40.18. Mean age of the conversion hysteria group was 42.42. Sexes of the subjects were four males in the early

stages of multiple sclerosis, five males considered conversion hysterics; 10 females in the early multiple sclerosis group, and eight females, considered to be conversion hysterics. Marital status for early multiple sclerosis was single two, married 12; for conversion hysteria was single two, married 11.

Results revealed differences among scales were statistically significant ($F=3.38$, $p<.01$). The F ratio for groups ($F=.74$) or the F ratio for interaction between groups and scales ($F=.17$) were not statistically significant. Therefore, Dodge and Kolstoe (1971) concluded total scales of the MMPI did not differentiate the groups statistically.

Hovey's Index (1964) composed of items from the MMPI, was administered in an attempt to differentiate the two groups. Fisher's exact probability test was used to measure the frequencies in a 2 x 2 classification from the two diagnostic groups and Hovey's Index. This index correctly classified four of the early multiple sclerosis cases and eight of 12 conversion hysteria cases as non-organics. However, four of the conversion hysteria group were missclassified as having organic brain damage. The results were not statistically significant.

The Shaw and Matthews (1965) Pseudo-Neurological Scale (P-N) was administered to try and differentiate these two groups. The P-N scale correctly identified 10 out of 14 early multiple sclerosis patients as having neurological

impairment, and 11 of the 13 conversion hysteria patients as having no neurological impairment. Fisher's exact probability test of frequencies revealed a ($p < .005$). Therefore, the Shaw and Matthews P-N scale revealed "considerable ability" (p. 408) to differentiate early multiple sclerosis and conversion hysteria.

Previous researchers (Canter, 1951; Gilberstadt & Farkas, 1961; Lair & Trapp, 1962) suggested that MMPI profiles do not appear to be of much value in differentiating organics from nonorganics. The Dodge and Kolstoe (1971) study does not dispute those findings. The Hovey's Index was weak in the identification of early multiple sclerosis patients with neurological problems. Dodge and Kolstoe (1971) and Shaw and Matthews (1965) indicated that the P-N scale can differentiate neurological and pseudo-neurological disorders.

Schwartz and Krupp (1971) designed research to review and summarize earlier studies relative to the incidence of the 1-3/3-1 MMPI code type among 50,000 medical patients. The incidence of the code type was to be defined by three different sets of rules. Due to the extremely large size of the medical patient sample, research questions were:

> (a) What are the nontest factors associated with the different elevations of the 1-3/3-1 MMPI profile? (b) What are the nontest factors associated with patients of different ages with patients of different ages with the 1-3/3-1 MMPI

> profile? (c) Is the discrepancy between scales 1 and 2 and 3 and 2 related to differential non-test factors? (d) Is the elevation of K significantly related to the nontest factors associated with the 1-3/3-1 profile? (e) Could another scale, a moderator variable, increase the accuracy of the 1-3/3-1 MMPI profile for predicting nontest factors in similar profiles? (p. 90-91).

A total of 50,000 medical patients completed the MMPI at the Mayo Clinic from 1963-1965. Those profiles with the 1 and 3 highest among the routine clinical scales, and equal to or higher than a T score of 70 were selected initially. A total of 4,000 of the 50,000 met this original criteria. Additional selection criteria were numerous and complicated and can be found in the original study. The criteria resulted in a total of 60 men and 60 women subjects selected from each high, medium, and low 1-3/3-1 MMPI elevation. Two research assistants abstracted medical records of these subjects. Data included medical diagnoses and all symptoms and complaints reported to and recorded by the patients' physicians. Results revealed no chi square comparison that was significant at the .05 level of confidence. Therefore, Schwartz and Krupp (1971) concluded that elevations of the 1-3/3-1 did not signify a functional (nonorganic) diagnosis for a patient.

Schwartz, Osborne, and Krupp (1972) originally began

to explore the possibility of developing an MMPI scale which would differentiate nonorganic and organic diagnosis in medical patients. However, it was discovered that the age and sex of the patients in the nonorganic and organic groups were too diverse to warrant an investigation. Therefore, they discontinued their original intention.

Schwartz et al. (1972) then hypothesized that age and sex would improve their ability to predict organic versus nonorganic diagnosis in medical patients with the 1-3/3-1 MMPI profiles. A total of 178 patients, 86 males and 92 females, selected from the records of the Mayo Clinic were included as subjects. The sample was chosen from the profiles classified as 1-3/3-1 profiles with Halbower's Rules (1955), plus one additional rule. A stratified random sample was selected from this population on the basis of significant nonorganic components or psychiatric disorder. Included were patients with cancer, myocardial infarction, and osteoarthritis. The nonorganic category was composed of those patients with symptoms of physical disease without evidence of significant organic lesion or malfunction and without significant psychiatric disorder. Another group was comprised of those with psychiatric disease or disability without evidence of significant organic pathology. This group included those patients with tension headache, functional backache, irritable bowel syndrome, anxiety tension state, psychoneurosis, personality disorder, schizophrenia, and hypocondriasis.

Another group was composed of a mixture of patients with organic lesion or malfunction plus unrelated nonorganic symptoms with or without apparent psychiatric disorder. Incuded were patients with coronary insufficiency and psychoneurosis, lumbar disk syndrome, hysteria, inquinal hernia, and chronic tension condition. Psychophysiological disorders with organic lesions believed to be partially or completely resulting from emotional stress such as bronchial asthma or duodenal ulcer were not included in this study.

Data abstracted by the researchers included a medical diagnosis, sex, age, physician's notes, and pertinent comments found in letters sent to the referring physician. A psychiatrist reviewed the abstracted histories of each patient for purposes of classification. If a question arose that could not be answered, the complete medical records were reviewed. The data supported the use of age as a significant variable in decision making that concerns inferences of psychological or organic diagnosis given the prescence of the 1-3/3-1 MMPI profile. From their sample, clinical validity was greatest with males less than 40 years of age or older than 63 years of age. In females, the best identified group was less than 40 years of age.

These results revealed that age and to a minor degree the sex of a medical patient with the 1-3/3-1 MMPI profile statistically improved the association of medical diagnostic classification. Base rates for the organic group were

39%, while base rates for the nonorganic psychological group were 34%. The base rate for the mixed group was 28%. The relationship of age and medical diagnosis was stronger in males than in females.

Beutler, Karacan, Anch, Salis, Scott, and Williams (1975) designed their exploratory study to develop a diagnostic tool to assess methods of differentiating organic from nonorganic impotency in patients diagnosed by "nocturnal tumescence studies." (Karacan, 1970), p. 27). They reported that male impotence can result from any psychological and biological causes and that differentiating these groups by etiologies can be a difficult and serious matter. They stated that before surgery was to be attempted, a method to differentiate these patients into organic and nonorganic would be of substantial value. They believed such a method could be more valuable than nocturnal erection studies and involve less time and expense. Another reason for their research was to cross-validate the Male Impotence Test (MIT) (Senoussi, 1964), with groups that had been more objectively well defined as being impotent than in the original study (Senoussi, 1964). Also, a comparison of this test with the MMPI was proposed.

A total of 32 subjects of diverse socioeconomic and racial backgrounds, and diverse geographical locations were chosen for this study. All were referred for "inflatable prosthetic implantation" (p. 80) therapy as a cure

for their impotence (Scott, Bradley, & Timm, 1973). The sample was comprised of 30 whites and two non-whites, ages 17 to 67 (mean age of 45), with an educational level of six to 20 years (mean 13.0). A total of 15 were classified as having psychogenic (nonorganic) erectile problems and 17 as having biogenic (organic) incapacity for erections. Karacan's (1970) work revealed the clinical value of nocturnal penile tumescence cycles as being indicative of whether or not a patient was suffering impotence from organic or nonorganic etiology. Those patients for whom measurements exceeded a specific number were thought to have impotence of a nonorganic etiology. The MMPI and MIT tests were completed before the first night of measurement studies during sleep. The MMPI was routinely scored for 13 K corrected scales and the MIT for one single score indicating pathology. From 24 patients who took both tests and had two nights of nocturnal tumescense study, two groups were selected. One represented clear cut tumescence adequacy (N=6) and one tumescence inadequacy (N=4).

There were no significant differences between criterion groups on any of the MMPI scales. However, two patterns were revealed that appeared to distinquish the groups. In the first pattern four of the six subjects in the nonorganic group and only one of four subjects in the organic group produced an Mf score on the MMPI above a T score of 60. All six nonorganic subjects and only one

organic subject had any T score above 70. The MIT was not cross-validated and was found to be of little usefulness with this type of population. However, there were no clear personality variables evidenced suggesting that irrespective of organic or nonorganic impotence, a person's psychological reaction may be similar or dissimilar. The Mf scale of the MMPI suggested nonorganic cases were likely to have a T score above 60 on the MMPI. The authors concluded that those men with nonorganic impotence might reveal more "sexual concern, esthetic values and philisophical interests, than those with organic impotence" (p. 902). A second pattern, any scale on the MMPI with a scale score 70 T or more, discriminated the groups. They concluded this may indicate more psychological disturbance in men with nonorganic impotency. Results seemed to indicate impotency may occur in patients with various types of psychological difficulty.

Discrimination with the MMPI

Watson and Plemel (1978) conducted research to develop an empirical MMPI scale to differentiate brain damaged from nonbrain damaged psychiatric patients. Subjects were 100 patients who had been referred to the Psychology Service at a Minnesota Veteran's Administration Hospital. The subjects' complaints were such that physicians ordered they be evaluated for possible organic brain syndrome. An organic brain syndrome was diagnosed in 40 of the subjects.

The subjects' physician, nurse, and psychologist had to agree that the evidence from the tests was that of an organic brain syndrome before the subjects were included in this study. Psychological test data was not used for the diagnosis.

The control group included 60 patients diagnosed as nonorganic by their physician, nurse, and psychologist. Once again, the professionals had to agree clinically detectable brain damage was not evident. The mean age for the brain damaged group was 48.3 years and for the non-organic group, was 40.0 years.

Only those subjects with MMPI data less than one month old were included in this study. Each MMPI item was subjected to a chi square test to determine if it significantly differentiated the two groups. A total of 56 items were found to be statistically significant at the .05 level of confidence and were labeled the Psychiatric-Organic (P-O) scale. The scale was cross validated twice. Both validations produced statistically significant results. The Benton Visual Retention Test (BVRT) (Benton, 1946) results were then used along with the P-O scale to increase the discriminating power of the research.

The results revealed an average unweighted hit rate of 72% over the two separate samplings. These results are better than those obtained with the P-O alone (organics 77%; controls 52%). The P-O revealed "moderate accuracy" (p. 1132) to discriminate organic from nonorganic

psychiatric patients. It also revealed improved predictive power beyond the BVRT. Item overlapping with the 13 MMPI validity and clinical scales revealed information that cannot be gleaned from the MMPI scales independently. Watson and Plemel (1978) cautioned against using the P-O to discriminate organic from nonorganic disease process in nonpsychiatric settings.

Summary

Methods and procedures used to differentiate nonorganic medical patient groups from organic medical patient groups have been less than statistically significant and not of practical value in diagnostic use. There have been few reported successes in the effort to categorize individual patients as belonging to either group, organic versus nonorganic. Adding nontest variables to test data in an attempt to differentiate groups was one method of discriminating organic and nonorganic groups and individuals practically and statistically. Recognition and validation of individual items and groups of items on the MMPI was also suggested as a means to increase the accuracy of a diagnosis of organic versus nonorganic in medical patient populations (Osborne, 1979). Using the MMPI responses and medical history questions to discriminate groups and individual patients more successfully is the aim of this proposed research.

Chapter III

Instrumentation and Methodology

This chapter begins with a discussion of the instruments used in the study and consinues by describing the procedures, the sample and population. The chapter concludes with a presentation of the proposed methods for data analysis and practical communication.

Instrumentation

The Minnesota Multiphasic Personality Inventory (MMPI) and medical history questions from the Patients Personal History Form II were used to supply the data for analysis and comparison of the groups.

Minnesota Multiphasic Personality Inventory

The MMPI was used to gather personality information on each of the 100 medical patients in the study. The development of the MMPI began in 1937. The instrument was designed to have a sixth grade reading level (Hathaway & McKinley, 1967) and items were stated in the first person so people taking the test will assume it is a personal assessment. The content of the items was designed to be varied, and some items only have a faint

resemblance of face validity. All items were found by reference to empirical keying between a normal group and a criterion group. Scales were developed by comparing visitor groups with over 800 carefully studied clinical patients. The criteria of excellence for scale determination was whether a scale achieved a valid prediction of clinical patients when compared to staff diagnosis (Hathaway & McKinley, 1967). The MMPI is intended to be an aid to psychiatric case studies and an estimate of the seriousness of a particular patients' difficulty (Hathaway, 1965).

The MMPI was designed by Hathaway & McKinley (1943) to provide an objective assessment of some personality characteristics which influence one's level of personal and social adjustment. The test has uncomplicated directions and is considered to be a self administered test. It provides a personality measurement for literate adolescents and adults as well as validity scales to determine if the test has been answered in good faith. These validity scales are: (a) (? Cannot Say) indicating the number of questions that were left unanswered; beyond approximately 30 the test is generally thought to be invalid; (b) (L Lie) indicating the number of items considered to be answered in a nontruthful fashion; (c) (F Validity) indicating the number of items answered as a validity measurement, beyond plus or minus approximately 11 is generally considered faking in either a positive or

negative direction; and (d) (K Correction) indicating that number which has been developed to weight scales in a certain direction to aid in discriminatory power (Hathaway & McKinley, 1967).

Form R of the MMPI contains 566 items. The number of items included for each subject area are: General Health, 9; General Neurologic, 19; Cranial Nerves, 11; Motility & Coordination, 9; Sensibility, 5; Vasomotor, 10; Cardio-respiratory, 5; Gastrointestinal, 11; Genitourinary, 5; Habits, 19; Family & Marital, 26; Occupational, 18; Educational, 12; Sexual Attitudes, 16; Religious Attitudes, 19; Political Attitudes, 46; Social Attitudes, 72; Affect Depressive, 32; Affect Manic, 24; Obsessive-Compulsive, 15; Delusions, 3; Phobias, 29; Sadistic, 7; Morale, 33; Masculinity-Femininity, 55; and Lie, 15 (Hathaway & McKinley, 1951).

Thirteen overlay keys are needed to score Form R of the MMPI. To obtain raw scores, each key is laid over the answer sheet and the number of marks showing through the holes of the key are counted. Raw scores counted and plotted are then converted to T scores. As a correction factor, K, was developed to provide more discriminatory power to scales Hs, Pd, Sc, and Ma of the MMPI. Computer interpretation methods have been developed for use with the MMPI, but clinical interpretation requires knowledge and experience to be accurate and sensitive to individual patients.

Scores on the MMPI are reported in the form of standard scores with a mean of 50 and a standard deviation of 10. MMPI scores are plotted on a profile sheet specifically designed for this purpose. Separate profile sheets are needed for males and females, respectively. A score of 70 or more, a minimum of two standard deviations above the mean, is generally considered aberrant. However, an assumption cannot be made that a high score on one scale is equivalent to a high score on another scale of the MMPI. Psychological sophisitication and study are needed to interpret MMPI results in a meaningful manner (Anastasi, 1969).

Reliability. The test technical manual (Hathaway & McKinley, 1967) reports test-retest reliability coefficients. Hathaway and McKinley (1942) used the Card Form of the MMPI with unselected normals. They reported reliabilities for six scales of the MMPI. Retest intervals ranged from three days to more than one year. Reliability coefficients were: Hypocondriasis, .80; Depression, .77; Hysteria, .57; Psychopathic Deviate, .71; Psychasthenia, .74; and Hypomania, .83 (Hathaway & McKinley, 1967).

Cottle (1949) reported test retest coefficients for unselected normals who took both the Card Form and the Group Form within one week. A total of 12 scale coefficients were reported: Lie, .46; Validity, .75; Correction, .76; Hypocondriasis, .81; Depression, .66; Hysteria, .72; Psychopathic Deviate, .80; Masculinity-Femininity, .91;

Paranoia, .56; Psychasthenia, .90; Schizophrenia, .86; and Hypomania, .76 (Hathaway & McKinley, 1967).

Holzberg and Alessi (1949) reported test retest coefficients for unselected psychiatric patients who took both the complete version and a shortened version of the Card Form within three days. Results were given on 12 scales: Cannot Say, .75; Lie, .85; Validity, .93; Hypocondriasis, .67; Depression, .80; Hysteria, .87; Psychopathic Deviate, .52; Masculinity-Femininity, .76; Paranoia, .78; Psychasthenia, .72; Schizophrenia, .89; and Hypomania, .59 (Hathaway & Mckinley, 1967).

Butcher and Gur (1974), Goldberg and Jones (1969), Schofield (1948), Ullman and Wiggins (1962), Butcher and Tellegen (1978) report consistent findings of 87% of items being answered in the same direction on retesting with the MMPI. These studies suggest the MMPI has proven to be a reliable instrument in their research studies.

Validity. One of the recent categories of voluminous research using the MMPI has been in the area of medicine with the physically ill patient. Success has been noted in identifying patients' emotional reactions to surgery and in predicting mortality in females scheduled for open heart surgery. This instrument also has been used with substantial accuracy in predicting which patient will respond to lithium therapy for depression. Scales have been developed that discriminate brain damage from schizophrenia. The MMPI has been reported by King (Buros, 1978) to be more

accurate than a neurologist in differentiating organic from nonorganic neurologic symptoms.

Meehl and Dahlstrom (1960) have pointed out that neurotic, psychotic, and indeterminate classifications have been ascertained with 76% accuracy when this test was used with a sample population of 988 cases. Lingoes (Buros, 1965) indicated the MMPI has been documented to be effective in distinquishing normal persons from persons with emotional and adjustment problems. Adcock (Buros, 1965) believed the empirical validity of the MMPI was self evident when the ability of the instrument to predict with accuracy, diagnostic categories for patients, was established. He believed this indicated the internal validity of the test.

King (Buros, 1978) stated the MMPI stands alone among currently used tests with the capacity to assess personality with objective accuracy. A review of research by King (Buros, 1978) consistently demonstrated the MMPI is the best predictive measurement available.

Normative Data. The original normative data was derived from a sample of about 700 individuals who were considered by Hathaway & McKinley (1942) to be representative or a cross section of the Minnesota population. The sampling was considered adequate for age 16 to 55 of both sexes. Data are also available on 250 precollege and college students, a group which Hathaway and McKinley (1967) stated was representative of a reasonably good

cross section of college entrance applicants.

Patients Personal History II (PPH-II)

Questions from the Patients Personal History II form (PPH-II) published by the American Society of Internal Medicine were used in this study. This instrument is a medical history questionnaire physicians with a specialty in internal medicine commonly use to develop a data base from which to evaluate a specific patient. Questions that could be answered dichotomously were included. A copy of the questions used in this study is included in Appendix A.

In 1973 a documentation committee from the American Society of Internal Medicine initially developed the basic information they considered needed to treat a hypothetical 65 year old male patient. First, they determined the leading cause of death for white males and then decided what significant information was needed in order to be well informed about each patient. Family history, a systems review, physical examination, and laboratory information were considered to have face validity in the establishment of a diagnosis for a medical problem. The committee then determined etiologies for less serious problems and analyzed each to determine what was needed to treat these disabilities. The Committee then attempted to cover areas they considered important which had not earlier been covered in the serious and less serious categories of disease process which they reviewed (PPH-II, 1980). This

writer is not familar with any use of this instrument in a psychometric fashion which would provide reliabilities or validity studies in statistical terminology.

Methodology

Sample

The sample for this study came from the patient population of one large southcentral United States medical clinic. The licensed physicians with a specialty in internal medicine and gastroenterology at this clinic see hundreds of patients annually to determine if an organic malady exists to account for their pain symptomatology.

The 100 patients comprising the sample for this study were those who sought the advice and consultation of one of the primary care physicians for physical pain symptoms. Patients had all been subjected to similar admissions procedures requiring medical history questions. A total of 50 females and 50 males above the age of 21 years were selected for inclusion in this study. Mean ages for the subjects are give in Table 1.

Table 1

Subject Mean Ages for 94 in the Classification	
Grand Mean for 94 Medical Patients	33.95
Organic Group Mean (46)	37.10
Nonorganic Group Mean (48)	30.80
Male Group Mean (46)	35.42
Female Group Mean (48)	32.48
Nonorganic Group Males (25)	30.48
Organic Group Males (21)	40.36
Nonorganic Group Females (25)	31.12
Organic Group Females (23)	33.84

From the medical history questions, a medical consultation-examination, and necessary laboratory studies, a decision was made by the physicians with respect to what medical measures should be taken to treat the patients' conditions. As a patients' significant organic possibilities were ruled out, their difficulties were more likely to be considered primarily a nonorganic disability and the patients were referred to the clinical psychologist for corroboration of the nonorganic diagnosis.

Those 50 patients, 25 females and 25 males, considered to be nonorganic had already completed the psychologists' battery for evaluation and corroborative diagnosis. The MMPI was part of that battery. This group of patients was selected by the researcher based on their case histories and their records were manually reviewed. Nonpersonally identifying data from the MMPI and the medical history questions were abstracted for analysis. For each patient there was a medical history and an MMPI protocol to be encoded into the computer for analysis.

The organic group for this study came from the same patient population as the nonorganic group. This group was composed of those patients who had undergone the same basic admissions procedures as the nonorganic group. From a review of physical findings, medical examinations, and laboratory studies, a decision was made by the physician as to whether the patient was primarily organic or primarily nonorganic. Only those patients who were considered to be organic were selected for participation in this group. All were considered to be literate and were caucasian. All organic patients were asked to sign a letter giving permission to have nonidentifying data used in a research project benefiting the author in the completion of his doctorate at Oklahoma State University. A copy of that permission letter is included in Appendix B.

Test Administration

The MMPI and the medical history questions were gathered on the nonorganic patients before the organic patients. The nonorganic patients' records were on file in the office of the clinical psychologist who cooperated in the study. The MMPI and the medical history questions were obtained from the organic group of patients while they were in a major metropolitan hospital for treatment. Patients were asked to complete the first 400 items of the MMPI and the 50 items of the medical history questionnaire. A Physician's Assistant (PA) was employed by the researcher to gather the necessary MMPI, permission letter, and medical history questions on each patient included in the group. The MMPI and medical history questionnaire were then collected for analysis.

Data Analysis

To begin the systematic treatment of this data a Pearson correlation was calculated with 100 medical patients as one grouped variable and the items 1 to 450 as the other variable. Each item was correlated with group membership. The items found to be significantly correlated with group membership greater than .30 are included in Appendix C with the corresponding coefficient of correlation. A total of 71 items (predictor variables) were selected.

The 71 items were then used to develop a multiple regression equation to predict group memberhip. Results of the Stepwise Multiple Regression analysis will be found in Chapter IV.

Discriminant function analysis is the treatment of choice when a researcher has known diagnostic groups and wishes to set up a method of decision making to classify future cases (Huck, Cormier & Bounds, 1974). In this study, discriminant function analysis followed a multiple regression analysis. The regression equation in discriminant function analysis is a regression equation with the dependent variable representing either organic or non-organic medical patient group membership. Items gathered with the Pearson correlation were used as the independent predictor variables to develop the discriminant function analysis and the multiple regression analysis. The resultant discriminant function predictions are designed to maximally discriminate subjects in the study (Kerlinger & Pedhazur, 1973).

Chapter IV

Presentation and Analysis of the Data

The results of the Pearson correlation, a Stepwise Multiple Regression Analysis, and a Stepwise Discriminant Function Analysis on the medical patients studied is presented in this chapter. The 450 questions answered by each of the subjects were used to predict to which group a medical patient would belong (organic versus nonorganic).

Hypothesis

Can a method be derived to differentiate patients with organic versus nonorganic abdominal pain symptoms with the use of the MMPI data and medical history questions?

For proper use of multivariate statistical procedures the number of predictor variables had to be reduced to a number less than the number of subjects. A Pearson correlation matrix was calculated for group membership as one variable and each of the items 1 to 450 as the other variable. A total of 71 items were found to be correlated .30 or greater with group membership (see Appendix C).

A Stepwise Multiple Regression Analysis was developed using the 71 items from Pearson correlation. The 71 items

were used as predictor variables. The dependent variable was group membership. The multiple regression equation reduced the number of items to 15 which produced the most statistically significant prediction equation. Final statistics of the multiple regression analysis are presented in Table 2.

Table 2

Final Statistics of the Multiple Regression Analysis

Analysis of Variance

	D. F.	Sum of Squares	Mean Square
Regression	15	45497.47838	3033.16523
Residual	75	7072.67547	94.30234

F = 32.16426 Significant F = .0000

Multiple R: .93030 R Square: .86546

Adjusted R Square: .83855 Standard Error: 9.71094

The variables found significant in the multiple regression analysis and the coefficients are reported in Table 3.

Table 3

Significant Variables and Coefficients in Multiple Regression Analysis

Variable	B	S E B	Beta	T	Sig. T
Item 336	5.91333	2.69261	.11747	2.196	.0312
Item 094	6.24506	2.71827	.12641	2.297	.0244
Item 165	12.63689	2.60489	.26274	4.851	.0000
Item 124	12.66990	2.71573	.25776	4.665	.0000
Item 030	13.60991	2.73327	.24244	4.979	.0000
Item 135	6.64254	2.48404	.13677	2.674	.0092
Item 358	5.88050	2.78263	.10781	2.113	.0379
Item 212	10.70203	3.20253	.15581	3.342	.0013
Item 428	10.41659	3.33407	.15165	3.124	.0025
Item 379	11.60126	2.82709	.20977	4.104	.0001
Item 373	9.19451	2.63213	.18790	3.493	.0008
Item 308	7.44559	2.48221	.15330	3.000	.0037
Item 234	6.32999	2.41932	.13167	2.616	.0107
Item 301	-7.00888	2.81930	-.13174	-2.486	.0151
Item 359	6.02073	2.77939	.11443	2.166	.0335

To further analyze this data a Stepwise Discriminant Function Analysis was calculated with the set of 71 items. Nine subjects of the 100 were deleted from analysis due to at least one missing predictor variable. This disciminant analysis produced a total of 26 items which maximally differentiated the two groups (organic versus nonorganic). Final statistics of the discriminant function analysis are presented in Table 4.

Table 4

Final Statistics of Discriminant Function Analysis

Eigenvalue	Percent of Variance	Cumulative Percent
5.62189	100.0%	100.0%
Canonical Correlation		**Wilks' Lambda**
0.9214042		0.1510143
Degrees of Freedom	**Chi-Squared**	**Significance**
26	143.67	0.0000

Table 5 includes group centroids in the discriminant

analysis.

Table 5

Discriminant Function Group Centroids

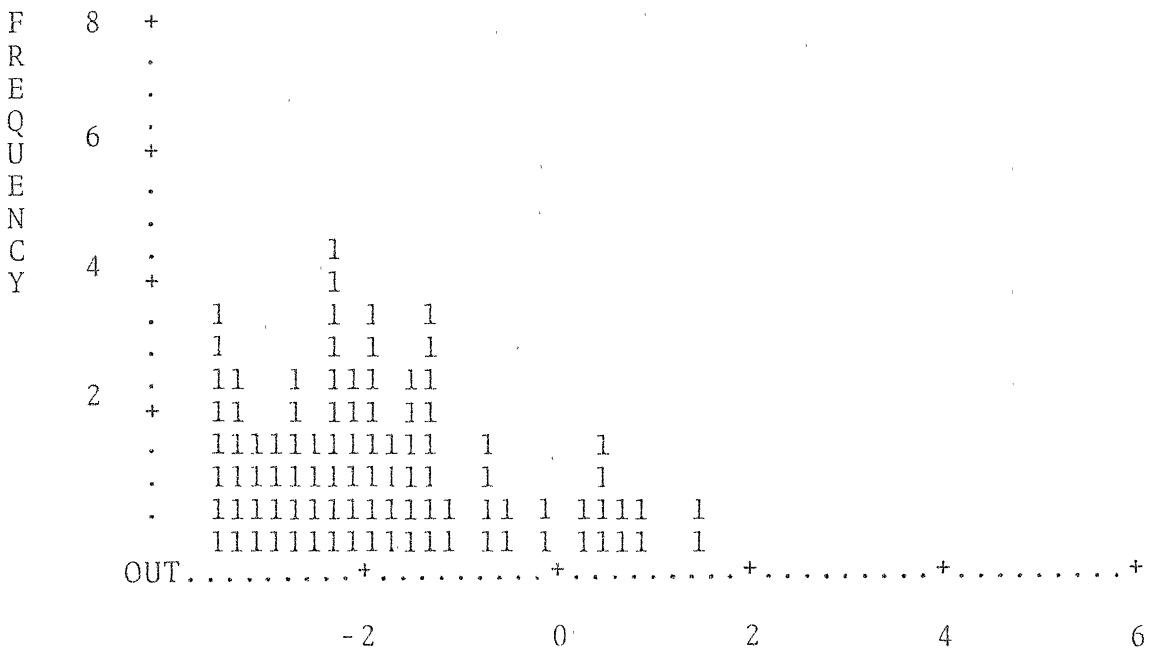
Group	Function
1	-2.37076
2	+2.31922

Figure 1 presents a Group 1 Histogram developed with the discriminant function analysis. It reveals clear substantial clustering of Group 1 subjects (nonorganics). Figure 2 present a Group 2 Histogram developed with the discriminant function analysis. It reveals clear substantial clustering of Group 2 (organics). Figure 3 presents a combined Group 1 and Group 2 stacked Histogram developed with the use of the discriminant function analsysis. It reveals clear separation of the groups from a group centroid of -2.37076 to +2.31922.

Table 6 presents Standardized Discriminant Function Coefficents with descending significance of weights.

Figure 1

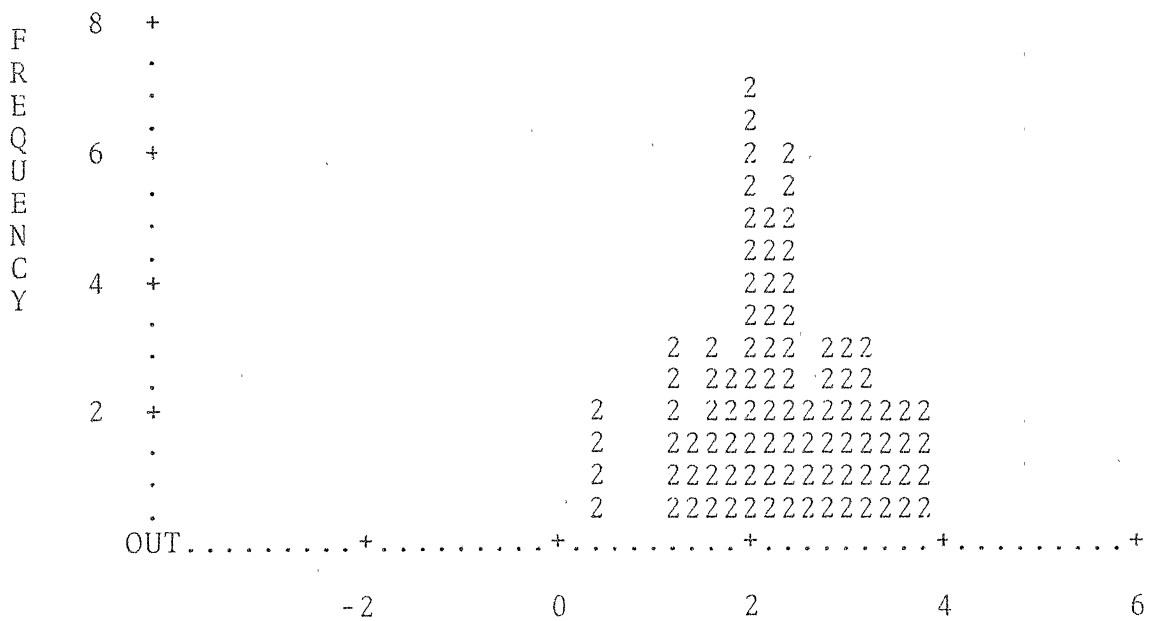
Histogram for Group 1 (Nonorganics)



Group 1 (Nonorganics) Centroid -2.37076

Figure 2

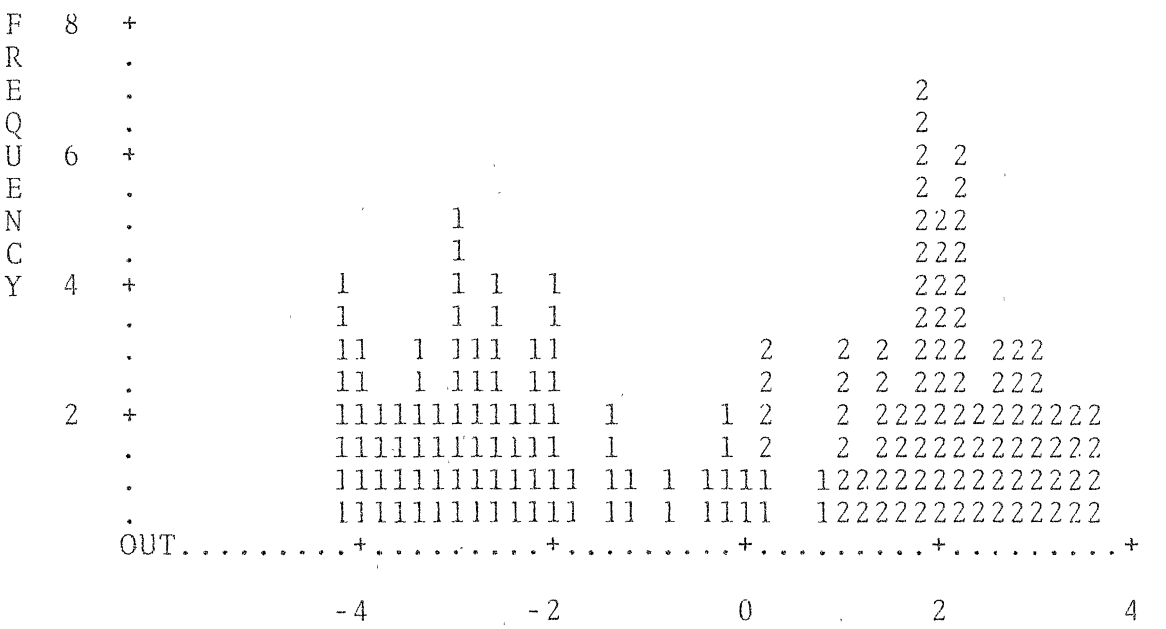
Histogram for Group 2 (Organics)



Group 2 (Organics) Centroid +2.31922

Figure 3

Histogram for Group 1 and 2 Stacked



Group 1 and 2 Stacked

Table 6

Discriminant Function Coefficients

Item 062	-0.76167
Item 437	0.61513
Item 081	0.60511
Item 055	0.59282
Item 340	-0.56817
Item 145	-0.55273
Item 135	0.53926
Item 142	0.53609
Item 301	-0.53402
Item 016	-0.52333
Item 072	-0.46127
Item 245	-0.41090
Item 373	0.40289
Item 094	0.39230
Item 024	0.38174
Item 125	-0.37866
Item 285	-0.35142
Item 216	-0.35110
Item 314	0.32313
Item 030	-0.28307
Item 266	0.25979
Item 093	-0.26045

Item 148	0.21854
Item 283	0.21664
Item 379	0.19300
Item 428	0.18478

Table 7 presents final prediction statistics with the discriminant function analysis. A total of six subjects were deleted from final classification due to at least one missing predictor variable. A total of 94 subjects made up the final classification results.

Table 7

Final Classification Results

Group	No. of Cases	Predicted Group	
		1	2
		45	3
		93.8%	6.3%

Group	No. of Cases	Predicted Group	
2	46	1	2
		0	46
		0%	100%

Percent of Grouped Cases Correctly Classified

96.81%

Chapter V

Summary, Conclusions and Recommendations

Summary

The purpose of this study was to explore the feasibility of discriminating between organic and non-organic medical patient groups. A total of 100 medical patients from a large southcentral United States medical clinic were the subjects for this study. All medical patients were admitted in a similar fashion and examinations and physiological testing was done in a routine manner to rule out serious physical illness or disease to account for their pain symptoms.

A total of 50 of those 100 patients for whom no evidence of organic malady was found to account for their pain symptoms were evaluated by the clinical psychologist at the medical clinic. A part of the psychologists' battery for diagnosis was the Minnesota Multiphasic Personality Inventory. Subjects' responses to the Patients Personal Hsitory II form were already in their files. After complete evaluation, these 50 patients were designated as primarily to be suffering a nonorganic etiology for their pain symptoms and were included in the nonorganic

group for this research. Those 50 patients who were established objectively by their physicians to have a demonstrable organic illness to account for their pain symptoms were designated the organic group of patients.

From the first 400 answers given to the MMPI questions and the 50 answers to the medical history questionnaire, 71 items were found to be highly correlated with patient group membership to the .30 or greater degree. With these 71 items, a multiple regression analysis and a discriminant function analysis was conducted to discriminate which items determined patient membership.

For multiple regression analysis and the Pearson correlation, none of the 100 patients were excluded because of missing answers to predictor variables. For discriminant function analysis nine subjects were excluded due to at least one missing predictor variable. For the classification results using the discriminant function analysis six subjects were excluded due to missing predictor variables.

A total of 15 items were found with multiple regression analysis to provide the best prediction equation of patient membership. A total of 26 items were found with discriminant function analysis to account for 100% of the between groups variance. Final classification results predicted the membership of 94 of the 100 medical patients. From these results it appears this method reveals a substantially accurate method of prediction of medical patient

group membership. A full 100% of the patients in Group 2 (organic) were accurately identified with the discriminant function analysis of the data. A total of three cases of the 94 were found to be missplaced in Group 1 (nonorganic). This means there were three subjects of the 48 member non-organic group who were found with the discriminant function analysis to be placed in the wrong group. The total rate of accurate prediction for the 94 of 100 medical patients was 96.81%.

Conclusion

The following conclusion is drawn from the results of this study. The evidence does suggest that this empirical method can predict medical patient group membership (organic versus nonorganic). It does provide substantial evidence for predictions of medical patient group memberships to be made with this paper and pencil test.

As previously stated, this method was never intended to replace the expertise of physicians and psychologists in the diagnostic process. This project was intended to provide a method to add to the precision of the psychologist and physician when attempting to diagnose patients with an inconclusive pattern of symptomatology and objective findings. It appears this method is a step in that direction.

It appears there is no one scale of the MMPI that encompasses all of the items which differentiated the two

groups so effectively. The questions which differentiated groups seem to represent a pervasive pessimistic attitude about life. Items and the scales on which they appeared were: Lie, 5; Validity, 1; Correction, 6; Hypocondriasis, 3; Depression, 3; Hysteria, 4; Psychopathic Deviate, 5; Masculinity-Femininity, 2; Paranoia, 5; Psychasthenia, 6; Schizophrenia, 5; Hypomania, 3; and Social Introversion, 4. Some of the items were repeated on different scales. These items seem to reflect feelings of guilt, grandiosity, distrust, perfectionism, alienation, pessimism, obsessions, compulsions, morality, frustration, agression, and four items which actually report some somatic difficulty.

Recommendations

1. Repeating this study with a larger number of subjects may provide more conclusive evidence to use in the diagnosis of individual medical patients.

2. Obtaining a sample of patients from the major metropolitan medical centers across the nation could provide a more representative sample.

3. The researcher is preparing a commercially available index for routine use by physicians and psychologists.

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APPENDIXES

APPENDIX A

MEDICAL HISTORY QUESTIONS

Medical History Questions Taken From PPH-II

Item401	Sex	(M)True	(F)False
Item402	Marital Status	(M)True	(U)False
Item403	Rheumatic Fever	True	False
Item404	Angina Pectoris	True	False
Item405	Heart Attack	True	False
Item406	High Blood Pressure	True	False
Item407	Anemia	True	False
Item408	Kidney Disease	True	False
Item409	Gout	True	False
Item410	Hay Fever	True	False
Item411	Asthma	True	False
Item412	Emphysema	True	False
Item413	Diabetes	True	False
Item414	Cancer	True	False
Item415	Nervous Breakdown	True	False
Item416	Thyroid Disease	True	False
Item417	Stomach Ulcers	True	False
Item418	Gallbladder Disease	True	False
Item419	Jaundice	True	False
Item420	Hepatitis	True	False
Item421	Colitis	True	False

Item422	Arthritis	True	False
Item423	Migraine Headaches	True	False
Item424	Smoke Cigarettes	True	False
Item425	Drink Alcohol Regularly	True	False
Item426	Drink Coffee	True	False
Item427	Trouble Sleeping	True	False
Item428	Presently Unemployed	True	False
Item429	Dissatisfied with your work	True	False
Item430	Have more than 1 job	True	False
Item431	Work more than 60 hours per week	True	False
Item432	Are you unable to work due to a dissability	True	False
Item433	Married more than 1 time	True	False
Item434	Recently married or divorced	True	False
Item435	Problems in your marriage	True	False
Item436	Sex Problems	True	False

Item437	Recent death of a relative or friend	True	False
Item438	Family member with drug or alcohol problems	True	False
Item439	I did not complete high school	True	False
Item440	I did not attend or complete college	True	False
Item441	Eat less than three meals a day	True	False
Item442	Exercise less than three times weekly	True	False
Item443	Active in political, community or church activities	True	False
Item444	Worry a lot about your health	True	False
Item445	Usually feel tired or worn out	True	False
Item446	Feel depressed a lot of the time	True	False
Item447	Change in eating habits recently	True	False
Item448	Have a poor appetite	True	False

Item 449	Are you bothered by constipation	True	False
Item 450	Do you take laxatives regularly	True	False

APPENDIX B

PATIENT PERMISSION LETTER

Patient Permission Letter

PLEASE PRINT YOUR NAME AND ADDRESS BELOW:

Name:_____

Address:_____

_____

I being 21 years of age or older do hereby give my permission to have this information and test I will be filling out to be used in a research project. The test I will be taking will be the Minnesota Multiphasic Personality Inventory.

This information will be used by Max M. Edgar, a doctoral candidate at Oklahoma State University, to complete his degree requirements. No one besides the above named person and the doctors of the XXXXXXXXXXX Medical Clinic will have access to any information which could identify me personally as having completed these forms and test. The research or report of the research will not contain any information which could identify me personally.

I also hereby give my permission for the doctors at the XXXXXXXXXX Medical Clinic to use this information

in benefit of my treatment and care at the XXXXXXXXXX Medical Clinic.

Signature:_____

Date:_____

Witness:_____

APPENDIX C

ITEMS FROM PEARSON CORRELATION

Items From Pearson Correlation (.3 or greater)

Item 008	-.3166
Item 011	.3200
Item 015	.5428
Item 016	.3657
Item 024	.4812
Item 028	.3124
Item 030	.3228
Item 039	.5335
Item 044	.3298
Item 052	.3304
Item 055	-.3009
Item 062	.3122
Item 064	.3536
Item 067	.3176
Item 072	.3268
Item 080	.3693
Item 081	.3178
Item 093	.3991
Item 094	.6059
Item 109	.3567
Item 111	-.3093

Item 124	.4623
Item 125	.3762
Item 127	.3201
Item 133	-.3272
Item 135	.3151
Item 142	.3192
Item 145	.3090
Item 148	.3501
Item 157	.4474
Item 158	.3156
Item 165	.3896
Item 181	.5204
Item 182	.3288
Item 212	.3242
Item 216	.3033
Item 217	.4159
Item 218	.3067
Item 234	.3670
Item 244	.3359
Item 245	.3850
Item 259	.3248
Item 262	-.3010
Item 266	.3494

Item 278	.4042
Item 283	.3294
Item 285	.3108
Item 299	.3959
Item 301	.3767
Item 305	.3731
Item 308	.4620
Item 312	.4444
Item 314	.3783
Item 315	.3207
Item 322	.4894
Item 328	.3046
Item 335	.4311
Item 336	.5784
Item 337	.4339
Item 338	.3731
Item 340	.4530
Item 357	.3476
Item 358	.4184
Item 359	.4484
Item 366	.3139
Item 368	.3450
Item 372	.3724
Item 373	.3417

Item 379	.4436
Item 428	.3081
Item 437	.3328
Total 71 Items	

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VITA

Max Morris Edgar

Candidate for the Degree of

Doctor of Philosophy

Thesis: AN EMPIRICAL METHOD TO DIFFERENTIATE ORGANIC FROM NONORGANIC MEDICAL PATIENTS

Major Field: Applied Behavioral Studies

Biographical:

Personal Data: Born in Enid, Oklahoma, April Fools Day and Easter Sunday in 1945, the Son of Harry Thomas Edgar and Alma Fern Johnson Edgar.

Education: Graduated from Perry High School, Perry, Oklahoma, in May 1963; received Bachelor of Arts degree in Psychology from Central State University, in July 1970; received Master of Education degree in Counseling Psychology from Central State University in May 1976; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in December, 1984.

Professional Experience: School Psychologist Internship, Department of Psychology, Central State University, Spring 1976; Psychological Assistant, State Health Department Guidance Center, 1976-1977; Psychometrist, State Department of Education, 1978-1979; Clinical and Counseling Psychology Internship, State Health Department Guidance Center, 1979-1980; Psychometrist, State Department of Education, 1980 to present.

Professional Organizations: American Psychological Association (Associate); A.P.A. Division of Clinical Child Psychology; Society of Pediatric Psychology; A.P.A. Division of Child, Youth, and Family Services; A.P.A. Division of Psychological Hypnosis; A.P.A. Psychopharmacology Division.