1975

A comparison of the generalizability of MMPI code-type correlates selected by two statistical methods.

Ian D. Berks
University of Windsor

A COMPARISON OF THE GENERALIZABILITY OF MMPI CODE-TYPE CORRELATES SELECTED BY TWO STATISTICAL METHODS

by

Ian D. Berks

B.A. (Honours), University of Windsor, 1973

A Thesis
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in partial fulfillment of the
requirements for the Degree
of Master of Arts at the
University of Windsor

Windsor, Ontario, Canada
1975

ABSTRACT

Two statistical methods of code-type correlate selection, chi-square and percentage endorsement, were compared to determine if the generalizability of resultant MMPI actuarial cook-book material was improved by the use of more stringent statistical methods. Actuarial tables were constructed using chi-square and percentage frequency statistics on a sample of 492 enlisted airforce personnel and their dependents who had received the MMPI as part of a routine psychological evaluation and upon whom a Mental Health Evaluation Form was available. Generalizability was defined as being represented by the number of times a given code-type correlate received support by various MMPI literature sources. No significant differences were found in the distribution of the amount of support received by adjectives selected by chi-square statistic ($p<.05$) or by percentage endorsement (>49%).

Failure to demonstrate differences was not found to be due to any bias in the statistical methods of correlate selection used by those literature sources that supported a given correlate. A comparison of generalizability at more conservative levels of chi-square probability and percentage endorsement did not demonstrate statistically significant differences in the amount of support received by adjectives selected at various levels within each method of code-type correlate selection. The use of more conservative statistical

methods of selecting MMPI code-type correlates did not improve the generalizability of correlates across various literature sources.

The effects of methodological limitations on these results were discussed. The discussion was involved with the meaning of the methodological issues involved in actuarial cook-book construction. It was also considered relevant to deal with the restrictions of the content of such cook-books.

ACKNOWLEDGEMENTS

I would like to express my thanks to the members of my committee for their aid and encouragement in the completion of this thesis. My thanks to Dr. Raymond Daly for acting as chairman, to Dr. David Lachar for his great help and guidance, and to Drs. Martin Morf and Ralph Cowan.

I would like to thank Dr. J. Grisell of the Computer Laboratory at Lafayette Clinic, Detroit, for the completion of the many calculations he performed, and my thanks and appreciation to Pat Sanr for the hours she spent deciphering my notes and typing this thesis.

to Mary, I express my loving thanks.

Believing that the guy ahead of you
knows what he is doing is the
most dangerous religion.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The Minnesota Multiphasic Personality Inventory (MMPI) is probably the most widely used psychological test in the routine evaluation of patients seen in the mental health profession. The popularity of the test may well be due to the little clinical time required for administration and the easing of the burden of interpretation by the use of cook-book materials. Concern by some authors (Gynther, Altman and Sletten, 1973; Morf and Krane, 1973) about the widespread use of this method of interpretation, prior to complete evidence that the methods of cook-book construction are empirically valid, is well noted. It was to further provide evidence on MMPI cook-book validity that this study was undertaken.

The MMPI consists of ten clinical scales devised empirically by determining those inventory items that were differentially endorsed by various clinically defined groups as compared to a defined non-pathological control group. Two of these scales reflect characterological dispositions (Scale 5, Masculinity-Femininity; Scale 0, Social Introversion) and the other eight reflect basic clinical types based on Kraepelenian classifications. The latter are Scale 1, Hypochondriasis; Scale 2, Depression; Scale 3, Hysteria; Scale 4, Psychopathic Deviate; Scale 6, Paranoia; Scale 7, Psychasthenia; Scale 8, Schizophrenia; and Scale 9, Hypomania.

Three additional scales (L, F, K) reflect test taking attitude, and act as validity indicators.

The early clinical interpretations of MMPI profiles were based on the knowledge of the clinician regarding the relevant attributes of the clinical group represented by the highest elevated clinical scale (above 70T). The failure to demonstrate the homogenity of scales (e.g., Comrey, 1958; Welsh and Dahlstrom, 1956) and the observation that most patients obtained elevations on more than one clinical scale of the MMPI eventually led away from the interpretation of individual scales and to a reliance on an analysis of the configuration of the test profile in interpretation. Profiles would then be defined by those clinical scales that exceeded two standard deviations from the norm; i.e., the scale elevation exceeds 70T. Such profiles defined by one, two or more clinical scales were not interpreted by a literal attribution to the patient of the characteristics of a nosologic group, but on the behavioural consistencies that were demonstrated to be associated with the recurring configuration. This constituted the essence of actuarial prediction. Utilizing this method, a patient that obtained elevations on Scale 2 and Scale 7 would not be diagnosed as a depressed psychasthenia, but might be described as an older inpatient whose difficulties were manifested in his personality, primarily of a neurotic nature. These patients are bright intellectually and show good marital adjustment. The symptoms that they report include depression, guilt and worrying. Physical complaints are anorexia, insomnia and chest

pains. They are seen as perfectionistic, rigid and religious (Marks and Seeman, 1963).

The interpretation of test profiles became increasingly systematic and formal by the determination of many empirical correlates for various MMPI profile types. This endeavor utilized both single scale indices (Black, 1953; Block and Bailey, 1955; Gough, McKee and Yandell, 1955; Guthrie, 1958; Hathaway and Meehl, 1951; and Hovey, 1956P and the two highest scales to define the profile (Black, 1956; Guthrie, 1949; Hathaway and Meehl, 1951). As the psychopathological categories that the scale names reflected were no longer clearly represented in actuarial methods of the interpretation of profiles, the scales could be identified by their numeric designation in a coding system (Hathaway, 1956; Welsh, 1956).

The initial attempts at actuarial prediction were further encouraged by Halbower's (1955) doctoral dissertation that substantiated the utility of the actuarial approach. In Halbower's study, frequently occurring profile types based on the Hathaway code were identified and cook-book descriptions were constructed. The descriptions thus generated were used to describe patients from an independent sample of inpatients and outpatients. These cook-book descriptions, when compared to the descriptions given by the therapists who saw the patients, obtained "validity" coefficients that were better than those obtained by the descriptions generated by blind clinical interpretation of the patient profiles. This indication of the utility and accuracy of cook-book interpretive methods led Meehl in his presidential address to the Midwest

Psychological Association (1956) to call for a complete cook-book system for psychometric interpretation.

The publication in 1963 of Marks and Seeman's comprehensive study comprised the first available MMPI cook-book. After identifying code-types by a complex contingency method that relied heavily on the clinical experience of the investigators, Marks and Seeman utilized the Q-sort method on 108 descriptive statements and the percentage frequency of 225 case history items to obtain correlates. This material is presented as actuarial tables, that divide the 15 clinical and K+ code-types into ranked quartiles for each statement and item, from which the clinician may choose relevant data. This cook-book, based on private hospital female patients and utilizing a complex rule system to define code-types, has shown limited applicability to other populations (Briggs, Taylor and Telegen, 1966; Fowler and Coyle, 1968; Gynther, 1972; Huff, 1965; Owen, 1970; Pauker, 1966; Payne and Wiggins, 1968; Porier and Smith, 1971; Shultz, Gibeau and Barry, 1968; Sines, 1966). The profiles identified by Marks and Seeman were shown to represent a low percentage of the patient profiles seen in other populations.

Gilberstadt and Duker (1965) present cook-book material on male Veterans Administration Hospital patients. Nineteen code-types were identified as representing cardinal types or by the high frequency of their occurrence. Relying on a nomograph approximation for significant differences in frequency of occurrence (Lawshe and Baker, 1950) and a cut-off of 50 percent frequency occurrence within a code-type, the authors present descriptive summaries of the complaints,

traits and symptoms of those individuals represented by each code-type. Clinical information is also included as discussion. This cook-book, which requires complex rules to define code-types, also has shown limited applicability in other settings (Fowler and Coyle, 1968; Own, 1970; Payne and Wiggins, 1968; Porier and Smith, 1971; Shultz, Gibeau and Barry, 1968; Vestre and Klett, 1969).

Lachar (1968) has also provided correlates for MMPI code-type profiles. This study, which utilized a simple two-point code system rather than the complex rules used in the studies of Marks and Seeman or Gilberstadt and Duker, further indicates the limited applicability of cook-book materials outside the sample that they were constructed on.

Reflecting on the limited applicability of available MMPI cook-book interpretive systems, Gynther, Altman and Sletten (1973) argued that cook-books should be constructed using the reciprocal two-point code system as it accounts for patient profile variance as well as the more complex rule systems of Marks and Seeman and Gilberstadt and Duker. This coding procedure allows for cook-books to be constructed that would theoretically cover all profiles in all patient populations. Gynther et al., (1973) provides other useful information pertaining to the methodological considerations of cook-book construction. It was shown in this study that male and female profiles generally obtained similar correlates. This may allow the clinical use of the data from the major works of Marks and Seeman and Gilberstadt and Duker that have a major sex bias.

The desire of researchers to empirically validate the methodologies of cook-book construction must inevitably lead to the consideration of the statistical methods used to select correlates. The use of chi-square to obtain discriminative correlates may be most useful for differential diagnosis, (e.g., Gilberstadt and Duker, 1965; Gynther, Altman and Sletten, 1973), however, high frequency correlates must be considered for descriptive purposes (e.g., Marks and Seeman, 1963). Not all clinicians will be familiar with high base rate descriptors over all clinical settings. It would be premature to accept one method of selection as being superior to the other until both methods have been studied and compared to determine their clinical utility.

The purpose of this study is to compare the use of discriminative and descriptive statistics in the selection of MMPI code-type correlates. For the purpose of this study, it is hypothesized that descriptor correlates to MMPI code-types obtained by chi-square statistics will have greater generalizability in the research literature than those selected by percentage frequency. This hypothesis is based on the indications of the available studies utilizing discriminative statistics and indicating the method provides more stable correlates (Lewandowski and Graham, 1972; Gynther, Altman and Sletten, 1973).

In order to facilitate intra-method comparisons, it is further hypothesized that descriptor correlates to MMPI code-types will be more stable with more conservative levels of confidence for chi-square and that high frequency descriptors will be more stable than low frequency descriptors.

Since research articles utilize different methods of correlate selection, chi-square, quartile, percentage frequency and verbal clinical description, it is also considered relevant to analyze the type of support in the literature obrained by the two statistical methods.

CHAPTER II

METHODOLOGY

Sample Selection

The sample for this study is comprised of 492 enlisted United States Air Force personnel and their dependents. The Subjects (Ss) were patients seen by the Inpatient Psychiatric Service, Outpatient Psychiatry Clinic and Consultation Service of the Department of Mental Health, Wilford Hall USAF Medical Center, Lackland AFB, Texas, U.S.A. The sample is heterogeneous for both age and sex. The sample was 78% male and 22% female. The ages ranged from 18 to 57 years; sixty percent of the sample were under 27 years of age. Patients were seen from inpatient services (31%), outpatient services (51%) and on general medical referral (14%). No referral data was available for 37 Ss. The Ss received the MMPI routinely as part of psychiatric evaluation for a variety of problems from poor work adjustment to severe psychological difficulty. The MMPI's were processed using an automated program described elsewhere (Lachar, 1974).

For the purpose of this study a Mental Health Evaluation Form (See Appendix A) was completed independent of MMPI data by the psychiatrist, psychologist, psychiatry resident, psychology intern, staff social worker or social work technician who had seen the Ss. Subjects were seen for a minimum of a one hour interview, while many Ss were seen over several sessions. This Mental Health Evaluation Form

recorded identification data, including social security number, age, sex, education, marital status, source of referral and diagnosis and a unique combination of state and trait descriptors that were felt to have clinical utility that have been found to be related to MMPI data (See Marks and Seeman, 1963, and Gilberstadt and Duker, 1965) and those suggested by psychiatric staff. The list of 81 adjectives is divided to describe functioning in the areas of Affect, Interpersonal Relations, Motor Behaviour, Efficiency, Patient-Therapist Relationship, History, Thought, Tnought Content, and Physical Complaints.

Construction of the Actuarial Tables

Code-types were identified by paragraph numbers (Lachar, 1974). These paragraph numbers define one and two point codes on the basis of the numeric designation of those scales exceeding 69T. If only one scale exceeds 69T, then the profile is termed a Spike. The two-point code-types represent the two scales having the highest T values exceeding 70T. If the T values of the second and third highest elevated scales are the same, then the code is assigned on the basis of the scale having the lowest numeric designation. Code-types are reciprocal; e.g., both 2>7 and 7>2 are contained in the 2-7/7-2 profile. Those code-types having N>8 were retained for study.

The initial data processing used a general purpose Chi-Square statistic program using Yates correction to compute significant differences in the occurrence of a given descriptor in each code-type from the rate of occurrence for the remainder of the 492 cases. Adjectives were identified as being more and less descriptive for that code-type

at confidence levels $p<.01$, $p<.05$, $p<.10$, and $p<.20$ (Appendix B).

The percent endorsements of each adjective in each code-type and for the total sample (base rate) were calculated (Appendix B). The frequency distributions of demographic variables across code-types and for the total sample were tabulated. This information includes Age, mean and range; Sex, number male and female; Marital Status; Years of Education; Source of Referral and Diagnosis.

Actuarial Tables were compiled for each code-type (Appendix C). These tables list the descriptors obtained by each of the four levels of chi-square (identified earlier) and those occurring at three levels of percent endorsement: >49%, >39%, and >29%. These tables also list for each adjective the actual percent endorsement for that code-type and the base rate for the total sample. Distribution of demographic data was included for descriptive purposes. Primary diagnostic classification was grouped for the categories of Psychotic, Neurotic and Character Disorder, while other entries, such as Alcoholism and Organic Brain Syndrome, were left as individual classifications. Modal Diagnosis represents the diagnosis occurring the most times within that code-type.

The literature sources that were used to "cross-validate" the code-type correlates were Dahlstrom, Welsh and Dahlstrom (1972); Gilberstadt and Duker (1965); Marks and Seeman (1963); Gynther, Altman and Sletten (1973); Stelmakers (1974); Carson (1969); Graham and Lewandowski (1972); Davis and Sines, (1971); Person and Marks (1971); and Drake and Oetting (1959).

Literature sources for each obtained code-type were matched for best clinical fit of mean profiles; e.g., the 1-2/2-1 profile matched Gilberstadt and Duker's 1-2-3-4 profile. Literature support (+) for check list adjectives was defined by its direct congruence with that descriptive material presented in the literature source. This congruence was also classified by the method of descriptor selection utilized by these authors. Four categories to describe Type of Support were defined: (1) the descriptor was selected by discriminative statistics usually chi-square $p<.05$ for that code-type, but other statistics were also included, e.g., t-test as utilized by Lewandowski and Graham (1972); (2) the descriptor was selected by its occurrence in the top or bottom quartile for that code-type in a rank order of code-types for that descriptor; (3) the descriptor was selected by more than 49% occurrence in that code-type; and (4) non-statistical report of occurrence of that descriptor for that code-type, verbal clinical inference.

Evidence of direct contradiction to a selected code-type adjective in literature (-) was systematically measured. Any adjective selected in this study that did not occur in the descriptive material of a given literature source was left blank in the Literature Source column.

Data Analysis

Differences in the pattern of the amount of literature support received by code-type adjectives selected at different levels of percentage frequency were determined by chi-square (Yates correction) analysis (three levels of percent endorsement and five levels of support).

"Amount of Support" refers to the number of adjectives which were found to be generalizable to the Literature Sources at various levels of support. Five levels of support to define the generalizability were used; two or more sources of support (++), one source of support (+), no support in the literature (0), one contradictory source (-), and two or more contradictory sources (--). Support was arithmetically summed for each adjective in the code-types, so that an adjective that was found to be generalizable to one literature source but was found to be contradicted in another was identified as receiving no support in the literature (0). A similar chi-square table was constructed to analyze the differences in the amount of support received by adjectives selected at the four confidence levels of x^2 probability.

To determine possible differences in the amount of support received by adjectives selected by the two methods, chi-square and percentage frequency, a chi-square analysis (Yates correction) of amount of support by type of adjective selection was conducted. The five percent confidence level was selected for chi-square and in excess of the 49% level was selected for percentage endorsement for adjective inclusion in this analysis. These criteria are consistent with those levels commonly accepted in the literature to identify MMPI code-type correlates.

To determine if descriptors obtained by percentage endorsement and chi-square differed in pattern of <u>type</u> of support obtained, a chi-square (Yates correction) analysis evaluated the type of selection approach (two levels) by type of support (four levels). Each descriptor was classified by the most stringent type of selection procedure used in any one literature source (chi-square > quartile > percent endorsement > clinical lore).

CHAPTER III

RESULTS

Specific information to describe the sample for this study is presented in Table 1.

TABLE 1

Distribution of Some Demographic Variables for Total Study Sample

		M	SD	Range
Age (years)		26.9	9.3	18-57
Education (years)		12.3	2.1	
Sex:	male - 384 female - 108			
Marital Status:	married - 219 single - 240 other - 33			
Diagnosis:	psychosis	9.1%		
	neurosis	17.1%		
	organic brain syndrome	3.5%		
	character disorder	26.8%		
	psychophysiological reaction	3.7%		
	drug abuse	2.0%		
	situational/marital disturbance	15.0%		
	no mental illness	7.1%		
	other	4.3%		

Seventeen code-types occurred frequently enough to warrant inspection. These code-types represented 64% of the study sample of 492 Ss.

Descriptor correlates were obtained for all of the seventeen MMPI code-types identified in this study. The exception being the failure to demonstrate discriminative (x^2) correlates for the 9-spike profile. Of the total 171 discriminative adjectives, 59.6% received support in at least one literature source, 22.8% were contradicted in at least one literature source, and 26.3% were unique to our sample. The 168 descriptive adjectives were divided: 65.5% supported, 29.2% contradicted, and 20.8% unique. The totals are in excess of 100% as adjectives may well have received both support and contradiction in different literature sources. These adjectives represented four levels of confidence for chi-square and three percentage levels. Literature Support was defined as the direct congruence of adjective meaning in the literature (+), the contradiction of adjective meaning (-) and failure to find any mention of that descriptor in the literature sources (0). An analysis was performed using a chi-square statistic to test the hypothesis stated in the introduction.

Table 2 presents the distribution of amount of literature support obtained for adjectives selected by the two statistical methods, chi-square ($<.05$) and percentage endorsement (>49%).

TABLE 2

Degree of Literature Support Received by Adjectives Obtained by the Statistic of x^2 ($p<.05$) or Percentage Endorsement (>49%)

	--	-	0	+	++	
x^2 ($p<.05$)	0	4	14	12	27	57
>49%	0	5	9	6	19	39
	0	9	23	18	46	

$x^2 = 1.26$ df = 4 $p>.05$

The chi-square analysis revealed no significant difference ($x^2 = 1.26$, $p<.05$) in the distribution of the amount of support received by adjectives selected by chi-square statistic ($p<.05$) from the pattern of support for those adjectives selected by percentage endorsement (>49%). The hypothesis that descriptor correlates to MMPI code-types obtained by chi-square statistic would have greater stability in the research literature than those selected by percentage endorsement was not supported. This indicates that the amount of literature support received by adjectives did not depend on the statistical method of their selection.

Table 3 presents the distribution of literature support obtained for adjectives selected by chi-square at four levels of confidence.

The chi-square analysis revealed no significant differences in the distribution of the amount of support received by adjectives selected at four levels of statistical significance for chi-square (x^2 = 15.46, p>.05). This finding did not support the hypothesis that more conservative levels of confidence for chi-square would provide descriptor correlates to MMPI code-types of greater stability in the research literature. This indicates that the amount of literature support received by adjectives did not increase with more conservative levels of statistical significance.

TABLE 3

Amount of Literature Support Received by Adjectives Selected by Chi-Square at Four Levels of Statistical Significance

	--	-	0	+	++	
<.01	0	0	5	4	11	20
<.05	0	4	9	8	16	37
<.10	2	4	16	5	11	38
<.20	2	10	27	15	22	76
	4	18	57	32	60	

x^2 = 15.46 df = 12 p>.05

Table 4 presents the distribution of literature support obtained by adjectives at three levels of percentage endorsement. The chi-square analysis revealed no statistical differences in the distribution of amount of support received by adjectives selected at three levels of percentage endorsement ($x^2 = 12.63$, $p>.05$). This finding failed to support the hypothesis that high frequency descriptors will be more stable than low frequency descriptors. This indicates that the amount of literature support did not increase with more conservative levels of percentage endorsement.

TABLE 4

Amount of Literature Support Received
by Adjectives Selected at
Three Levels of Percentage Endorsement

	--	-	0	+	++	
>49%	0	5	9	6	19	39
>39%	2	7	14	9	20	52
>29%	0	10	23	22	22	77
	2	22	46	37	61	

$x^2 = 12.63$ df = 8 $p>.05$

The type of support adjectives received in the ten literature sources was defined as 1,2,3, or 4. These numbers represent the method of adjective selection, $p<.05$; (2) top or bottom quartile; (3) greater than 50% occurrence; or (4) verbal clinical inference, respectively.

Table 5 presents the distribution of the type of support received by adjectives selected by the two statistical methods, chi-square ($p<.05$) and percentage endorsement (>49%). This table represents only those adjectives that received positive support in the literature. The chi-square analysis revealed no significant differences in the distribution of the type of support received by adjectives selected by chi-square statistic ($p<.05$) and percentage endorsement (>49%).

TABLE 5

Type of Literature Support Received by Adjectives Obtained by Chi-Square ($p<.05$) or Percentage Endorsement (>49%)

	1	2	3	4	
x^2 ($p<.05$)	18	13	0	8	39
>49%	9	9	5	2	25
	27	25	5	10	

$x^2 = 6.47$ df = 3 $p>.05$

CHAPTER IV

DISCUSSION

The purpose of this study was to provide empirical evidence that more stringent statistical methods would provide correlates to MMPI two-point code-types that would demonstrate greater generalizability across clinical populations. The use of chi-square as an example of discriminative statistics to select MMPI code-type correlates did not provide correlates of greater generalizability than those selected by percentage endorsement, an example of descriptive statistics. Also, it could not be demonstrated that the use of more conservative levels of chi-square probability or the use of higher levels of percentage endorsement would provide correlates of greater generalizability. Thus, it was indicated that more stringent restrictions within the methods do not improve generalizability. As a result of this study's failure to support the hypotheses, both the method of analyses and the data itself must be reviewed.

The analyses of the data in this study utilized a chi-square statistic to compare the observed distribution of the generalizability of MMPI code-type correlates with a theoretical distribution that was defined by the null hypothesis, i.e., an equal distribution. This method of analysis was allowable and appropriate as the data was consistent with the theoretical restrictions for the use of a chi-square statistic: 'the independence of sample observations, unrestricted

sampling, and minimum sample size.

The data generated in this study provided a cook-book for the description of patients who completed the MMPI as part of a psychiatric evaluation. The content of the cook-book was robust in adjectives that appear consistent with the correlates described in other literature on MMPI code-types. Of the 171 adjectives selected by chi-square, 61% were generalizable to the literature sources; the remainder were not found to be generalizable to at least one literature source. Only 32% of the adjectives for which chi-square was significant at the .05 level were found not to be generalizable to the literature. Support was received for the remaining 68% of those adjectives selected above the .05 level for chi-square and was an indication that the discriminative adjectives that were found to correlate with the MMPI code-types in this study are consistent with the accepted literature on specified MMPI code-types.

The descriptive statistic, percentage endorsement, selected a total of 108 adjectives of which 47% were found to be generalizable to the literature. Support was received for 64% of the adjectives above the 49% endorsement level, indicating the consistency of this data with the accepted literature. It appears, then, that the cook-book material generated in this study was both robust in the number of descriptors and consistent in content with the literature on MMPI code-types. The number of adjectives attributed to a given code-type ranged from 4 adjectives for the 9-spike profile to 31 for the 8-9/9-8 profile. This reflects the clinical knowledge that psychotic profiles (e.g., 8-9/9-8) are more blatantly pathologic than benign profiles (e.g.,

9-spike). It must be realized that for some profiles there was great overlap in the adjectives selected. Adjectives may have been selected by both discriminative and descriptive statistics. In the 8-9/9-8 profile, for sample, a total of 45 adjectives were selected. Of these adjectives, 26 were selected by chi-square and 19 were selected by percentage endorsement; 14 of the adjectives were selected by both statistics.

There was a pattern apparent in this study that is consistent with the clinical impression that elevation in the right hand scales (Scales 6, 7, 8 and 9) represent more serious pathology than elevations on the left hand scales (scales 1, 2, 3 and 4). The descriptors for the 2-spike, 4-spike, 1-2/2-1, 1-3/3-1, 1-8/8-1, 2-3/3-2 and 2-4/4-2 codes were fewer and more benign than those associated with the 6-8/8-6, 7-8/8-7 and 8-9/9-8 codes. There was not, however, any notable discrepancy in the inpatient/outpatient ratios across these code-types that would indicate the debilitating effects of serious pathology. The demonstrated consistencies with the known data on MMPI code-type correlates suggests that the material generated in this study was appropriate to test the hypotheses.

The failure to demonstrate differences between the generalizability of correlates selected by chi-square and those selected by percentage endorsement suggested that neither method of correlate selection was superior in providing generalizable cook-book interpretation material. Though the distributions for the type of support received by the two methods were not significantly different, the trends apparent in Table 5 are noteworthy. Only three of the adjectives that discriminated

code-types in this study were found to describe the code-type in any other study, but were found most often to discriminate the code-types in other research (Type 1 and Type 2 support) or to be clinically useful in identifying code-types (Type 4 support). This trend is easily understood if it is considered that chi-square may well have selected adjectives that occur infrequently in a code-type if the base rate for the sample was extremely low. The inclusion of anorexia as a correlate to the 1-2/2-1 code-type is illustrative. This adjective was used to describe only 18% of the 1-2/2-1 code-type, but was associated with the entire sample in only 3% of the cases. It was, therefore, identified as associated statistically more frequently with the code-type than with the sample. The generalizability demonstrated for these extremely low frequency correlates showed that they were consistently associated with the code-type more frequently than with psychiatric patients in general. However, if a patient obtains a 1-2/2-1 profile as the antecedent probability here is approximately .80. It is questionable whether the use of chi-square statistics or other discriminative statistics alone would provide correlates to MMPI code-types that are clinically useful because of the possibly extremely low frequency of attribution.

Similar to cross validation procedures, that reduce the number of MMPI correlates (Gynther, Altman and Sletten, 1973); Lewandowski and Graham, 1972; Boeger, Graham and Lilly, 1974), the restriction of MMPI correlates to those that occur frequently enough to be observed clinically would radically restrict the content of actuarial cook-books. To illustrate, very few adjectives were found to both discriminate and

describe a code-type in this study. Of the 17 code-types identified, only 7 have such adjectives associated with them. For most of these profiles, only one adjective was selected by both chi-square statistic ($p<.05$) and percentage endorsement (>49%). These are 4-spike, history of marital conflict; 1-2/2-1, hostile; 2-3/3-2, depressed; 2-7/7-2, depressed; while others received several, 4-6/6-4, moody, excitable and hostile; 6-8/8-6, depressed, negativistic and suicidal thought; 8-9/9-8, excitable, suspicious, agitated/restless, impulsive, difficulty in concentration, and worrisome. Such meager correlates do not provide very robust descriptions and if generalizability is another restriction, the list of adjectives becomes even shorter. Only 7 of the 16 adjectives that both discriminate and describe were highly generalizable, i.e., they occurred in more than one-half of the literature sources that have studied the code-type.

The adjectives selected by percentage endorsement in this study were supported by literature sources that represented all four types of statistical methods of correlate selection. It appears, then, that adjective content for a code-type was consistent across samples, but that the relative frequency of occurrence for a given descriptor in a code-type may vary across populations.

That neither method of correlate selection provided greater generalizability and that both methods provided descriptors that were supported across populations indicates that neither method was superior and that both methods were appropriate in selecting MMPI code-type correlates.

The failure to demonstrate greater generalizability at more stringent levels within the statistical methods of correlate selection was puzzling. Neither more conservative levels of probability for chi-square nor higher levels of percentage endorsement appeared to provide correlates of greater generalizability. This finding is significant as specific probability levels for chi-square ($p<.05$) and specific levels of percentage endorsement (>49%) have been arbitrarily selected by researchers as cut-off levels for the acceptance of correlates to MMPI profiles. The results of this study indicate that such levels do not represent some statistical dividing line between useful and useless correlates to MMPI code-types and that even liberal statistical restrictions may provide useful correlates. Before too much significance is placed on these results, however, it must be realized that methodological considerations may have biased the results. Notably these were the failure to include a true chance level of attribution in the analyses and the fact that the adjectives used in this study were preselected to have clinical utility as correlates to MMPI code-types. The inclusion in the analyses of adjectives that cluster at the .50 level of significance for chi-square and those adjectives that occurred at base rate within the code-type to represent chance level adjectives would have extended the significance of the failure to support the hypothesis. It must be noted, also, that trends were apparent in the percentage of adjectives selected at the decreasing levels of significance for chi-square probability and at the lower levels of percentage endorsement that received strong support (++). This trend would indicate decreasing generalizability (See Tables 3 and 4).

The use of adjectives that had already demonstrated utility as MMPI code-type correlates might well imply that lower levels of statistical significance, including lower levels of percentage endorsement, in this study would represent a sort of ranking of the clinical significance of adjectives rather than selecting out useless attributes.

In summary, the results of this study would imply that more conservative restrictions on the accepted methods of MMPI code-type correlate selection will not increase the generalizability of the correlates. This applies specifically to a comparison of those adjectives selected by chi-square statistics and by percentage endorsement. Though a statistically significant difference was not obtained in the comparison of the generalizability at more conservative levels within methods, methodological restrictions and apparent trends would indicate that more conservative restrictions within methods may provide correlates that demonstrate greater generalizability.

It was not the purpose of this study to provide results of specific reference to the clinical interpretation of the MMPI, but to elaborate the necessity of empirically valid and reliable methodologies in cook-book construction. However, the content of the cook-books generated by the study should not be overlooked as having clinical utility. Specifically, they provided cook-book data of "cross-validated" correlates that are applicable for a large percentage of those patients seen in military settings and is, therefore, unique. As these enlisted personnel and dependents represent a heterogeneous sample, the correlates are well applicable in unique but similar populations. In fact, the demonstrated generalizability of the majority of these correlates would

indicate that these results may be applicable across many populations. Nearly 50% of the adjectives found to correlate with the MMPI code-types in this study were supported by two or more literature sources while about 65% were supported by at least one literature source. It was unfortunate that the methodology did not allow the literature sources used to "cross-validate" the results of this study to be compared with each other. An adjective that was not included in the Mental Health Evaluation Form or was not found to describe or discriminate the code-type at the preselected level, might well have occurred as a relevant correlate in one, many, or all of the literature sources. For that reason the content of these cook-books does not represent a complete reference, but should be used in conjunction with other interpretive material.

While some authors (Gynther, Altman and Sletten, 1973; Lewandowski and Graham, 1972; Boeger, Graham and Lilly, 1974) argue the necessity of the cross-validation of results prior to publication, the results of this study would suggest that even non-cross-validated correlates demonstrate good generalizability to other populations. This level of generalizability would imply that the results of other studies of the correlates of MMPI code-types may well be applicable in many populations whether or not these correlates have been cross-validated. While there was no direct evidence in this study, the varied correlates of MMPI profiles across populations would suggest that the applicability of the content of any cook-book might be mediated by the "goodness-of-fit" of the target populations on demographic variables, including age, sex, and racial origin (See Schwartz, Osborne and Drupp, 1972; Costello, Fine

and Blau, 1972) associated with the study sample.

It must be considered that in clinical use the MMPI is rarely interpreted on the basis of the known cook-book research data, but rather on either the basis of individual clinical expertise or by reliance on some automated commercial interpretive system. These include the Psychological Corporation MMPI Reporting Service (Rome, Swenson, Mataya, McCarthy, Pearson, Keating and Hathaway, 1962), OPTIMUM Psychodiagnosis Consulting Service (Finney, Auvenshite, Smith and Skeeters, 1970), the Institute for Clinical Analysis (Dunlop, 1966), and Roche Psychiatric Institute (Fowler, 1967). Still others may utilize noncommercial automated programs for the interpretation of profiles (e.g., Lachar, 1974).[1] As aptly noted by Gynther, Altman and Sletten (1973), the validity of these types of interpretation is open to question as the relationship of the MMPI profile to the interpretive statements is not readily available. Exceptions are Psychological Corporation MMPI Reporting Service (See Pearson and Swenson, 1967) and the Lachar program (See Lachar, 1974). The failure to formally state the relationship of test profile to interpretation is in direct contradiction to the many research articles that elaborate the need for strict methodologies in cook-book instruction (Morf and Krane, 1973; Gynther, Altman and Sletten, 1973). It seems that presently, then, the necessity in providing valid and reliable cook-book interpretations lies in the transposition of the knowledge gained in research into clinical practice. The difficulties in this endeavor have been stated earlier (Gynther, Altman and Sletten, 1973), but because of their importance will be reiterated briefly. In order to develop a cook-book that will allow the interpretation of all

---

[1]The Lachar program has been automated and installed at Lafayette Clinic, Detroit.

profiles seen in clinical practice would require a huge sample as some profiles appear very rarely. Also, the available research that does utilize stricter methodologies provide cook-books that contain few clinically useful correlates.

It was reported by Gynther, et al. (1973) that the two-point code-type used to identify MMPI profiles were able to discriminate the profiles as well as the more complex rule system utilized by Marks and Seeman (1963) and Gilberstadt and Duker (1965). While this may be true, it is necessary to evaluate empirically the clinical utility of such a system for the identification and classification of patients. The present study identified seventeen clinical groups represented by three Spike codes and fourteen two-point codes. These groups did not appear clinically homogeneous. Each code-type was associated with a number of diagnostic classifications and in most cases the descriptors that were significant were attributed to a low percentage of the patients. If the identification of a patient's MMPI code-type did not allow differential diagnosis, and resultant associated therapies, and if the descriptions generated by the use of a cook-book approach did not represent the majority of the patients within a group, the code-types have questionable clinical utility. This is further emphasized by the demonstrated heterogeneity of the scales (See Comrey, 1958; Welsh and Dahlstrom, 1956) that indicates that the clinical scales, or perhaps groups of scales, of the MMPI might not represent homogeneous classes. The present study expands this knowledge to include the two-point coding system as representing such diverse clinical patients as to have little clinical utility.

Future research, rather than elaborating on the correlates of MMPI two-point code-types, might consider the difficulties in identifying homogeneous clinical groups by psychometric indices. The Wiggins Content Scales have demonstrated that they are statistically homogeneous and might thereby be considered as better indices for the identification of patients. Present research (Alexander, 1975 in progress), however, indicates that these scales might not represent homogeneous clinical groups. Adjectives are associated with single high and low point Content Scales with consistently low frequencies.

While the clinical interpretation of psychological tests in the evaluation of patients may be under fire due to its lack of formality in stating the relationship between tests responses and interpretive statements, the use of formal statistical procedures to present provide neither the breadth nor depth necessary to formulate a comprehensive understanding of the difficulties in functioning experienced by individual patients.

REFERENCES

Black, J.D. The interpretation of MMPI profiles of college women. Unpublished doctoral dissertation, University of Minnesota, 1953.

Black, J.D. Adjectives associated with various MMPI codes. In G.S. Welsn and W.G. Dahlstrom (Eds.), Basic Reading on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota Press, 1956.

Block, J. and Bailey, D. Q-sort Item Analyses of a Number of MMPI Scales. (Tech, Rep. OER-TM-55-7) Berkeley, California: Office of Education Research Laboratory, May, 1955.

Boeger, A. R., Graham, I.R. and Lilly, R.S. Behavioral Correlates of single-scale MMPI code-types, Journal of Clinical and Consulting Psychology, 1972, 39, 267-272.

Briggs, P.F., Talor, M., and Tellegen, A. A study of the Marks and Seeman MMPI profile types as applied to a sample of 2,875 psychiatric patients. Report No. PR-66-5, November 15, 1966 Department of Psychiatry, University of Minnesota.

Carson, R.C. Interpretative Manual to the MMPI. In J.N. Butcher (Ed.), MMPI: Research Developments and Clinical Applications. New York: McGraw-Hill, 1969.

Comrey, A.L. A factor analysis of the items on the MMPI psychasthenia scale. Educational and Psychological Measurement, 1958, 18, 293-300.

Costello, R.M., Fine, M.J., Blau, B.I. Racial comparisons in the Minnesota Multiphasic Personality Inventory. Journal of Clinical Psychology, 1973, 29, 63-65.

Dahlstrom, W.G., Welsh, G.S. and Dahlstrom, L.E. An MMPI Handbook. Vol. I. Clinical Interpretation, Minneapolis: University of Minnesota Press, 1972.

Davis, K.R. and Sinces, J.O. An Anti-social Behavior Pattern Associated with a Specific MMPI Profile. Journal of Consulting and Clinical Psychology, 1971, 36, 229-234.

Drake, L.E. and Oetting, E.R. An MMPI Codebook for Counselors. Minneapolis: University of Minnesota Press, 1959.

Dunlop, E. Essentials of the Automated MMPI, Glendale, California: Institute of Clinical Analysis, 1966.

Finney, J.C., Avenshine, C.D., Smith, D.F. and Skeeters, D.Z. The optimum program: interpreting psychological tests for schools. Journal of Ed. Data Processing, 1970, 7, 209-276.

Fowler, R.D., Jr. Computer interpretation of psychological tests: The Automated Psychologist. Comprehensive Psychiatry, 1967, 8, 455-467.

Gilberstadt, H. and Duker, J. A Handbook for Clinical and Actuarial MMPI Interpretation. Philadelphia: W.B. Saunders, 1965.

Gough, H.G., McKee, M.G. and Yandell, R.J. Adjective Checklist Analyses of a Number of Selected Psychometric and Assessment Variables. (Tech. Rep. OER-TM-55-10) Berkeley, California: Office of Education Laboratory, May, 1955.

Guthrie, G.M. A study of the personality characteristics associated with the disorders encountered by an internist. Unpublished doctoral dissertation, University of Minnesota, 1949.

Guthrie, G.M. Common characteristics associated with frequent MMPI profile types. In G.S. Welsh and W.G. Dahlstrom (Eds.), Basic Reading on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota Press, 1956).

Gynther, M.D. A new replicated actuarial program for interpreting MMPI's of state hospital patients. Presented at the Seventh Annual MMPI Sumposium, Mexico City, February, 1972.

Gynther, M.D., Altman, H. and Sletten, I.W. Replicated correlates of MMPI two-point code-types: The Missouri Actuarial System. Journal of Clinical Psychology Monographs, 1973, 29, 263-289.

Halbower, C.C. A comparison of actuarial versus clinical prediction to classes discriminated by MMPI. Unpublished doctors dissertation, University of Minnesota, 1955.

Hathaway, S.R. A coding system for MMPI profile classification. In G.S. Welsh and W.G. Dahlstrom (Eds.), Basic Reading on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota, 1956.

Hathaway, C.C. and Meehl, P.E. An Atlas for the Clinical Use of the MMPI. Minneapolis: University of Minnesota Press, 1951.

Hovey, H.B. MMPI profiles and personality characteristics. In G.S. Welsh and W.G. Dahlstrom (Eds.), Basic Readings on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota Press, 1956.

Huff, R.W. Use of actuarial description of personality in a mental hospital. Psychological Reports, 1965, 17, 224.

Lachar, D. MMPI two-point code-type correlates in a state hospital population. Journal of Clinical Psychology, 1968, 24, 434-437.

Lachar, D. MMPI, Clinical Assessment and Automated Interpretation. Los Angeles: Western Psychological Services, 1974.

Lawshe, C.H. and Baker, P.C. Three aids in the evaluation of the significance of the differences between percentages. Journal of Educational and Psychological Measurement, 1950, 10, 263-270.

Lewandowski, J.R. and Graham, D. Empirical correlates of frequently occurring two-point code-types: A replicated study. Journal of Clinical and Consulting Psychology, 1972, 32, 467-472.

Marks, P.A. and Seeman, W. The Actuarial Prediction of Abnormal Personality. Baltimore: Williams and Wilkins, 1963.

Meehl, P.E. Wanted - a good cook-book. American Psychologist, 1956. 11, 263-272.

Morf, M.E. and Krane, W.R. A strategy for developing automated assessment systems. Behavioral Science, 1973, 18, 294-306.

Owen, D.R. Classification of MMPI profiles from non-psychiatric populations using two cook-book systems. Journal of Clinical Psychology, 1970, 26, 84-86.

Payne, F.D. and Wiggins, J.S. Effects of rule relaxation and system combination on classification rates in two MMPI "cook-book" systems. Journal of Consulting and Clinical Psychology, 1968, 32, 734-736.

Pauker, J.D. Identification of MMPI profile types in a female, inpatient, psychiatric setting using the Marks and Seeman rules. Journal of Consulting Psychology, 1966, 30, 90.

Pearson, J.S., and Swenson, W.M. A user's guide to the Mayo Clinic Automated MMPI Program. New York, Psychological Corporation, 1967.

Persons, R.W. and Marks, P.A. The Violent 4-3 MMPI Personality Type. Journal of Consulting and Clinical Psychology, 1971, 36, 189-196.

Porier, G.W. and Smith, R.C. MMPI "cook-books": Are rule relaxation and system combination procedures an answer to low classification rates? Journal of Clinical Psychology, 1971, 96-101.

Rome, H.P., Swenson, W.M., Mataya, P., McCarthy, C.E., Pearson, J.S., Keating, F.R. Jr., and Hathaway, S.R. Symposium on Automation Techniques in Personality Assessment. Proceedings of the staff meetings of the Mayo Clinic, 1962, 37, 61-82.

Shultz, T.D., Gibeau, P.J. and Barry, S.M. Utility of MMPI "cook-books". Journal of Clinical Psychology, 1968, 24, 430-433.

Sines, I.O. Actuarial methods in personality assessment. In B.S. Maher (Ed.), Progress in Experimental Personality Research. Vol. 3, New York: Academic Press, 1966.

Stelmacher, Z.T. "Canned" MMPI interpretation used at Hennepin County General Hospital, Minneapolis. Citation: Lachar, D. The MMPI: Clinical Assessment and Automated Interpretation. Los Angeles: Western Psychological Services, 1974.

Schwartz, M.S., Osborne, D. and Krupp, N.C. Moderating effects of age and sex on the association of medical diagnoses and 1-3/3-1 MMPI profiles. Journal of Clinical Psychology, 1972, 28, 502-505.

Vestre, M.D. and Klett, W.G. Classification of MMPI profiles using the Gilberstadt-Duker rules. Journal of Clinical Psychology, 1969, 25, 284-486.

Welsh, G.S. An extension of Hathaway's MMPI profile coding system. In G.S. Welsh and W.G. Dahlstrom (Eds.), Basic Readings on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota Press, 1956.

Welsh, G.S. and Dahlstrom, W.G. Basic Readings on the MMPI in Psychology and Medicine. Minneapolis: University of Minnesota Press, 1956.

APPENDIX A

MENTAL HEALTH EVALUATION NAME _____

IDENTIFYING DATA: Social Security Number: (1-9) _ _ _ / _ _ / _ _ _ _

Date: (10-15) _ _ / _ _ / _ _ (day / mo / yr) Years Education: (16-17) _ _

Age: (18-19) _ _ Sex: (20) M_ F_ Rank: (21-22) _ _

Months in Service: (23-25) _ _ _

Days Now in Basic Military Training School (26-28) _ _ _
Basic Trainees Only--Days at Lackland----------
Marital Status: (29) 1-single 2-married 3-divorced
4-separated 5-widowed

Referral: (30) 1-self 2-other clinic 3-other ward 4-supervisor
5-other hospital/dispensary 6-other

Evaluated Now By: (31) WHMC: 1-inpt Psy 2-Neurology/Neurosurgery 3-Other Dept.
4-Outpt Clinic 5-Mental Hygiene Clinic
6-USAFSAM 7-Other

Diagnosis: (32-33) Primary _ _ Onset: (34) 1-Acute 2-Chronic
Severity: (35) 1-mild 2-moderate 3-severe
(36-37) Secondary _ _
(38-39) Tertiary _ _ (Diagnostic codes on reverse side of page)

Rank Codes: 01-Basic 02-Airman 03-A1C 04-Sergeant 05-Staff Sergeant
06-Tech Sergeant 07-Master Sergeant & above 08-OTS Cadet
09-2nd/1st Lt 10-Captain 11-Major/LtCol 12-Col/General
13- Retired officer 14- Retired NCO 15- dependent wife
16- dependent son 17- dependent daughter 18- Other

DIAGNOSTIC CODES:

01 Mental retardation

02 Learning disability

03 Chronic OBS
04 Acute OBS

05 Alcoholism

06 Non-specific psychosis
07 Simple schiz
08 Hebephrenic schiz
09 Catatonic schiz
10 Paranoid schiz
11 Schizo-affective schiz
12 Borderline/latent schiz
13 Involutional
14 Manic-depressive, manic
15 Manic-depressive, deprsd

16 Paranoid state
17 Unspecified neurosis
18 Anxiety neurosis
19 Conversion neurosis
20 Dissociative neurosis
21 Phobic neurosis
22 Obsessive-compulsive
23 Depressive neurosis

24 Unspecified personality disorder
25 Paranoid
26 Cyclothymic
27 Schizoid
28 Explosive
29 Obsessive-compulsive
30 Hysterical
31 Anti-social
32 Passive-aggressive
33 Inadequate/immature

34 Psychophysiological reaction

35 Sexual deviation

36 Drug abuse w/o dependence
37 Drug abuse with dependence

38 Situational disturbance

39 Marital discord

40 No mental illness

CIRCLE THE NUMBERS OF ONLY THE APPLICABLE DESCRIPTIVE TERMS

Affect

40 Ambivalent
41 Anxious
42 Apathetic
43 Depressed
44 Euphoric/elated
45 Excitable
46 Fearful/phobic
47 Guilty
48 Hostile
49 Inappropriate
50 Irritable
51 Labile
52 Moody
53 Perplexed
54 Shallow
55 Suspicious
56 Tearful
57 Worrisome

Interpersonal Relations

58 Amoral
59 Assaultive
60 Dependent
61 Homicidal
62 Homosexual
63 Immature
64 Impotent/decreased libido
65 Negativistic
66 Passive
67 Withdrawn

Motor Behavior

68 Agitated/restless
69 Compulsive
70 Destructive gestures
71 Hyperactive/hypomanic
72 Impulsive
73 Indecisive
74 Retarded
75 Talkative
76 Tremulous

(Columns 79-80 punch P1)

Social Security Number: (1-8) ___ / __ / ____

Efficiency

9 Difficulty in Concentration
10 Fatigue
11 Insomnia
12 Poor memory

Patient-Therapist Relation

13 Defensive
14 Malingering
15 Uncooperative

History

16 Alcohol excess
17 Combative when intoxicated
18 Drug usage
19 Financial problems
20 Marital conflict
21 Poor judgment
22 Suicide attempts

Thought

23 Autistic
24 Blocking
25 Circumstantial
26 Confused
27 Disorganized
28 Incoherent
29 Paucity of ideation
30 Perfectionistic

Thought Content

31 Delusions
32 Hallucinations
33 Ideas of reference
34 Religiosity
35 Sense of inadequacy/inferiority
36 Suicidal thoughts
37 Unreality feelings

Physical Complaints

38 Abdominal pain
39 Anbrexia
40 Back pain
41 Bizarre complaint
42 Chest pain
43 Constipation
44 Convulsions
45 Diarrhea
46 Headaches
47 Joint pains
48 Loss of consciousness
49 Nausea, vomiting
50 Numbness
51 Shortness of breath
52 Visual problems

NAME _____

RECOMMENDED DISPOSITION (indicate only one) (53-54): _ _

01 - RTD (no Rx, no action)(also for dependents)
02 RTD w Outpt Rx (here) (also for dependents)
03 RTD w Rx elsewhere (also CHAMPUS)
04 RTD w profile change
05 C & B discharge
06 Change of base/duty section/training
07 Change of AFSC
08 Punitive action/discharge due to performance
09 Request hospitalization (also for dependents)
10 Medical discharge
11 TDRL
12 VA
13 Permanent disability

Days Hospitalized: (55-57) _ _ _ (from Sgt Raines)

Medication: (Circle class of drugs used and highest effective dosage)

Sedatives (59): 1-occasional 2-daily single dose 3-more than single daily dose

Minor Tranquil. (60): 1-less than 4 tabs/day 2-more than 3 tabs/day
(1 tab = 5Valium, 10Librium, 15Serax, 400Meprobamate)

Major Tranquil. (61): in equivalent dose of Thorazine: 1 - 0-399 mg/day
2 400-1199 mg/day
3 1200+ mg/day

Anti-depres. (62): 1-up to 99 mg/day 2-100-199 mg/day 3-200+ mg/day

Lithium (63): (check if prescribed): _

EST Given (64-65): _ _

Number of prior psych. hospitalizations (66-67): _ _

Age at first admission (68-69): _ _

Legal Involvement **(70): _ Article 15's, court-martials, other military infractions.**
(71): _ Trouble with civilian police or law.

(Columns 79-80 Punch F2)

PRINT Name of Clinician_____

APPENDIX B

Percentage Frequency

of Mental Health Evaluation Adjectives for Code Type

		AFFECT								
CODE TYPE	N	Ambivalent	Anxious	Apathetic	Depressed	Euphoric/elated	Excitable	Fearful/phobic	Guilty	Hostile
2-spike	13	15	54	0	31	0	15	15	15	15
4-spike	20	15	45	0d	20b	0	15	5	5	15
9-spike	19	11	53	5	42	0	11	11	11	11
1-2/2-1	11	18	36	9	46	0	0	18	0	55b
1-3/3-1	25	21	36	4	32	0	4	3d	7	21
1-8/8-1	8	13	38	13	50	0	25	38d	13	13
2-3/3-2	21	0c	43	14	76a	0	10	14	5	10
2-4/4-2	27	22	56	11	48	0	19	15	22	15
2-7/7-2	31	26	58d	19	68b	0	3d	23	23	26
2-8/8-2	26	19	46	12	54	0	12	31b	12	15
3-4/4-3	10	0	40	10	40	0	0	20	20	30
4-6/6-4	9	33	56	11	56	11	44b	22	22	56b
4-8/8-4	17	18	47	18	41	0	18	6	18	24
4-9/9-4	19	11	47	11	42	5	11	11	11	21
6-8/8-6	12	25	50	33c	92 a	0	17	25	42b	25
7-8/8-7	31	23	32d	10	55	7	13	3d	13	29
8-9/9-8	14	7	50	21	57	14 b	50a	21	21	43c
Base Rate	492	17	45	11	44	2	12	14	14	21

*Letters represent the level of chi-square probability at which adjectives were found to discriminate a code-type. Four levels were identified: a, $p>.01$; b, $p>.05$; c, $p>.10$; d, $p>.20$. Inclusion of negative symbol (-) over chi-square designation indates that the adjective occurred statistically less frequently in that code-type.

APPENDIX B continued

AFFECT cont'd

CODE TYPE	N	Inappropriate	Irritable	Labile	Moody	Perplexed	Shallow	Suspicious	Tearful	Worrisome
2-spike	13	0	23	8	15	8	23	0[d]	8	39
4-spike	20	0	20	5	0[c]	15	30	15	10	30
9-spike	19	5	11	21	11	21	16	5	16	16
1-2/2-1	11	9	27	0	36[d]	18	36	9	9	36
1-3/3-1	28	4	14	11	11	8[d]	11	4[c]	14	32
1-8/8-1	8	25	13	13	13	25	25	25	0	50
2-3/3-2	21	5	14	5	24	24	10	10	10	10
2-4/4-2	27	11	19	11	7	33	19	26	15	37
2-7/7-2	31	7	23	7	7[d]	23	10	26	16	42[d]
2-8/8-2	26	4	15	15	19	19	31	19	23[d]	39
3-4/4-3	10	0	0	0	10	10	0	10	0	10
4-6/6-4	9	11	33	33	67[a]	44[d]	44[d]	33	33[d]	56[d]
4-8/8-4	17	12	18	6	12	35[d]	12	29	29[c]	35
4-9/9-4	19	11	16	16	26	16	26	11	5	11[d]
6-8/8-6	12	8	33	8	33	33	0[d]	17	25	58[e]
7-8/8-7	31	13	23	13	26	19	23	23	7	19
8-9/9-8	14	14	29	29[c]	50[a]	29	21	50[a]	7	57[b]
Base Rate	492	7	16	11	17	19	19	17	13	30

APPENDIX B continued

CODE TYPE	N	Interpersonal Relations: Amoral	Assaultive	Dependent	Homicidal	Homosexual	Immature	Impotent/decreased Libido	Negativistic	Passive	Withdrawn
2-spike	13	0	8	23	8	0	23	0	8	31	15
4-spike	20	5	15	15$\bar{d}$	0	5	20	0	5	40	0$\bar{c}$
9-spike	19	0	11	26	0	0	32	11	5	21	5
1-2/2-1	11	0	9	45	0	0	36	18	46b	36	9
1-3/3-1	28	7	0$\bar{d}$	46 d	0	0	29	11	18	39	11
1-8/8-1	8	0	13	25	0	0	50	25	0	50	25
2-3/3-2	21	0	0	43	0	5	5$\bar{b}$	14	10	43	19
2-4/4-2	27	19a	19d	30	7c	0	44 d	0$\bar{d}$	30d	30	22
2-7/7-2	31	3	7	39	0	0	36	13	26	45 d	36b
2-8/8-2	26	0	15	42	0	4	39	0	8	46 d	39b
3-4/4-3	10	0	10	50	0	0	10	10	30	20	0
4-6/6-4	9	0	22	44	11	0	44	0	44c	11	11
4-8/8-4	17	6	6	24	0	18a	24	6	24	35	18
4-9/9-4	19	11	16	32	0	5	32	11	16	26	16
6-8/8-6	12	0	8	50	8	8	25	17	50a	50	25
7-8/8-7	31	0	7	19$\bar{d}$	0	3	32	0	23	26	23
8-9/9-8	14	7	21	36	0	0	50 d	14	36 d	29	29
Base Rate	492	4	9	32	2	2	30	7	17	33	18

APPENDIX B continued

		Motor Behavior								
CODE TYPE	N	Agitated/restless	Compulsive	Destructive gestures	Hyperactive/ hypomanic	Impulsive	Indecisive	Retarded	Talkative	Tremulous
2-spike	13	15	8	0	0	8	15	8	23	0
4-spike	20	20	5	5	10	20	30	5	20	15
9-spike	19	26	21	5	5	21	21	0	32	11
1-2/2-1	11	18	9	0	0	18	27	27c	27	0
1-3/3-1	28	7d	18	4	0	14	14	4	18	14
1-8/8-1	8	38	13	25	13	38	0	0	13	13
2-3/3-2	21	0b	19	5	0	10	10	10	10	14
2-4/4-2	27	22	19	15	0	30	30	7	22	15
2-7/7-2	31	19	19	10	7	26	39b	7	10d	23d
2-8/8-2	26	15	8	15	0	23	19	19c	19	19
3-4/4-3	10	0	0	10	0	20	10	0	20	10
4-6/6-4	9	44d	11	22	11	11	44d	0	22	22
4-8/8-4	17	18	12	0	12	12	29	12	41c	0
4-9/9-4	19	37c	0	16	5	26	16	16	21	11
6-8/8-6	12	8	8	8	17	17	33	17	33	8
7-8/8-7	31	23	0c	13	7	19	23	7	16	23d
8-9/9-8	14	57a	14	29b	29b	57a	21	7	21	21
Base Rate	492	19	11	8	5	19	20	8	21	13

APPENDIX B continued

		Efficiency				Patient-Therapist Relation		
CODE TYPE	N	Difficulty in Concentration	Fatigue	Insomnia	Poor memory	Defensive	Malingering	Uncooperative
2-spike	13	23	0	0[d]	8	15	0	0
4-spike	20	0[b]	5	10	5	25	5	0
9-spike	19	16	16	21	21	21	5	0
1-2/2-1	11	27	36d	18	9	46d	9	9
1-3/3-1	28	14	21	29d	11	43b	4	18a
1-8/8-1	8	25	25	13	25	25	13	25c
2-3/3-2	21	33	24	24	19	24	0	0
2-4/4-2	27	19	4[d]	7	7	19	4	7
2-7/7-2	31	32	26	32c	19	16	7	7
2-8/8-2	26	46a	19	31d	27 d	35 d	0	0
3-4/4-3	10	10	20	30	10	10	0	0
4-6/6-4	9	22	33	22	0	44	11	0
4-8/8-4	17	41d	18	18	24	24	6	0
4-9/9-4	19	21	5	21	11	11	11	11
6-8/8-6	12	33	42b	8	25	0[d]	0	0
7-8/8-7	31	39c	10	13	23	10[d]	3	7
8-9/9-8	14	50b	36d	36d	14	14	7	14
Base Rate	492	23	17	18	15	22	4	5

APPENDIX B continued

CODE TYPE	N	History: Alcohol excess	Combative when intoxicated	Drug usage	Financial problems	Marital conflict	Poor judgment	Suicide attempts
2-spike	13	7	0	0	8	0c	15	0
4-spike	20	20	0	0	5	50b	20	5
9-spike	19	16	0	0	5	16	21	11
1-2/2-1	11	27	0	9	9	18	18	0
1-3/3-1	28	11	0	0d	4	18	18	0
1-8/8-1	8	0	0	25	13	13	25	0
2-3/3-2	21	19	5	0	14	33	14	0
2-4/4-2	27	26	4	19d	15	33	33	4
2-7/7-2	31	19	7	13	16	23	26	13
2-8/8-2	26	23	4	12	19	27	39	12
3-4/4-3	10	40d	10	0	40b	30	10	0
4-6/6-4	9	11	0	0	11	44	22	11
4-8/8-4	17	12	0	24c	12	24	41	18d
4-9/9-4	19	21	5	21d	11	32	42d	5
6-8/8-6	12	8	0	8	0	42	8	25b
7-8/8-7	31	19	3	13	7	16	23	0
8-9/9-8	14	21	7	21	14	36	50d	7
Base Rate	492	19	3	9	11	27	27	6

APPENDIX B continued

CODE TYPE	N	Thought: Autistic	Blocking	Circumstantial	Confused	Disorganized	Incoherent	Paucity of ideation	Perfectionistic
2-spike	13	a	0	0	8	15	0 d	0	23
4-spike	20	0	5	15	10	0	0	5	5
9-spike	19	0	5	5	11	5	0	16	16
1-2/2-1	11	0	18	18	0	0	0 d	18	18
1-3/3-1	28	0	11	11	0 d	0	0	4	18
1-8/8-1	8	0	13	13	25	13	13 b	13	25
2-3/3-2	21	0	0	0	5	0	0	10	24 d
2-4/4-2	27	4	11	11	15	11	0	15	4
2-7/7-2	31	10	3	16	16	10	0	19	10
2-8/8-2	26	12d	8	8	12	12	0	15	8
3-4/4-3	10	0	0	0	0	0	0 c	0	0
4-6/6-4	9	0	0	22	0	0	0 c	0	11
4-8/8-4	17	6	6	24c	24d	24b	6	6	6
4-9/9-4	19	5	11	5	11	11	0	5	11
6-8/8-6	12	0	8	17	17	17	0 d	17	8
7-8/8-7	31	3	3	7	16	7	0	13	7
8-9/9-8	14	14d	7	14	29e	21d	7d	14	0
Base Rate	492	4	6	9	11	7	1	11	12

APPENDIX B continued

CODE TYPE	N	Thought Content: Delusions	Hallucinations	Ideas of reference	Religiosity	Sense of inadequacy/ inferiority	Suicidal thoughts	Ungodly feelings
2-spike	13	0	0	0	0	8	0	0
4-spike	20	0	0	0	0	20	5	5
9-spike	19	5	0	11	5	16	5	5
1-2/2-1	11	0	0	0	0	27	18	9
3-3/3-1	28	0	4	7	4	21	0d	0
1-8/8-1	8	13	0	0	13	38	0	13
2-3/3-2	21	5	0	5	5	14	5	5
2-4/4-2	27	4	4	15	0	26	15	11
2-7/7-2	31	10	0	19c	7	45b	23c	7
2-8/8-2	26	8	12b	4	0	46b	12	12
3-4/4-3	10	0	0	0	0	20	0	0
4-6/6-4	9	0	0	22	0	44	11	0
4-8/8-4	17	18c	0	18	12	47c	24	12
4-9/9-4	19	11	0	11	5	42d	5	5
6-8/8-6	12	0	0	25d	8	42	50a	25b
7-8/8-7	31	10	3	23b	10	36	13	3
8-9/9-8	14	21b	21a	36a	21b	29	14	21c
Base Rate	492	5	3	9	5	27	11	6

APPENDIX B continued

Physical Complaints

CODE TYPE	N	Abdominal pain	Anorexia	Back pain	Bizarre complaint	Chest pain	Constipation	Convulsions	Diarrhea
2-spike	13	0	0	8	0	0	0	0	0
4-spike	20	0	0	0	0	5	0	0	5
9-spike	19	5	5	11	0	0	0	0	0
1-2/2-1	11	9	18b	18	18b	27	0	0	9
1-3/3-1	28	11	7	32a	0	7	4	0	0
1-8/8-1	8	13	13	13	13	13	0	0	0
2-3/3-2	21	10	0	5	5	0	5	0	0
2-4/4-2	27	4	0	0	0	0	0	0	0
2-7/7-2	31	10	7	7	0	7a	7d	3	0
2-8/8-2	26	0	0	4	4	4	0	0	0
3-4/4-3	10	10	0	20	10	30a	0	0	10
4-6/6-4	9	22	0	0	0	0	0	0	0
4-8/8-4	17	18d	12d	12	0	6	0	6	6
4-9/9-4	19	0	0	0	0	0	0	0	5
6-8/8-6	12	17	0	8	0	0	8	8	8
7-8/8-7	31	0	0	3	3	3	0	0	0
8-9/9-8	14	0	0	7	7	7	7	7	0
Base Rate	492	7	3	8	3	5	2	2	2

APPENDIX B continued

Physical Complaints cont'd

CODE TYPE	N	Headaches	Joint pains	Loss of consciousness	Nausea, vomiting	Numbness	Shortness of breath	Visual problems
2-spike	13	8	0	0	8	0	8	0
4-spike	20	10	5	15b	0	5	5	5
9-spike	19	5	5	0	11	0	0	0
1-2/2-1	11	27	9	0	9	0	0	0
1-3/3-1	28	29c	11d	4	4	11c	7	7d
1-8/8-1	8	0	13	0	0	25a	25a	0
2-3/3-2	21	19	5	5	5	0	0	5
2-4/4-2	27	11	4	4	0	0	0	4
2-7/7-2	31	13	0	0	0	3	3	3
2-8/8-2	26	4d	4	0	0	0	0	0
3-4/4-3	10	20	10	0	10	0	0	0
4-6/6-4	9	11	0	0	11	0	0	0
4-8/8-4	17	24	6	6	0	0	0	0
4-9/9-4	19	16	0	0	0	0	5	0
6-8/8-6	12	25	0	17c	8	0	0	0
7-8/8-7	31	7	0	0	0	3	7	0
8-9/9-8	14	14	0	7	0	7	0	7
Base Rate	492	15	4	4	3	3	3	2

APPENDIX C

Code-Type Correlates and Literature Support Received for MMPI Code-Type Adjectives Selected by Levels of Chi-Square and Percent Frequency

Literature Sources

A Dahlstrom, Welsh and Dahlstrom, 1972
B Gilberstadt and Duker, 1965
C Marks and Seemen, 1963
D Gynther, Altman and Sletten, 1973
E Stelmachers, 1974
F Carson, 1969
G Graham and Lewandowski, 1972
H Davis and Sines, 1971
I Person and Marks, 1971
J Drake and Oetting, 1959

% Percentage endorsement within code-type.
B.R. Percentage endorsement for entire study sample.
Σ Most stringent type of selection procedure that supported the adjective.

2-Spike

(N=13 Cases)

X^2 Level	Adjectives	%	B.R.	* Literature Source: A	E	Σ
<.10	(less) history of marital conflict	0	36			
	(less) suspicious	0	17			
	(less) insomnia	0	17			
	(less) incoherent thought	0	1			

% Level	Adjectives	%	B.R.	Literature Source: A	E	Σ
> 49%	anxious	54	45			
> 29%	worrisome	39	30	4+		4
	depressed	31	44	4+	4+	4
	passive	31	33			

Modal Diagnosis - Organic Brain Syndrome
Alcoholism

Diagnosis Distribution -

organic brain syndrome	23%
alcoholism	15%
neurotic	23%
character disorder	31%
psychophysiological reaction	8%

Age: Mean=31.2 Range=18-58 years
Sex: M=84.6% F=15.3%
Marital Status: S=38.4% M=61.5%
Education: 13.9 years
Source: Inpatient=30.8% Outpatient=46.2% General Medical=23.1%

4-Spike

(N=20 Cases)

χ^2 Level	Adjectives	%	B.R.	Literature Source: A	B	Σ
<.05	(less) depressed	20	44		3-	
	(less) difficulty in concentration	0	23			
	history of marital conflict	50	27	4+		4
	loss of consciousness	15	4			
<.10	(less) moody	0	17		4-	
	(less) withdrawn	0	18			
<.20	(less) apathetic	0	11			
	(less) dependent	15	32			

% Level	Adjectives	%	B.R.	Literature Source: A	B	Σ
> 49%	history of marital conflict	50	27	4+		4
> 39%	anxious	45	45		2-	
	passive	40	33			
> 29%	shallow affect	30	19			
	worrisome	30	30			
	indecisive	30	20			

Modal Diagnosis - No Mental Illness

Diagnosis Distribution -

no mental illness	25%
alcoholism	20%
situational disturbance	20%
character disorder	25%
neurotic	10%

Age: Mean=30.8 Range=18-49 years
Sex: M=70% F=30%
Marital Status: S=30% M=60% Other=10%
Education: 11.8 years
Source: Inpatient=30% Outpatient=55% General Medical=15%

9-Spike

(N=19 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	Σ
(No Significant Adjectives)						

% Level	Adjectives	%	B.R.	Literature Source: A	B	Σ
> 49%	anxious	53	45		2-	
> 39%	depressed	42	44		3+	3
> 29%	immature	32	30	4+		4
	talkative	32	21		1+	1

Modal Diagnosis - Situational Disturbance

Diagnosis Distribution -

situational disturbance	37%
alcoholism	16%
psychotic	16%
character disorder	11%
organic brain syndrome	5%
neurotic	5%
no mental illness	5%
no data	5%

Age: Mean=26 Range=19-38 years
Sex: M=84.2% F=15.8%
Marital Status: S=63.1% M=36.9%
Education: 12.6 years
Source: Inpatient=52.6% Outpatient=36.8% General Medical=10.5%

1-2/2-1

(N=11 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	J	Σ
<.05	hostile	55	21	4+	1+						1
	negativistic	46	17			2-					
	anorexia	18	3	4+	1+	2+		4+			1
	bizarre physical complaints	18	3	4+		2+	1+	4+			1
<.10	retarded motor behavior	27	8								
<.20	moody	36	17	4+		2-					
	fatigue	36	17	4+	1+	2+		4+			1
	defensive	46	22								
	(less) incoherent	0	1		2+		1+				1

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	J	Σ
> 49%	hostile	55	21	4+	1+						1
> 39%	depressed	46	44	4+	3+	3+		4+	1-	4+	3
	dependent	45	32	4+	4+	2-		4+			4
	negativistic	46	17			2-					
	defensive	46	22								
> 29%	anxious	36	45	4+		2+		4+		4+	2
	moody	36	17	4+		2-					
	shallow affect	36	19				1-				
	worrisome	36	30	4+						4+	4
	immature	36	30	4+		2-					
	passive	36	33					4+			4
	fatigue	36	17	4+	1+	2+					1

Modal Diagnosis - Depressive Neurosis

Diagnosis Distribution -

neurotic	37%
character disorder	18%
alcoholism	9%
drug abuse without addiction	9%
situational disturbance	9%
no mental illness	9%
no data	9%

Age: Mean=28.1 Range=18-53 years
Sex: M=81.8% F=18.1%
Marital Status: S=54.5% M=45.4%
Education: 12.2 years
Source: Inpatient=36.4% Outpatient=36.4% General Medical=27.3%

1-3/3-1

(N=28 Cases).

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
<.01	uncooperative	18	5	4+							4
	complaint of back pain	32	8	4+	1+	2+	1+	4+		1+	1
<.05	defensive	43	22	4+				4+	4+		4
<.10	(less) suspicious	4	17			2+					2
	headaches	29	14	4+	1+	2+	1+	4+		1+	1
	numbness	11	3			2+	1+	4+		1+	1
<.20	(less) fearful/phobic	3	14								
	(less) perplexed	8	19			2-					
	(less) assaultive	0	9								
	dependent	46	32	4+	1+	2-					1
	(less) agitated/ restless	7	19	4+		2-					
	insomnia	29	18			2+	1+				1
	(less) drug usage	0	9								
	(less) confused thought	0	11			2+					2
	(less) suicidal thoughts	0	11			2+					2
	joint pain	5	4	4+		2+	1+	4+		1+	1
	visual problems	7	2	4+		2+	1+	4+		1+	1

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
> 39%	dependent	46	32	4+	1+	2-					1
	defensive	43	22	4+				4+	4+		4
>29%	passive	39	33	4+		2-					
	anxious	36	45		3+	3+		4+			3
	depressed	32	44	4-	2-	3+					

Modal Diagnosis - No Mental Illness

Diagnosis Distribution -

neurotic	32%
character disorder	25%
no mental illness	18%
situational disturbance	4%
psychophysiological reaction	11%
organic brain syndrome	4%
alcoholism	4%

Age: Mean = 31.2 Range = 18-51 years
Sex: M=82.1% F=17.8%
Marital Status: S=35.7% M=64.2%
Education: 12.8 years
Source: Inpatient=14.3% Outpatient=46.4% General Medical=39.3%

1-8/8-1

(N=8 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: B	C	Σ
<.01	numbness	25	3		2+	2
	shortness of breath	25	3			
<.05	incoherent	13	1		2+	2
<.20	fearful/phobic	38	14	2+	2+	2
	uncooperative	25	5			

% Level	Adjectives	%	B.R.	Literature Source: B	C	Σ
> 49%	depressed	50	44	2+	3+	2
	worrisome	50	30			
	immature	50	30		2+	2
	passive	50	33	2-		
> 29%	anxious	38	45		3+	3
	fearful/phobic	38	14		2+	2
	agitated restless	38	19	2+	2-	
	impulsive	38	19			
	sense of inadequacy/ inferiority	38	27		2+	2

No Modal Diagnosis

Diagnosis Distribution -

character disorder	38%
alcoholism	13%
psychophysiological reaction	13%
sexual deviance	13%
drug abuse without addiction	13%
drug abuse with addiction	13%

Age: Mean=25.1 Range=18-44 years
Sex: M=100%
Marital Status: S=62.5% M=37.5%
Education: 11.3 years
Source: Inpatient=37.5% Outpatient=25% General Medical=37.5%

2-3/3-2

(N=21 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	C	D	G	Σ
<.01	depressed	76	44	4+	2+	1+		1
<.05	(less) immature	5	30	4-	2+			
	(less) agitated/ restless	0	19	4-				
<.10	(less) ambivalent	0	7					
<.20	perfectionistic	24	12	4+			1+	4

% Level	Adjectives	%	B.R.	Literature Source: A	C	D	G	Σ
> 49%	depressed	76	44	4+	2+	1+		1
> 39%	anxious	43	45	4+	2+			2
	dependent	43	32	4+	2-			
	passive	43	33					
> 29%	difficulty in concentration	33	23	4+	2-		1+	
	history of marital conflict	33	27	4+	2-			

Modal Diagnosis - Alcoholism
Depressive Neurosis

Diagnosis Distribution -

neurotic	33%
character disorder	24%
alcoholism	19%
situational disturbance	14%
psychotic	5%
no mental illness	5%

Age: Mean=29.8 Range=18-51 years
Sex: M=76.1% F=23.8%
Marital Status: S=47.6% M=42.8% Other=9.5
Education: 12.4 years
Source: Inpatient=23.8% Outpatient=66.7% General Medical=9.5%

2-4/4-2

(N=27 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	G	Σ
<.01	amoral interpersonal relationship	19	4	4+		2-			
<.10	perplexed	33	19			2-			
	homicidal	7	2	4+		2-			
<.20	assaultive	19	9	4+					4
	immature	44	30			2-			
	(less) impotent/ decreased libido	0	7			2+			2
	negativistic	30	17						
	(less) fatigue	4	17						
	history of drug usage	19	9	4+		2-			

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	G	Σ
> 49%	anxious	56	45	4+	1+	3+			1
> 39%	depressed	48	44	4+	3+	3+	1+		1
	immature	44	30			2-			
> 29%	worrisome	37	30			2+			2
	perplexed	33	19			2-			
	history of marital conflict	33	27	4+	1+				1
	poor judgement	33	27	4+					4

Modal Diagnosis - Alcoholism

Diagnosis Distribution -

character disorder	26%
alcoholism	19%
situational disturbance	19%
psychotic	11%
neurotic	11%
drug abuse without addiction	4%
no mental illness	4%
no data	7%

Age: Mean=26.3 Range=18-54 years
Sex: M=81.4% F=18.5%
Marital Status: S=40.7% M=48.1% Other=11.1%
Education: 12.4 years
Source: Inpatient=29.6% Outpatient=63.0% General Medical=7.4%

2-7-7-2

(N=31 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
<.01	chest pain	7	5		2+	2+		4+			2
<.05	withdrawn	36	18	4+							4
	indecisive	39	20	4+							4
	depressed	68	44	4+	1+	3+		4+		1+	1
	sense of inadequacy/ inferiority	45	27	4+	4+	3+	1+	4+	4+		1
<.10	insomnia	32	18	4+		2+		4+			2
	ideas of reference	19	9			2-	1-				
	suicidal thoughts	23	11				1+				1
<.20	(less) excitable	3	12			2+				1+	1
	anxious	58	45	4+	1+	3+		4+	4+		1
	(less) moody	7	17	4-		2+					
	worrisome	42	30	4+	1+	2+		4+	4+		1
	passive	45	33								
	(less) talkative	10	21								
	tremulous	23	13								
	constipation	7	2		2-	2+					

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
> 49%	depressed	68	44	4+	1+	3+		4+			1
	anxious	58	44	4+	1+	3+		4+	4+		1
> 39%	passive	45	33								
	sense of inadequacy/ inferiority	45	27	4+	4+	3+	1+	4+	4+		1
	worrisome	42	30	4+	1+	2+		4+	4+		1
> 29%	dependent	39	32		4+	2-			4+		4
	indecisive	39	20	4+							4
	immature	36	30			2-					
	withdrawn	36	18	4+							4
	difficulty in concentration	32	23								
	insomnia	32	18	4+		2+		4+			2

Modal Diagnosis -- Alcoholism

Diagnosis Distribution -		
	character disorder	29%
	psychotic	16%
	situational disturbance	16%
	alcoholism	13%
	organic brain syndrome	6%
	neurotic	6%
	no mental illness	3%
	psychophysiological reaction	6%
	no data	3%

Age: Mean=25.5 Range=18-43 years
Sex: M=93.5% F=6.4%
Marital Status: S=45.1% M=54.8%
Education: 12.4 years
Source: Inpatient=35.5% Outpatient=61.3% General Medical=3.2%

(N=26 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	D	E	G	Σ
<.01	difficulty in concentration	46	23	4+			4+		4
<.05	hallucinations	12	3						
	fearful/phobic	31	14		2-				
	withdrawn	39	30	4+		1+			1
	sense of inadequacy/ inferiority	46	27						
<.10	retarded motor behavior	19	8			1+	4+	4+	1
<.20	shallow affect	31	19						
	tearful	23	13		2+				2
	passive	46	33						
	insomnia	31	18	4+	2-				
	poor memory	27	15	4+			4+		4
	defensive	35	22		2+				2
	autistic thought	12	6						
	(less) headaches	4	15						

% Level	Adjectives	%	B.R.	Literature Source: A	B	D	E	G	Σ
> 49%	depressed	54	44	4+	3+	1+	4+		1
> 39%	anxious	47	45	4+	2+		4+		2
	passive	46	33						
	difficulty in concentration	46	23	4+			4+		4
	sense of inadequacy/ inferiority	46	27						
	dependent	42	32						
> 29%	worrisome	40	30	-					
	immature	39	30						
	poor judgement	39	27						
	withdrawn	35	18	4+					4
	defensive	35	22		2+				2
	fearful/phobic	31	14		2-				
	insomnia	31	18	4+	2-				

Modal Diagnosis - Inadequate/Immature

Diagnosis Distribution -		
	character disorder	39%
	alcoholism	15%
	psychotic	15%
	neurotic	15%
	situational disturbance	8%
	drug abuse without addiction	4%
	no mental illness	4%

Age: Mean=25.8 Range=18-54 years
Sex: M=84.6% F=15.3%
Marital Status: S=57.6% M=30.7% Other=11.4%
Education: 11.9 years
Source: Inpatient=42.3% Outpatient=53.8% General Medical=3.8%

3-4/4-3

(N=10 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	E	F	G	H	I	Σ
<.01	chest pain	30	5								
<.05	history of financial problems	40	11		1+				4+	4+	1
<.10	(less) incoherent	0	1					1+	4+		1
<.20	history of alcohol excess	40	19		1+				4+	4+	1

% Level	Adjectives	%	B.R.	Literature Source: A	B	E	F	G	H	I	Σ
> 49%	dependent	50	32	4-					4+		4
> 39%	anxious	40	45			4+			4+	4+	4
	depressed	40	45		3+				4+		3
	history of alcohol excess	40	19	4+	1+				4+	4+	1
	history of financial problems	40	11		1+				4+	4+	1
> 29%	hostile	30	21	4+	1+	4+	4+		4+	4+	1
	negativistic	30	17			4+			4+		4
	insomnia	30	18		2-						
	history of marital conflict	30	27	4+	2+	4+	4+		4+	4+	2
	chest pain	30	5								

Modal Diagnosis - Alcoholism
Situational Disturbance

Diagnosis Distribution -

situational disturbance	40%
alcoholism	30%
no mental illness	20%
character disorder	10%

Age: Mean=32.0 Range=21-48 years
Sex: M=60% F=40%
Marital Status: S=10% M=70% Other=20%
Education: 9.9 years
Source: Inpatient=30% Outpatient=50% General Medical=20%

(N=9 Cases)

X^2 Level	Adjectives	%	B.R:	Literature Source: A	C	E	F	G	Σ
<.01	moody	67	17						
<.05	excitable	66	12						
	hostile	56	21		4+	2+	4+	4+	2
<.10	labile	33	11			2+			2
	negativistic	44	17			2-			
	(less) incoherent	0	1						
<.20	perplexed	44	19						
	shallow affect	44	19						
	tearful	33	13						
	worrisome	56	30			2-			
	agitated/restless	44	19			2-			
	indecisive	44	20			2+			2

% Level	Adjectives	%	B.R.	Literature Source: A	C	E	F	G	Σ
> 49%	moody	67	17						
	anxious	56	45		4+	3+			3
	depressed	56	44		4+	3+			3
	hostile	56	21			2+	4+	4+	2
	worrisome	56	30			2-			
> 39%	excitable	44	13						
	perplexed	44	19						
	shallow affect	44	19						
	dependent	44	32			2+	4+		2
	immature	44	30			2+			2
	negativistic	44	17			2-			
	agitated/restless	44	19			2-			
	indecisive	44	20			2+			2
	defensive	44	22			2+			2
	history of marital conflict	44	27		4+	2+	4+		2
	sense of inadequate/ inferiority	44	27			2-			
> 29%	ambivalent	33	17						
	irritable	33	16		4+	2+			2
	labile	33	11			2+			2
	suspicious	33	17		4+	2+	4+		2
	tearful	33	13						
	fatigue	33	17			2-			

Modal Diagnosis - Paranoid Character Disorder

Diagnosis Distribution -		
	character disorder	67%
	neurotic	22%
	psychotic	11%

Age: Mean=24.6 Range=18-44 years
Sex: M=33.3% F=66.6%
Marital Status: S=22.2% M=77.7%
Education: 12.2 years
Source: Inpatient=33.3% Outpatient=66.7% General Medical=0

4-8/8-4

(N=17 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
<.01	homosexual	18	2		4+	2-					
<.05	disorganized thought	24	7			2+		4+		1+	1
<.10	tearful	29	13			2-					
	talkative	41	21								
	history of drug usage	24	9								
	circumstantial thought	24	9			2+		4+		1+	1
	delusions	18	5								
	sense of inadequacy/ inferiority	47	27		1+			4+			1
<.20	perplexed	35	19			2-					
	difficulty in concentration	41	23					4+			4
	suicide attempts	18	6			2+		4+			2
	confused thought	24	11			2+		4+		1+	1
	abdominal pain	18	7								
	anorexia	12	3			2-					

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
> 39%	anxious	47	45	4+	2+	3+		4+	4+		2
	sense of inadequacy/ inferiority	47	27					4+			4
	depressed	41	44		4+	3+		4+			3
	talkative	41	21								
	difficulty in concentration	41	23					4+			4
	history of poor judgement	41	27	4+				4+	4+		4
> 29%	perplexed	35	19			2-					
	worrisome	35	30			2+		4+			2
	passive	35	33			2+					2

Modal Diagnosis - Situational Disturbance

Diagnosis Distribution -		
	psychotic	29%
	character disorder	24%
	situational disturbance	24%
	neurotic	12%
	alcoholism	6%
	psychophysiological reaction	6%

Age: Mean=24.6 Range=18-55 years
Sex: M=64.7% F=35.2%
Marital Status: S=52.9% M=35.2% Other=11.7%
Education: 12.3 years
Source: Inpatient=41.2% Outpatient=58.8 General Medical=0

4-9/9-4

(N=19 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
<.10	agitated/restless	37	19	4+	4+	2+			4+	4+	2
<.20	(less) worrisome	11	30			2+		4+			2
	history of drug use	21	9	4+		2+					2
	poor judgement	42	27	4+		2+		4+	4+		2
	sense of inadequacy/ inferiority	42	27		4+	2+					2

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
> 39%	anxious	47	45	4-		2-		4-			
	depressed	41	44		2-	2-					
	poor judgement	41	27	4+		2+		4+	4+		2
	sense of inadequacy/ inferiority	41	27			2+					2
> 29%	agitated/restless	37	19		4+	2+			4+	4+	2
	dependent	32	32			2+					2
	immature	32	30		4+	2+		4+			2
	history of marital conflict	32	27	4+	2+	2+		4+			2

Modal Diagnosis - Unspecified Personality Disorder
No Mental Illness

Diagnosis Distribution -

character disorder	37%
psychotic	16%
no mental illness	16%
neurotic	11%
situational disturbance	11%
psychophysiological reaction	5%
drug abuse without addiction	5%

Age: Mean=24.4 Range=18-43 years
Sex: M=89.4 % F=10.5%
Marital Status: S=42.1% M=52.6% Other=5.2%
Education: 12.7 years
Source: Inpatient=15.8% Outpatient=73.7% General Medical=10.5%

6-8/8-6

(N=12 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	Σ
<.01	depressed	92	44	4+		3+	1+	4+		1
	negativistic	50	17	4+		2+		4+		2
	suicidal thoughts	50	11			2+				2
<.05	apathetic	33	11	4+		2+		4+		2
	guilty	42	14			2+				2
	fatigue	42	17		4+					4
	suicide attempts	25	6							
	unreality feelings	25	6			2+		4+		2
<.10	irritable	33	16	4+	2-			4+		4
	worrisome	33	30							
	loss of conscious	17	4							
<.20	(less) shallow affect	0	19				1-			
	(less) defensive	0	22		2+					2
	(less) incoherent thought	0	1		4-		1-	4-	4-	
	ideas of reference	25	9	4-	1+		1+	4+		1

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	Σ
> 49%	depressed	92	44	4+		3+	1+	4+		1
	worrisome	58	30							
	anxious	50	45		3-	3+		4+		3
	dependent	50	32			2-				
	negativistic	50	17	4+		2+		4+		2
	passive	50	33							
	suicidal thoughts	50	11			2+				2
> 39%	guilty	42	14			2+				
	fatigue	42	17							
	history of marital conflict	42	27		2-					
	sense of inadequacy/ inferiority	42	27		2-	2+				
> 29%	apathetic	33	11	4+		2+		4+		2
	irritable	33	16	4+	2-			4+		4
	moody	33	17		2-	2+				
	perplexed	33	19							
	indecisive	33	20							
	talkative	33	21		4+					4
	difficulty in concentration	33	23				1+			1

Modal Diagnosis - Depressive Neurosis

Diagnosis Distribution -

character disorder	33%
neurotic	25%
mental retardation	8%
alcoholism	8%
psychophysiological reaction	8%
no data	17%

Age: Mean=26.0 Range=18-41 years
Sex: M=41.6% F=58.3%
Marital Status: S=41.6% M=33.3% Other=24.9%
Education: 12.4 years
Source: Inpatient=8.3% Outpatient=66.7% General Medical=25.0%

7-8/8-7

(N=31 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	Σ
<.05	ideas of reference	23	9							
<.10	(less) compulsive	32	45	4-		2-				
<.20	(less) fearful/phobic	3	14		4-	2-				
	(less) dependent	19	32	4-						
	tremulous	21	13		2-					
	(less) defensive	14	22			2+		4+		2
	(less) anxious	32	.45	4+		2-		4+		4

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	G	Σ
> 49%	depressed	55	44	4+		2+				2
> 29%	difficulty in concentration	39	23		1+	2+				1
	sense of inadequate inferiority	36	27	4+	1+			4+		1
	anxious	32	45	4+		3+		4+		3
	immature	32	30			2-				

Modal Diagnosis - Situational Disturbance

Diagnosis Distribution -

character disorder	23%
situational disturbance	23%
neurotic	16%
psychotic	13%
organic brain syndrome	7%
learning disability	3%
alcoholism	3%
psychophysiological reaction	3%
sexual deviance	3%
drug abuse without addiction	3%
no mental illness	3%

Age: Mean=21.3 Range=18-34 years
Sex: M=97.0% F=3.0%
Marital Status: S=74.2% M=22.6% Other=3.2%
Education: 11.9 years
Source: Inpatient=22.6% Outpatient=71.0% General Medical=6.5%

8-9/9-8

(N=14 Cases)

X^2 Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
<.01	excitable	50	12			2+	1+				1
	suspicious	50	17		2+	2+		4+			2
	agitated/restless	57	19	4+	1+	2+		4+	4+		1
	impulsive	57	19			2+					2
	hallucinations	22	3		2+	2+		4+			2
	ideas of reference	36	9		2+		1+				1
<.05	destructive gestures	29	8					4+			4
	euphoric/elated	14	2	4+	3-					1+	1
	worrisome	57	30	4+		2-					
	hyperactive/ hypomanic	29	5		2+	2+	1+	4+	4+		1
	difficulty in concentration	50	23			2+		4+	4+		2
	delusions	21	5		4+	2+	1+			1+	1
	religiosity	21	5		1+	2+					1
<.10	hostile	43	21		1+	2+	1+	4+			1
	labile	29	11			2+					2
	moody	50	17								
	history of poor judgement	50	27								
	confused thought	28	11		4+	2+		4+			2
	unreality feelings	21	6			2+		4+			2
<.20	immature	50	30		2-						
	negativistic	36	17			2+					2
	fatigue	36	17								
	insomnia	36	18	4+	2-	2+					2
	autistic thought	14	4			2+		4+			2
	disorganized thought	21	7		4+	2+		4+			2
	incoherent thought	7	.1		4+	2+		4+			2

% Level	Adjectives	%	B.R.	Literature Source: A	B	C	D	E	F	G	Σ
> 49%	depressed	57	44	4+	3+	3+	1-	4+			3
	worrisome	57	30	4+		2-					
	agitated/restless	57	19	4+	1+	2+		4+	4+		1
	impulsive	57	19			2+					2
	anxious	50	45		4+	3+		4+			3
	excitable	50	12			2+	1+	4+	4+		1
	moody	50	17								
	shallow affect	50	21					4+			4
	immature	50	30		2-						
	difficulty in concentration	50	23			2+		4+			2
	history of poor judgement	50	27								
	suspicious	50	17		2+	2+					2
> 39%	hostile	43	21		1+	2+		4+	4+		1
> 29%	dependent	36	32								
	negativistic	36	17			2+					2
	fatigue	36	17								
	insomnia	36	18	4+		2+					2
	history of marital conflict	36	27		4+						4
	ideas of reference	36	9		2+			4+	4+		2

Modal Diagnosis - Alcoholism
Paranoid Schizophrenia
Inadequate-Immature

Diagnosis Distribution -

character disorder	36%
psychotic	29%
alcoholism	14%
organic brain syndrome	7%
neurotic	7%
situational disturbance	7%

Age: Mean=23.3 Range=18-38 years
Sex: M=92.8% F=7.1%
Marital Status: S=50.0% M=35.7% Other=14.2%
Education: 12.4 years
Source: Inpatient=42.9% Outpatient=50.0% General Medical=7.1%

VITA AUCTORIS

1949 - Born in Dorking, Surrey, England to Joyce Muriel and Gerald Berks.

1954-1958 - Educated in Dorking, Surrey, England and Barnes, England.

1958-1969 - Educated at Central Public School, Vincent Massey Secondary School, and Assumption College High School, Windsor, Ontario, Canada.

1972 - Graduated with the degree of B.A. (Zoology) from The University of Western Ontario, London, Ontario, Canada

1973 - Graduated with the degree of B.A. Honours (Psychology) from The University of Windsor, Windsor, Ontario, Canada

1975 - Registered as a part-time graduate student at The University of Windsor