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VALIDATION OF A FACTOR-ANALYTIC MMPI SCALE

by

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## INTRODUCTION

The Minnesota Multiphasic Personality Inventory (MMPI) was developed by Hathaway and McKinley (1943) to make possible a quick, standard way of screening larger numbers of patients at the University of Minnesota Psychiatric Hospitals.

Published scales of personal and social attitude, case writing directions, psychiatric examination directions and textbooks in psychiatry were used to generate the original group of MMPI statements. The more than 1000 statements, that were generated in that manner, were reduced to 566 by elimination of all but sixteen identical statements, and other statements that did not contribute significantly to the final profiles.

The use of the MMPI as the diagnostic tool for this research design is supported by Sundberg (1961), who reports it is the most widely used objective test in the United States, and by Fowler (1969) who ascribes the same primacy to the MMPI in clinical usage.

The Sixth Mental Measurements Yearbook (Buros, 1965) lists 1394 publications based on the MMPI. Lingoos (1965) reports that over 200 additional MMPI scales have been constructed within the last decade.

In his judgement, Berron's (1953) ego strength scale, Feldman's (1952) prognosis for electroshock therapy scale, and Welsh's (1952) factor scales A and R have added considerably to the power of the MMPI. He further notes that;

" . . . neurotics, character disorders, and psychosomatic conditions as broad diagnostic groupings, can be reliably separated, if not among each and all of the several categories, at least among selected subjects. Finer distinctions within any one of these nosological groups however, have been in the main unproductive. . . . "

In standard usage, the elevation of the clinical scales are computed by counting the number of items answered in a pathological direction with each item having a linear value of one. The height of the scale is then equal to the number of items scored plus a K scale correction for scales Hs, Pd, Pt, Sc, and Ma. These linear raw scores are then converted to a standard score (T score) with a mean of 50 and a standard deviation of 10. One of the most frequently used means of linear analysis is the construction of a new scale to predict the criterion in question. Over 200 scales have been developed from the MMPI item pool.

Vestre and Klett (1969), using Gilbertstadt and Duker's rules, reported the application of Gilbertstadt and Duker's (1965) criteria to the MMPI profiles of 589 consecutive admissions to a

neuropsychiatric hospital. Of these profiles, 33.45% could be classified into one of the 19 Gilberstadt and Duker types. Payne and Wiggins (1968) reported classification of 29% of 541 psychiatric patients without violating any of Gilberstadt and Duker's rules. With the application of Marks and Seeman's (1963) rules, Huff (1965) reports 28% classified, and Pauker (1966) reported 22% classified. Palmer (1970) utilizing Mark's and Seeman's and Gilberstadt and Duker's rules reported classification rates of 10 and 32% respectively for each code type.

Configural analysis and/or coding and factor analysis form the bulk of the non-linear clinical analytic systems (Buros, 1965). The work of Brister (1970) promises a significant extension of this technique. Configural analyses have been reviewed by Dehlstrom and Welsh (1960).

Adcock (1965) hypothesizes that the MMPI, because of the large number of items it contains could yield a fairly wide range of personality dimensions but feels that the appropriate procedures for deriving these measures would be more difficult to apply. He notes that the obvious requirement is a factor analysis of the items.

The history of attempts to use factor analytic techniques for scale construction has been typified

by difficulty attributable to the number and complexity of the mathematical calculations required. As a result, the published factor analytic studies concerned with the MMPI consists primarily of three types. They are:

Type 1. extractions of factors from individual scales utilizing factor analysis of the items that constitute an individual scale.

Type 2. factor analysis of MMPI utilizing correlations of the sample's scale scores.

Type 3. utilizing the MMPI items and estimating the magnitude of the diagonal entries in the correlation matrix. Comrey (1957a), Comrey (1957b), Comrey (1958a), Comrey (1958b), Comrey and Maggaff (1958), Comrey (1958c), Comrey (1958d), Comrey (1958e), Astin (1959), and Welsh (1952) typify the type 1 studies. The factor analytic investigations of Gocka and Mees (1960) and Eichman (1961), are representative of type 2 studies. Type 3 factor analytic investigations prior to Barker, Fowler, and Peterson (1970), are best typified by Finney (1961), Lewinsohn (1965), Williams and Lawrence (1954). Although numerous analyses have been published these have all been of individual scales or of the scale scores.

Comrey (1957a, 1957b, 1957c, 1958a, 1958b, 1958c, 1958d, 1958e, 1958f) and Comrey and Maggaff (1958) factor analyzed individual clinical and validity

scales of the MMPI. Eight factors were extracted from the hypochondriasis scale (Comrey 1957a), ten from the depression scale (Comrey 1957b), five from the hysteria scale (Comrey 1957c), eight from the psychopathic deviate scale (Comrey 1958a), nine from the paranoia scale (Comrey 1958b), ten from the psychasthenia scale (Comrey 1958c), five from the schizophrenia scale (Comrey and Magguff 1958), fourteen from the hypomania scale (Comrey 1958d), ten from the F scale (Comrey 1958e), and eight from the K scale (Comrey 1958f).

Kassenbaum, Couch, and Slater (1959) administered the MMPI to 160 college freshmen and scores were obtained on 32 MMPI scales. The 32 scales were inter-correlated and the factor matrix analyzed using Thurstone's (1947) complete centroid method. This factor analysis produced three factors:

#### Factor I

Ego strength versus ego weakness with loadings for Pt, Sc, A, Bp, Pd, (-) Lp - To, (-) Es(-) K suppression and (-) intellectual efficiency.

#### Factor II

Introversion versus extroversion with high loadings on R, Re, Si, (-) Ma, C, (-)So.

#### Factor III

With high loadings on Hy, Hs, D, To, Ai and Pr was tentatively labeled tender minded sensitivity.

Welsh (1952) extracted two factors from an analysis of nonoverlapping MMPI items. On the basis of the first two factors, Welsh (1952) has developed two scales, A and R. The A scale contains heavy loadings on the complaint scales, particularly Pt and Sc. The R scale, based on the second factor, is correlated positively with Pd, D, and Hy and negatively with Ma. Welsh hypothesized that this scale may relate to the expressive-repressive personality traits.

Welsh (Welsh & Dehlstrom, 1965) defines the Factor A scale as related to anxiety or emotional upset as reflected by dysphoria, tension, inefficiency and symptomatic complaints. Factor R stresses reliance on the mechanics of repression. Scores on these two factor scales, A and R, were used to select 225 male VA patients in such a way that 25 cases fell into each one of the nine cells plus or minus one standard deviation on A and R conjointly. Analysis of variance of the raw scores of the four validity and ten clinical scales showed significance for most of the terms.

Astin (1959), utilizing a population of 250 hospitalized drug addicts, extracted five factors from the item scores on the MMPI psychopathic deviate scale. The factors were: (1) Self Esteem (2) Hypersensitivity (3) Social Maladaptation (4) Emotional Deprivation and (5) Impulse Control. Astin also found that identical

Pd scores can have quite different clinical meanings depending upon the internal composition of the factors contributing to the total Pd score.

Gocke (1960) investigated the relationship between the introversion-extroversion factor and social desirability and discovered that the hypothesis that X (socially desirable) and O (not socially desirable) balance accounts entirely for a low correlation between a total scale and social desirability was not supported.

Edwards and Dier (1962) extracted factor loadings for 58 scales under: (1) standard instructions (2) under instruction to give socially desirable responses and (3) under instructions to give socially undesirable responses. The first factor loadings of the scale under the socially desirable response condition, the socially undesirable response conditions and the standard conditions correlated .92, .94, and .82 respectively with the number of items keyed for socially desirable responses in the scales. The authors interpreted this to mean that the first factor of the MMPI can be interpreted in terms of social desirability.

Crumpton, Cantor, and Batiste (1960) factor analyzed Barron's (1953) Ego Strength Scale with the Thurston centroid method and rotated analytically the factors thus extracted by the Kaiser (1955) varimax

method. Fourteen factors were extracted, 13 of which significantly discriminated the means of the two groups.

This investigation also found that while the Es scale (Barron, 1953) efficiently associated good Ego strength with the effective functioning of students, it less associated poor ego strength with the functioning of psychiatric patients. Barrons concluded from this that the scale appears to measure the absence of specific ego weakness and not the presence of ego strength.

Bendig (1959) factor analyzed the MMPI Lie Scale (Hathaway and McKinley, 1957) and six items in Cattell's (1955) neurotic personality factor questionnaire that are scored to provide a measure of motivational distortion. Previous research by Bendig (1959) had shown that both scales are pure measures of a falsification or a reversed honesty factor in responses to personality questionnaires. Two orthogonal factors were found within both sets of items and the rotated factors were tentatively labeled Emotional Denial and Social Facade.

Williams and Laurence (1954) made a factor analytic comparison of 100 psychiatric patients MMPI and Rorschach productions. The relationship between the two personality measures was not significant.

Five factors were isolated, of which two contained only Rorschach loadings. Factors extracted from the MMPI were: Factor II with high loadings on the Es scale of the MMPI and a tendency to utilize color freely and organize blots into wholes on the Rorschach; Factor III contained high MMPI loadings from K, D, L, R, and Hy and Rorschach F. This factor's opposite pole was made up of Ma, Rorschach F. This factor's opposite pole was made up of Ma, and Rorschach R, D, N, FM, Ms, F, C; Factor III was labeled Expressive-Repressive. Factor IV was closely related to the first factors obtained in studies by Wheeler, Little, and Lehner (1951) and Tyler (1951).

Lewinsohn (1965) attempted to identify the dimensions of change on the MMPI. The MMPI was administered at time of admission and again at time of discharge to 114 patients at a psychiatric hospital. Residual change scores were computed for 29 MMPI scales. Intercorrelations between the 29 residual change variables and the 29 admission variables were calculated and factor analyzed. Lewinsohn concluded that (a) change on the MMPI is multi-dimensional (b) factorial structure of the two sets of scores is very similar (c) the greatest amount of mean change was associated with those scales having high loadings on the first MMPI factor (Factor A), while the

scales loading on the second factor (Factor R) showed little change.

This group of investigations served primarily to demonstrate the applicability of utilizing factor analytic techniques to analyze the MMPI. At this level of investigation, interest was centered on the mathematical relationship between scales. The number of factors extracted varied from 2 (Welsh, 1952) to 19 (Comrey, 1958b). Sample size for each investigation was too small to satisfy Cattell's (1966) or Nunnally's (1967) reliability criteria.

#### Representation of the MMPI Domain by Factor Scales

Gocke and Mees (1960) attempted to represent the MMPI domain by utilizing the factors extracted by Mees (1959) in a factor analysis of the MMPI using only non-overlapping items. Mees extracted four factors, M1, M2, M3, and M4. The authors felt that the first three of these factors were of sufficient significance and stability to serve as the basis for the construction of relatively pure factor scales consisting of the heavily loaded items. All items included in the scale had similar factor loading both for a group of 300 university students and hospitalized neuropsychiatric patients of mixed diagnosis. Multiple

correlation of the three MMPI factor scales were found with the standard MMPI clinical scales and most of the empirically derived MMPI scales and factor derived MMPI scales were calculated in order to ascertain how well the MMPI domain would be represented by these three factor scales. The first scale, M1, seemed to be a member of the second order dimension Dynamic Integration versus General Complaint, and has the most significant relationship with the other MMPI scales. The second factor scale, M2, appeared to be related to the second order, Repressive-Expressive dimension and was less represented in the MMPI scales than was the first factor, M1. Factor scale M3 was represented least well on the other MMPI scales. Together the factor scales did a good job of predicting most of the non-clinical scales because of the high number of items correlated with social desirability in these scales. Previous research (Gocke & Marks, 1959) indicates the existence in these scales of a second order factor labeled the Dynamic Integration versus General Complaint dimension. For the clinical scales Hy, Pd, Mf, and Pa, less than 20% of their obtained variance was accounted for by the three dimensions. Gocke and Marks concluded that, if the clinical scales were to be replaced, at least one or two additional factor scales would be necessary. The results indicated that most

of the clinical scales that were not predicted by these factors have a multidimensional complexity not accounted for completely by the three factor scales.

Eichman (1961) reported the extraction of four factors labeled: anxiety, repression, somatization, and acting out. He replicated these factors in a sample of female neuropsychiatric patients. These factors were then compared with those found by Fisher (1957) and by Kassenbaum, Couch, and Slater (1959) with male subjects. Considerable correspondence was found. Eichman constructed scales to measure each of these factors. Four personality inventory scales were devised from an initial factor analysis by Eichman (1961), and a later item analysis of the MMPI. The criteria for selection of items for factor scale were: (1) an item correlation greater than .13 with this particular factor scale and (2) lower item correlations for the other three factor scales. However, the factor item scales correlated to a high degree despite this procedure designed to minimize any intercorrelations. Eichman notes that inspection of the correlations of items or factor scales quickly reveals that the MMPI item pool contains insufficient pure items for the construction of factor scales, and that the vast majority of items show a significant correlation with the first factor score. The entire procedure was followed independently

for male and female subjects for which separate scales were obtained. As a final step, the male scales were tried out with the female subjects and vice versa. Items which seemed to work equally well with both male and female subjects were included in both scales, but some of the most fertile items were useful for only one sex.

### Factor Scales

Factor I, Anxiety. This factor scale seems to take in more of the variance associated with denial of symptoms than has previous anxiety scales. Item content reveals that all items concern something similar to maladjustment or anxiety although denial items affect a varying normal level of this variable. The male and female forms of this scale have 16 of 20 items in common. Nine of the entire 24 items are scored for R<sub>w</sub> and P<sub>t</sub> or both. Another six items are scored in the opposite direction for L or K which have high negative ratings on Factor I.

Factor II, Regression. Male and female forms on this scale contained 13 of 27 items in common. Sixteen of the items are scored on two D, Mo, Hy, Ma, R<sub>w</sub><sup>1</sup> in the appropriate directions, suggesting that it

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<sup>1</sup>Welsh's R factor.

measures something akin to the Welsh (1952) R scale. All the items are keyed for first response and involve denial of active interest, denial of pathology, and a general trend toward introversion or withdrawal.

Factor III, Somatization. The male and female forms of this scale contained 13 items in common. Seventeen of the total 26 items are scored on Ho or Hy or both. Twenty-one of the total deal with physical complaints justifying the cumulative name of somatization.

Factor IV, Unconventionality. The male and female forms of this scale contained 14 items in common. Fifteen of the 26 total items are scored in the same direction on the F, Pa, Pd, Pc, and L and I scales. Four other items are scored in the opposite direction from the way they are on the Pd, Ib scales. These are the well known subtle items which, in the original standardization (Weiner, 1948), predict that the proper diagnosis is correlated negatively with the obvious and subtle items on the original MMPI scales. Eichman emphasizes that the only criteria for selecting the items were: (1) homogeneity of items within scales (2) statistical independence of scales. Thus, items which had significant relationships with two or more factors were discarded.

Eichman presents validity data indicating that four distinct classes of items were extracted from the

MMPI item pool. Each class represents a statistically important aspect of test taking performance. The extent to which this test taking behavior corresponds to general behavior is influenced by external validity. The data presented were valid in terms of diagnostic criteria and ratings from hospital records.

In addition, Eichman developed a neuro-psychiatric scale for separating psychiatric from normal subjects, for which he has validated 25 factorial code

These examples contain MMPI Welsh code as well as the Eichman factor code. Behavioral traits and intra-psychic phenomena are predicted or listed under each scale, much in the same manner as the Gilberstadt-Duker Codebook (1965). Four of the 25 Eichman code types and traits and symptoms are delineated in Appendix A.

This investigation utilizing interrelations of scale scores represents one of the first reasonably successful attempts to produce a clinical instrument consisting of factor entities from the MMPI. The two primary deficits of this, the Eichman factor profiles, are: (1) They produce a significantly smaller number of factors extracted than Finney (1966), Comrey (1957), Comrey (1958), Fisher (1957), Lewinsohn (1965) and Barker, Fowler and Peterson (1970) found. (2) Scale scores for the scale are intercorrelated and factor

analyzed. Adcock (1965), Comrey (1957) and Barker, Fowler and Peterson (1970) have indicated that a factor analysis of the item pool is the preferred statistical technique. In addition, none of the code behaviors listed describe paranoid schizophrenia. The following investigation appears to remedy these two deficits.

#### A Factor Analysis of the Items on the MMPI Short Form and the Generation of Factor Profiles

Horst (1965) provided a rationale and a mathematical proof for a factor analytic procedure based on a reduced data matrix. He indicated that the matrix of the MMPI items may be reduced to the size which corresponds to the number of subjects employed. Barker, Fowler and Peterson (1970) note that, although this approach makes possible the computer processing of large data matrices, it suffers from one serious fault: The number of variable under study may far exceed the number of subjects and raises serious questions regarding reliability of findings. Cattell (1966) proposed that the number of subjects should be approximately one hundred more than the number of variables. Nunnally (1967) has proposed that there should be ten subjects for every variable.

Barker, Fowler and Peterson (1970) factor analyzed all of the items of the MMPI short form by a computer operating system, Matlan, developed in Germany (IBM System, 1968) that employs overlays and disc storage which enables large data matrices that normally exceed computer capacity to be processed. This form of the MMPI consists of the first 366 questions and seven additional MMPI questions.

One thousand five hundred seventy five Tuscaloosa VA patients' answer sheets were processed which yielded an approximate ratio of four subjects per variable. It should be noted that: (1) the number of subjects exceeds Cattell's criterion but is less than Nunnally's and (2) that this is the first factor analysis of an entire MMPI item pool in which the number of subjects exceeds the number of variables. All subjects were administered the short group form of the MMPI, and were given the test taking instructions in the standard manner. All subjects were administered the MMPI by the same examiner.

The stopping point for factor extraction was set at one percent of the variable variance accounted for and no factor loadings of .3 or greater. Although ten factors were extracted, only nine met that criterion. The first principal component extracted accounted for 12

percent of the variance. This indicates that no single factor or dimension prepotently permeates the set of MMPI items. Items with loadings equal to or greater than .3 on the varimax factor were identified and pooled to that factor. The items comprising each factor may be examined in Appendix B. In strong contrast to the finding of Gocka and Mees (1960) and Eichman (1962), only 16 of the items in this study were selected for more than one factor. In order to present the factors graphically, and to compare them with standard "MMPI profiles," Barker, Fowler, and Peterson (1970) treated each of the standard nine factors as though they represented the responses of one subject and generated an MMPI profile based on the number of items from each subtest which appear on the factor. This produces a theoretically interpretable "profile" for each factor.

Factor I contains 62 items drawn from Scales 6, 8, 7 and 1. A careful examination of item content reveals a tendency to admit to bizarre experiences hence Factor I appears to be related to psychoticism. Factor II contains 57 items from Scales 1, 2, 3, 6, 7, and 8. Item content seems to indicate neurotic tendencies. Factor III contains 33 items from Scales 4, 6, 9, and L and seems to be related to acting out. Factor IV contains 25 items and loads from F, 6 and 8.

This factor seems to represent conformity and rigidity. Factor V is composed purely of MF items and may be a measure of masculinity, femininity and, education. However, its correlation with the conventional MMPI Mf scale is very low. Factor VI contains 38 items and appears to measure feelings of guilt and inadequacy. The items for this factor are drawn from Scales 2, 7, and 3. Factor VII consists of 44 items drawn from the F, 6 and 8 scales. Factor VII appears to be a measure of paranoid schizophrenia. Factor VIII contains 13 items drawn from the 3 and 6 scales. This factor appears to be related to cynicism. Factor IX consists of 12 items primarily from the F scale. Item content suggests withdrawal or "Anhedonia."

Factor I, II, and VI appear to be related to the Gilberstadt and Duker (1965) 8-6-7, 1-3-2, 2-7-3 profile types respectively. Relatively pure factors were extracted from the L and MF scales. Factor III loads predominately on L items with some representation on the Ma, Pa, and Pd items. Factor IV consists almost entirely of pure F items. Factor V items are almost totally MF items. Items for Factor VII are drawn primarily from items comprising the F and Pa scales. Factor VIII is derived largely from Pa items although the absolute number of Hy items exceeds those of Pa. Factor IX is composed of 12 items of which

eight are on the F scale. The most complex scales, it appears, are the Pa and F scales, both breaking down to load on several factors. The paranoia scale seems to break up into three separate sets: (1) a cynicism factor (2) a rather pure paranoid scale and (3) a general schizophrenic factor.

It should be again noted that this is the first published factor analysis of an entire MMPI item pool, wherein the number of subjects exceeded the number of variables, and is the first production of MMPI factor profiles based upon an analysis of an entire item pool. The factor profiles thus generated are illustrated in Figures 1-9.

The basic assumption underlying any personality test is that that test is essentially a behavioral sample from the client's repertoire and that his responses to test items and/or his verbal or projective responses are influenced by the same internal constructs, or dysfunctions as his behavior in general. This sample of test behavior can then be used to place people into broad behavioral, intellectual, or nosological categories, e.g., hyperactive, retarded, paranoid, etc. One can hypothesize, then, that the degree of dysfunction thus uncovered is related to the specificity of the instrument and the validity of the instrument. The validity of the instrument can be

Figure 1

## Factor I Profile

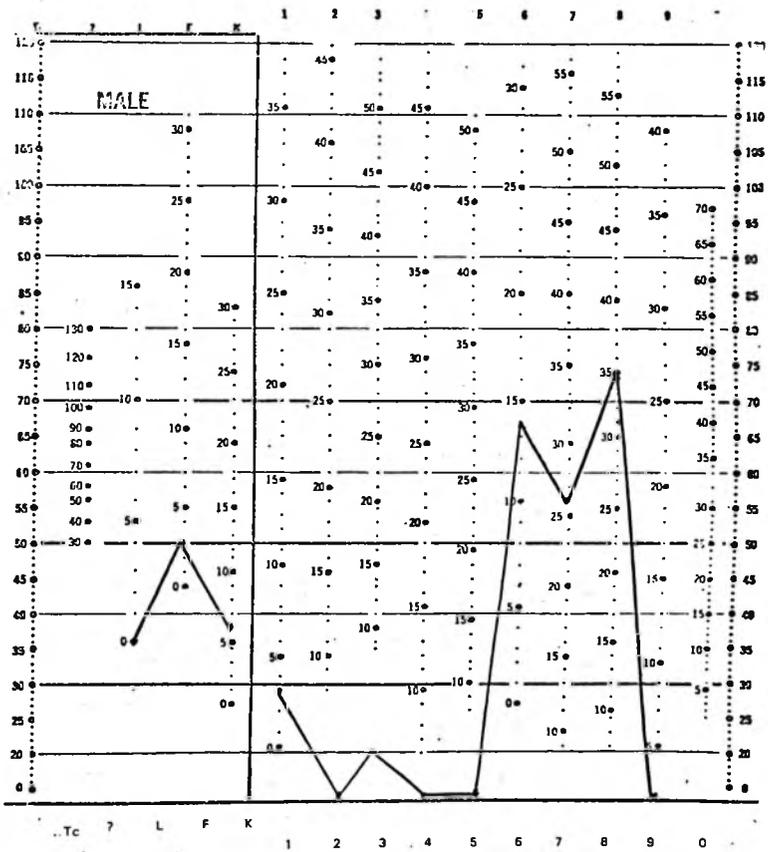


Figure 2

Factor II Profile

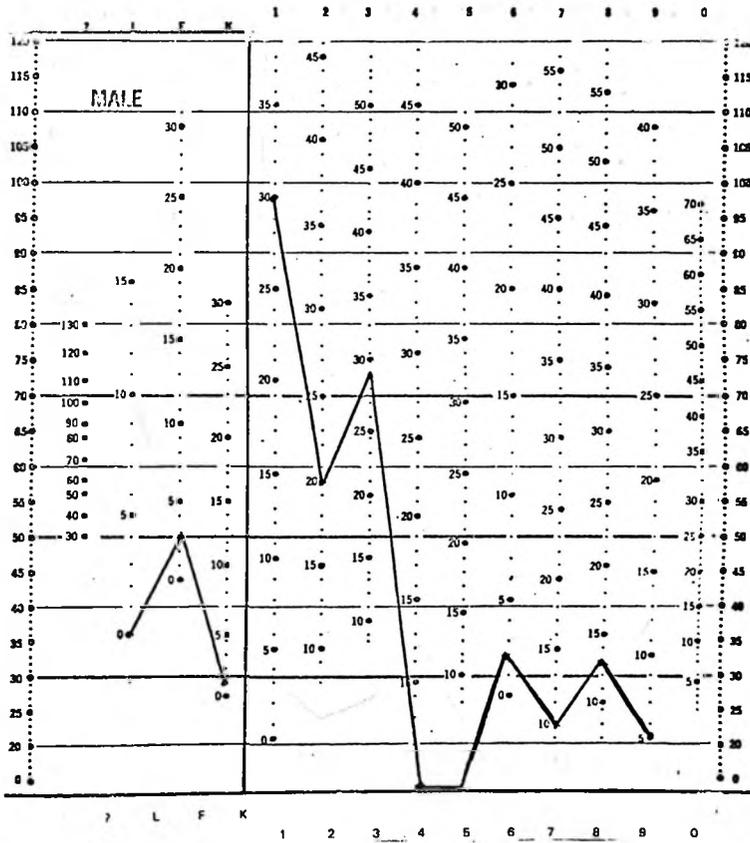


Figure 3

## Factor III Profile

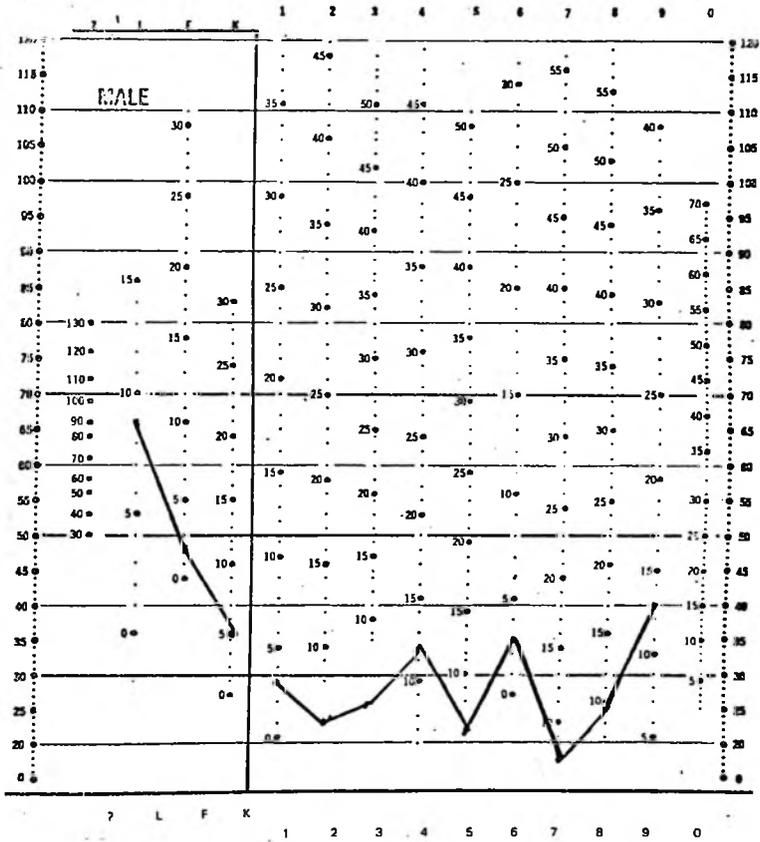
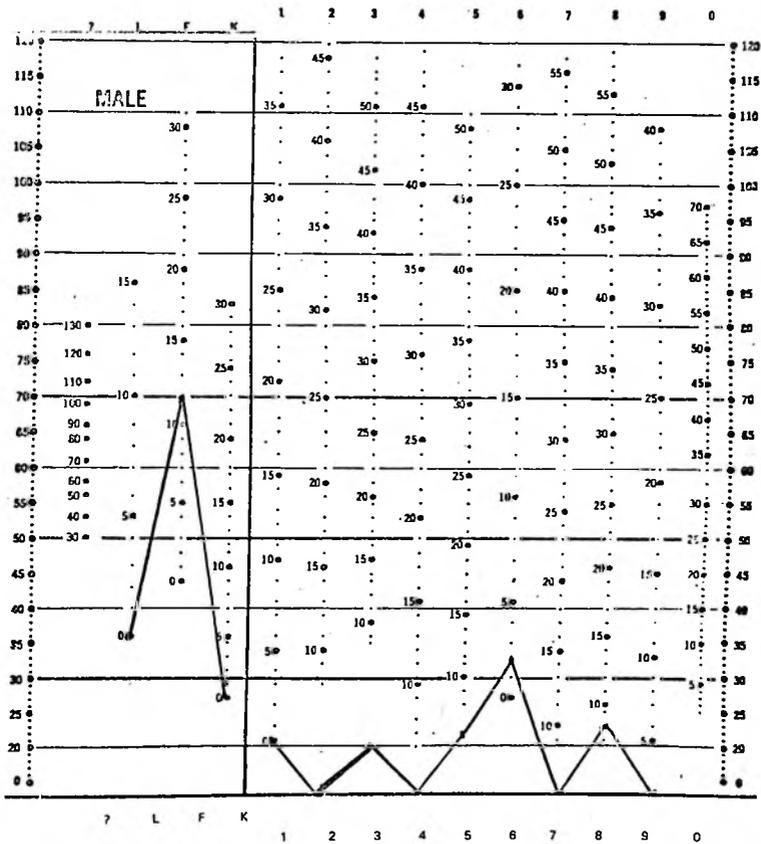


Figure 4

Factor IV Profile



Factor 5

Factor V Profile

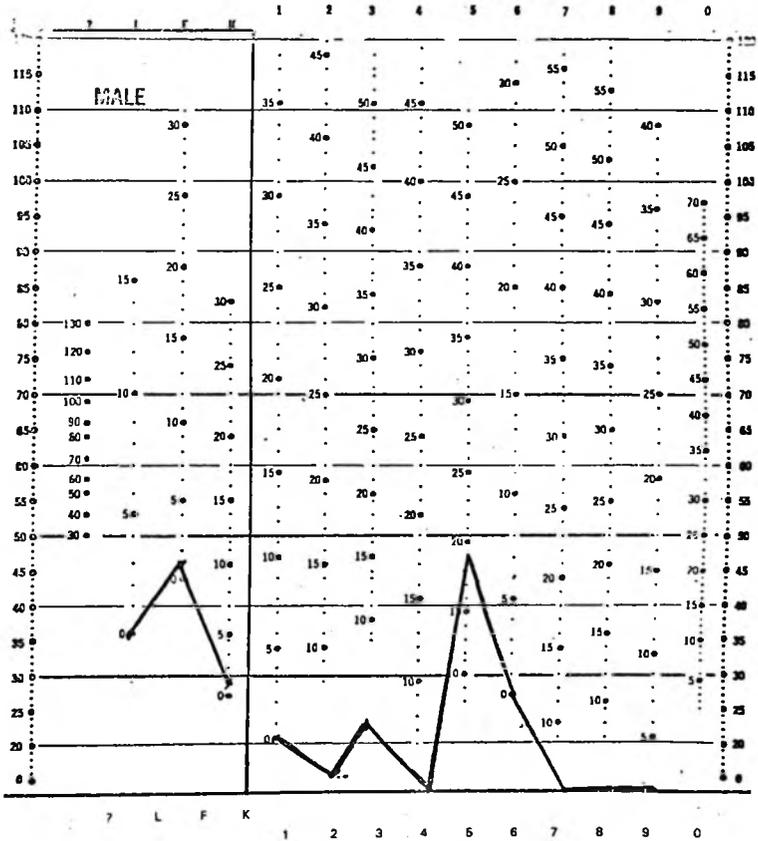


Figure 6

Factor VI Profile

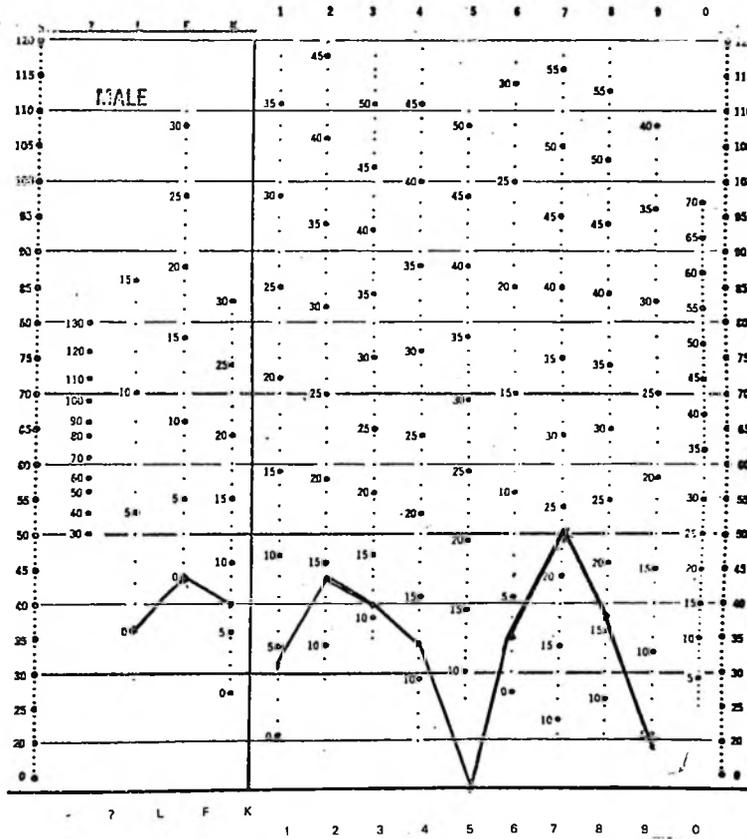


Figure 7

## Factor VII Profile

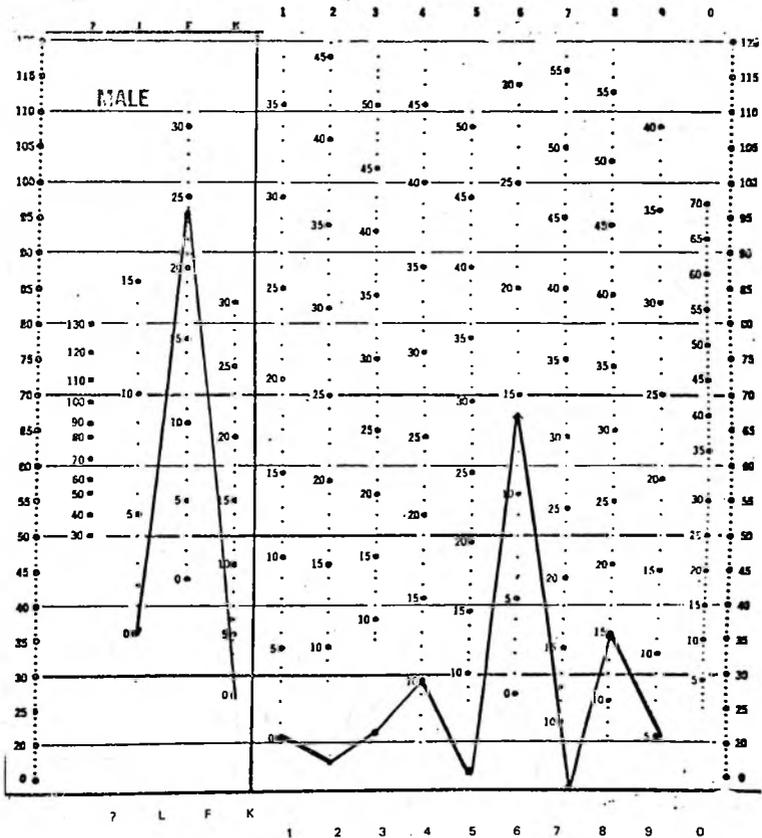


Figure 8

Factor VIII Profile

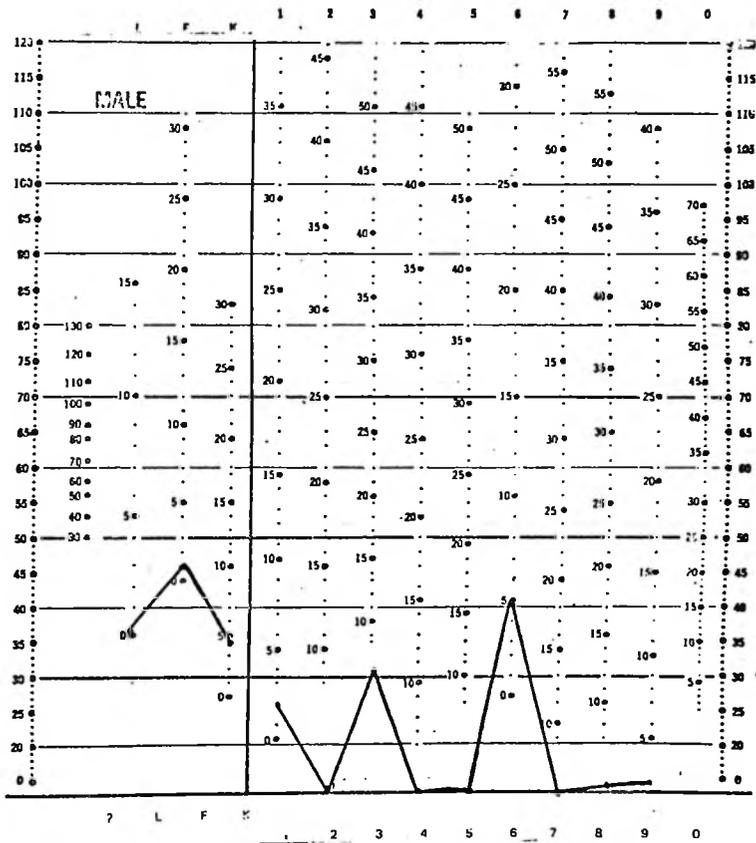
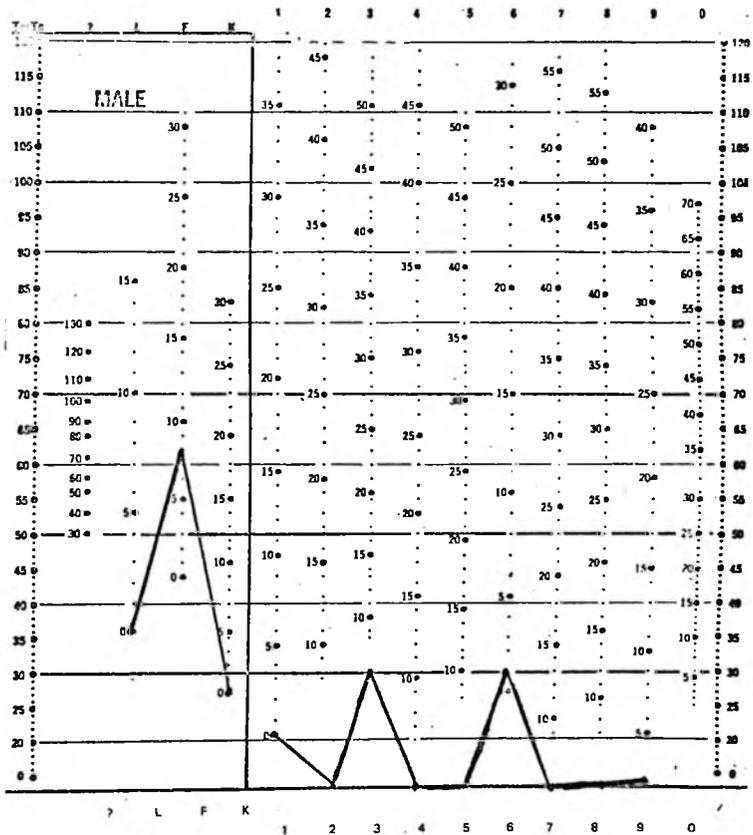


Figure 9  
Factor IX Profile



ascertained by determining the ability of the instrument to identify its target group and to differentially predict the behavior or performance of the individuals in the group and the performance and behavior of the group as a whole. The specificity of the instrument seems to be related to the nature of the category to be predicted and to the homogeneity of the predictive instrument.

Validating research on a test such as the MMPI can be usefully divided into four categories.

Separating individuals into broad nosological categories on the basis of differential responses to the test (McKinley and Hathaway, 1943) is, perhaps, the most basic task. A second phase is the empirical demonstration of the diagnostic and descriptive validity of the instrument. Investigations by Calvin and McConnell (1953), Drake and Oetting (1959), Marks and Seemen (1963), Hathaway and McKinley (1943) typify this category. A third important validating procedure is the search for additional behavioral corollaries common to response classes or diagnostic descriptive categories. Stated differently this is a search for additional pervasive response dimensions within a diagnostic scale category. Representative research in this domain includes Comrey (1957a), Comrey (1957b), Comrey (1957c), Comrey (1958a), Comrey (1958b), Comrey

(1958c), Comrey (1958d), Comrey (1958e), Comrey (1958f), Comrey and Maggraff (1958), Astin (1959), Kleinmütz (1960) and other researchers.

A fourth and infrequent approach is to search for common factors without regard to diagnostic scale categories and then relate these pure factors to diagnostic and descriptive categories. Theoretically, this would produce an instrument of discrete homogeneous factors capable of both identifying diagnostic descriptive categories, and of making finer within-category predictions. Representative studies in this area are not plentiful. The work of Gocke and Lees (1960) and Eichman (1962) constitutes most of this phase of research.

The present study proposes to investigate the efficacy of within and between diagnostic category discriminations by means of factor analytic and rating techniques.

Paranoid schizophrenia is the nosological category selected. The Diagnostic and Statistical Manual of Mental Disorders, second edition (1968), gives the following description of paranoid schizophrenia:

"This type of schizophrenia is characterized primarily by the presence of persecutory or grandiose delusions, often associated with hallucinations. Excessive religiosity is sometimes seen. The patients attitude is frequently hostile and aggressive and his behavior tends to be consistent with his delusions. In general, the disorder

does not manifest the gross personality disorganization of the hebephrenic and catatonic types, perhaps because the patient uses the mechanism of projection, which ascribes to others characteristics he cannot accept in himself. Three subtypes of the disorder may sometimes be differentiated, depending on the predominant symptoms: hostile, grandiose, and hallucinatory. . . ."

A legitimate question at this point is whether factor analytic research can add to our knowledge. The next group of studies are concerned with factor analytic investigations of paranoid schizophrenia. Published factor analytic investigations of this diagnostic category appear to be extremely rare. This may be due to the factorial complexity of the paranoid and schizophrenic scales of the MMPI.

#### Factor Analytic Research with MMPI Items on Paranoia, Schizophrenia, and Paranoid Schizophrenia

Guertin (1952a) found some factor analytic evidence indicating the existence of three types of paranoid schizophrenia. The three tentatively identified factors were: (1) persecuted-suspicious (2) superior-grandiose (3) over ideational. In an inverted factor analysis of that data, Guertin (1952b) obtained a large first factor which he identified as paranoid schizophrenia, but the subject sample was too broad to permit a focus solely on paranoid schizophrenia. To provide a

focus on paranoid schizophrenia alone, Guertin and Zelsitis (1955) selected 24 hospitalized males who were diagnosed as paranoid schizophrenics by the hospital staff. Subjects in remission and extreme states of confusion were not selected. A twenty-fifth hypothetically "normal" individual derived from normative data in the MMPI Manual (Hathaway and McKinley 1957) was added.

Guertin and Zelsitis (1955) selected 100 items from the MMPI card form which they agreed would probably be most discriminating among different types of paranoid schizophrenics. The estimated commonality among paranoid schizophrenics in this sample was 63.3% of the total variability of all of the individual test responses and gives good support for the homogeneity of people within this diagnostic category. Four group factors A, B, C, and D were extracted and they accounted for 85% of the commonality and 54% of the total variance of the individuals. The factors extracted were:

FACTOR A

Socially normal paranoid type. The authors described this factor as a normalcy factor because the responses of individuals of this type closely approximated the answers given by the normative individuals (Subject 25). Cattell's (1952) common species factor

label appears to adequately describe this factor. The only consistently deviant response in this group was wondering whether they had locked the windows and closed the doors before leaving home, (MMPI item 270).

Individuals of this type appear to retain good integration and are able to conceal many of their delusions. Although this individual's history would be more productive than that of the Type C individual, a paranoid diagnosis would still be difficult. He appears to be moral and not too cooperative in mental status inquiries.

#### FACTOR B

Grandiose and delusional paranoid type. These individuals were characterized as very outgoing and over productive people whose delusional systems are largely in the grandiose realm. The four most typical Type B paranoid gave deviant answers to MMPI items 19, 93, 136, 160, 232, 280, 284, 332, 334, 422, 432, and 476. Item content can be found in Appendix C.

#### FACTOR C

Evasive and well integrated paranoid type. The five most typical Type C subjects listed only the following deviant response to item 529 "I would (not) like to wear expensive clothes."

FACTOR D

Sensitive, inadequate and withdrawn type. Inhibitions and supprescion of overt and emotional responses seem to characterize this response class. This is evident in the areas of sexual and other interpersonal behaviors. He appears to experience feelings of inadequacy and neurotic conflicts.

The three most typical individuals of this type endorsed the following MMPI items in a deviant direction: 551, 510, 482, 429, 358, 346, 319, 297, 291, 280, 278, 221, 138 and 136. Item content is contained in Appendix D.

In general, Guertin and Zelaitis' (1955) study confirmed that the presence of a large paranoid classification could be demonstrated by using a factor analytic technique.

Comrey (1958b) factor analyzed 40 items from the MMPI paranoia scale. Comrey and Meggreff (1958) factor analyzed the MMPI schizophrenia scales. Of the factors extracted, Paranoia I, Paranoia II, Paranoia III and Paranoia IV from the paranoia scale, plus paranoia from the schizophrenia scale appear to be useful for identifying and delineating a paranoid schizophrenia factor.

The remaining relevant factors had the following characteristics:

Factor XV. The authors divided this factor into Paranoia I, representing possibly actual persecution, and Paranoia II representing imagined persecution (Appendix E).

Factor XIII, designated Paranoia III, represents an abnormal paranoia with emphasis on being followed. See Appendix F.

Factor X, designated Paranoia IV seems to represent a defeated paranoia. See Appendix G.

Factor I, schizophrenia scale, consisted of paranoia items on the MMPI Schizophrenia scale and was labeled Paranoia (Sc). The MMPI items that load on these factors are listed in Appendices E-H.

Comrey and Meggaff's (1958) and Comrey's (1958b) separate factor analytic studies of the Schizophrenia and Paranoia scales produced several clusters of items that are judged to be relevant to this study. From the Paranoia scale analytic study they are:

Paranoia I	Containing MMPI items 25, 24, 110, 124 and 284
Paranoia II	Containing items 35, 121, 151, 157, 275, 291, 293, 338, 364 and 365
Paranoia III	Containing items 27, 110, 121, 123 and 275
Paranoia IV	Containing items 16, 35, 157 and 202

From the factor analytic study of the Schizophrenia Scale, the following clusters appear to be relevant:

Factor I Paranoia containing items 52, 121, 202, 241, 291, 315, 323, 331, 333, and 364.

Other items deemed relevant were selected from the Guertin and Zelaitis (1957) factor analytic study of the paranoid schizophrenic reviewed earlier. The factors extracted were: Factor A---a socially normal paranoid type; Factor B---a Grandiose and Delusional type; Factor C---a evasive and well integrated type; Factor D---a sensitive and withdrawn type.

The item content and factor designation indicate that Factors B and D may be relevant to this study. Items contained in Factor B were: 19, 136, 232, 280, 420, 432, 476, 334, 332, 93, 160, and 284. The items that loaded on factor D were: 551, 510, 432, 429, 291, 346, 319, 302, 37, 297, 286, 278, 221, 138, and 136. It is noted that these items were intuitively chosen by Guertin and Zelaitis (1955) and then factor analyzed.

The items from these three studies provide an empirical estimation of the MMPI items that have been utilized in factor analytic studies that might be useful in delineating a paranoid schizophrenia factor.

If the Barker, Fowler, and Peterson's (1970) Factor VII and Comrey's (1958b), Comrey and Maggaff's

(1958), and Guertin and Zelaitis' factor analytic studies are estimates of paranoid schizophrenia, then the items loading on Factor VII should include most of the items in Paranoia I, Paranoia II, Paranoia III, and Paranoia IV factors from Comrey's (1958b) analysis of the paranoia scale and most of the items loading on paranoia and a paranoia factor extracted in Comrey and Maggaff's (1958) analysis of the schizophrenia scale. One would also expect the inclusion of a significant number of the items from Guertin and Zelaitis' (1955) Grandiose and Delusional type and Sensitive, Inadequate drawn type. It is noted, however, that Guertin and Zelaitis selected their item pool by choosing items that they intuitively felt were good discriminators of paranoid schizophrenia. The items thus intuitively selected were then factor analyzed.

Comrey (1958) utilized 63 items. Guertin and Zelaitis (1953) utilized 100 items (of which 29 proved to be of value). Barker, Fowler, and Peterson (1970) utilized 373 items, hence their study contains a larger correlation matrix or factor space and more items.

Examination of Table 1 reveals that Factor VII (Barker, Fowler, and Peterson, 1970) contains most of the items in Comrey's (1958a) and Comrey and Maggaff's (1958) factor analytic studies.

Table 1

MMPI Items from Barker, Fowler and Peterson and Comrey  
and Comrey and Meggraff

Items Unique to Barker, Fowler, and Peterson Items (1970)	Common Items	Items Unique to Comrey & Meggraff (1958) Comrey (1958a)	
21	197	16	223
22	200	24	338
28	212	27	364
40	216	35	365
42	245	52	156
48	252	110	273
49	284	121	
50		123	
66		151	
76		157	
85		275	
97		284	
104		291	
106		293	
139		315	
145		331	
179		333	
184			

Table 2 illustrates the lack of a substantial relationship between Factor VII (Barker, Fowler, and Peterson, 1970) and the previously noted factors extracted by Guertin and Zelaitis (1955). The low correspondence between Factor VII items and Guertin and Zelaitis items can be attributed to differences in item selection procedures previously described, and to a smaller factor space.

Table 2

MMPI Items from Barker, Fowler, Peterson and Guertin  
and Zelaitis

Items Unique to Barker, Fowler, and Peterson (1970)			Common Items	Items Unique to Guertin and Zelaitis (1953)	
16	21	315	284	19	37
22	24	331	291	93	136
27	28	333		138	160
35	40			221	232
42	48			278	280
49	50			284	297
52	66			302	319
76	82			332	334
97	104			346	420
106	110			429	432
121	123			476	482
139	145			510	551
197	200			136	
202	205				
212	216				
245	252				
275	282				
291	293				

## STATEMENT OF THE PROBLEM

The assumption upon which the MMPI is based is that different diagnostic groups answer different clusters of questions in reliably different ways. For example, individuals whose test performance placed them in diagnostic category labeled paranoid schizophrenia endorsed significantly more of the questions on the paranoid and schizophrenia scales than the individuals whose test performance placed them in another category, say passive aggressive personality. It is also assumed that the number of items endorsed in a pathological direction on any scale is related to the severity of and/or the probability of presence of the specific personality disorder that that scale discriminates.

Eichman (1962) has experimentally related four of his factorial entities to behavioral symptoms and diagnostic categories, however it should be remembered that his method of factor extraction did not include all items in the MMPI pool. In addition, his extraction of only four factors is not in accord with the work of Comrey (1957a, 1957b, 1957c, 1958a, 1958b, 1958c, 1958d, 1958e, 1958f, and Comrey & Magguff, 1958) who extracted 5-15 factors from factor analyses of individual

clinical scales; Finney (1959) who extracted 12-13 factors from 60 MMPI scales, and Barker, Fowler, and Peterson (1970) who extracted 9 factors from a factor analysis of the entire pool of the MMPI short group form.

The reliability and validity, in terms of diagnostic categories, of the Barker, Fowler, and Peterson (1970) factors are yet to be differentially determined. Correspondence of factors to behavioral measures is a necessary step in validating the factors as predictive instruments.

The general issues of this research are to evaluate:

1. The reliability across time of the nine Barker, Fowler, and Peterson factors.
2. The extent to which the factor analytic profile can be used to discriminate paranoid schizophrenics from a general abnormal sample.
3. The discriminability of behaviors of high and low Factor VII respondents from the general abnormal respondents.

## METHOD

Subjects Ss were selected from records of all admissions to the Tuscaloosa VA Hospital between the years 1966 and 1971. They were divided into two categories on the basis of the following rules:

Category 1                      Paranoid Schizophrenia Sample

1. An admission diagnosis of paranoid schizophrenia
2. Age when tested between 18-59 years
3. No history of brain damage
4. No history of habitual excessive drinking exceeding five years
5. Completed at least sixth grade education
6. MMPI administered within seven days of admission
7. A treatment planning conference diagnosis of paranoid schizophrenia

Category 2                      General Abnormal Sample

1. Neither admission or TPC diagnosis of paranoid schizophrenia
2. At least a sixth grade education
3. Age when tested between 18-59 years
4. MMPI administered within seven days of admission to hospital
5. All Ss that did not meet the requirements for inclusion in either category one or category two were excluded from this study

## Procedure

1. Factor profiles were computed for the three paranoid schizophrenic samples and for the general abnormal sample by means of the Barker, Fowler, Peterson (1970) method.
2. Mean factor scores were computed separately for two periods, pre 1970 and 1970-1971.
3. Twenty MMPI protocols were selected randomly from the paranoid schizophrenia sample.
4. Twenty MMPI protocols were selected randomly from the general abnormal sample.
5. Twenty MMPI protocols with the highest scores on Factor VII were selected from the paranoid schizophrenia sample.
6. Twenty profiles with the lowest score on Factor VII were selected from the paranoid schizophrenic sample.
7. Checklist ratings for the four samples delineated above were completed by three judges using a modified (Clark and Miller, 1971) behavioral checklist. The checklist and instructions to the judges can be examined in Appendices I and J.
8. Judges were instructed to check only those items on the checklist or synonyms of those items actually found. Judges were instructed not to make dynamic inferences from the data.

9. The frequency of occurrence of checklist items in each paranoid schizophrenic group was compared with the frequency of occurrence of checklist items in the general abnormal group. Lawshe and Baker's nomograph (1950) was utilized to evaluate the effectiveness of the item in discriminating between the groups for this program.
10. Quartile scores were located and frequencies of paranoid schizophrenia subjects and general abnormal subjects in each quartile compared.
11. A frequency tabulation of Factor VII profiles was made.
12. A frequency tabulation of Factor VII profiles with T scores above 70 was carried out.
13. Discriminant analysis was used to determine the effectiveness of the 9 Factor profile in differentiating between a group of paranoid schizophrenics and a general abnormal sample. None of the subjects in the latter two groups were included in the original Barker, Fowler, and Peterson study.

#### Hypotheses

The following specific hypotheses were tested:

- I. The general abnormal sample will differ significantly from the paranoid schizophrenic sample on behaviors rated on the same checklist. The paranoid schizophrenia sample will exhibit significantly more of the following checklist items: visual hallucinations,

auditory hallucinations, hostility, ideas of reference and persecution, paranoid trends, fire, gun reference, suspicions and suspicions of wife's fidelity.

- II. The high Factor VII samples will exhibit significantly more of the behaviors listed in hypothesis I than will the low Factor VII sample.
- III. The low Factor VII sample will exhibit a higher frequency of behaviors listed in the first hypothesis than will the general abnormal sample.
- IV. Factor profiles on which Factor VII is the most elevated (without regard to the degree of elevation) will discriminate between the paranoid schizophrenia groups and the general abnormal groups with greater reliability than that reported for Marks and Seemen's (1963) 8-4 profile, Gilberstadt and Duker's (1965) 8-6 profile and Bernreuter's (1938) Personality Inventory (BPI).
- V. A factor profile on which Factor VII is the high point and Factor VII's T score is greater than 70 will be diagnostic of paranoid schizophrenia with an accuracy greater than reported by Rosen (1956).
- VI. The proportion of the frequency of paranoid schizophrenics in the sample will increase as a function of Factor VII scores. Specifically

there will be significantly more paranoid schizophrenics in the upper quartile ranges of Factor VII scores than in the lower ranges.

- VII. A discriminant analysis applied to the Factor profile elevations of recent admissions that were not included in the standardization sample will yield discriminant functions that will reliably separate paranoid schizophrenics from non-paranoid schizophrenics.
- VIII. Factor VII scores will correlate highest with the discriminant scores to differentiate between the paranoid and general abnormal samples.

## RESULTS

The analyses in this chapter were carried out on (a) subjects that were included in the standardization sample from which the Barker, Fowler, and Peterson (1970) Factor scale was developed and (b) subjects that have subsequently been administered the MMPI at the Veterans Hospital at Tuscaloosa. Six samples were drawn from these two pools of MMPI protocols.

The MMPI was administered to each individual in the first subject pool within five days of admission to the hospital. Subjects were selected for this study in accordance with the criteria delineated in the previous chapter. The total sample pool for this group consisted of 1575 subjects tested between the years 1965-1968 inclusively. Throughout this study, subjects drawn from this pool are referred to as the standardization sample.

The selection of subjects for inclusion in the second subject pool also followed the criteria delineated in the previous chapter. This pool consisted of 277 subjects that were tested within the last 12 months at the Veterans Hospital at Tuscaloosa. This pool of subjects is referred to as the new sample.

Table 3 presents graphically the origin of the six samples discussed in this paper.

Table 4 contains the frequency of occurrence of the symptoms, complaints and traits within the general abnormal sample, the randomly selected paranoid schizophrenia sample, the high Factor VII sample, and the low Factor VII sample. Only those items which were rated at a frequency of 10% or higher are included in this table.

The frequency of occurrence of checklist items is evaluated for significance against the frequency of occurrence of the same items within the general abnormal sample. Lawshe and Baker's (1950) nomographic comparison is the basis for these significance comparisons.

Tables 5 through 7 contain listings of the frequencies of the significant items for the randomly selected paranoid schizophrenia sample, the low Factor VII sample, and the high Factor VII sample.

Table 5 contains the items that significantly discriminate between the general abnormal sample and the randomly selected paranoid schizophrenia sample. Checklist ratings of the randomly selected paranoid schizophrenia sample yielded five items that were significantly different from the general abnormal

Table 3

## Sample Origins

Standardization Sample N = 1575	New Sample N = 277
General Abnormal Sample N = 20	Paranoid Schizophrenia Sample N = 41
Random Paranoid Schizophrenia Sample N = 20	General Abnormal Sample N = 236
High Factor VII Sample N = 20	
Low Factor VII Sample N = 20	

Table 4

## Frequency of Occurrence of Checklist Items

Item	General Abnormal Sample	Random Paranoid Schiz. Sample	Low Factor VII Sample	High Factor VII Sample
Abdominal pain	15	5	5	0
Anorexia, nausea vomiting	10	15	25	20
Anxiety	20	0	5	0
Assaultive	0	5	0	20*
Auditory hallucinations	20	45	25	55*
Blunted inappropriate affect	10	15	5	25
Checkwriter, embezzler	10	0	0	0
Chest pain	5	10	0	5
Conflict with wife	20	5	20	0
Confusion (non-organic)	5	20	5	15
Conflict with parent	0	0	0	15
Conflict with sibling	10	0	0	0
Crying, tearfulness	35	5	0	0
Delusional (non- paranoid)	0	20	0	10
Depression	55	35	25	30
Difficult Concentration	0	10	0	0

Table 4 (Continued)

Item	General Abnormal Sample	Random Paranoid Schiz. Sample	Low Factor VII Sample	High Factor VII Sample
Disturbed by relatives	15	10	0	10
Divorced or separated	20	20	40	15
Evasive and defensive	5	15	15	0
Fearful	0	0	0	10
Fire	0	0	0	20
Forgetfulness	0	0	5	20
Grandiose delusions	0	5	0	10
Gun reference	5	30	20	20
Heavy drinking	40	15	35	20
Hostile	5	15	10	40*
Hyperactive	10	0	0	5
Ideas of reference and persecution	5	15	15	35*
Insomnia	35	15	20	25
Irritable	10	0	0	5
Loss of consciousness	10	0	0	0
Married	48	48	30	56
Moodiness	10	5	0	0
Nervousness	65	40	10	15
Nightmares	5	0	10	10
Paranoid delusions (bizarre)	0	20*	10	5

Table 4 (Continued)

Item	General Abnormal Sample	Random Paranoid Schiz. Sample	Low Factor VII Sample	High Factor VII Sample
Paranoid trends	0	20*	5	25*
Poor work adjustment	5	15	10	15
Quiet	10	5	5	10
Religious	0	10	20*	5
Somatic delusions	0	10	0	0
Suicidal attempt	15	15	10	5
Suicidal preoccupation	25	15	10	5
Suspicious	0	20	5	30
Suspicious of wife's fidelity	5	10	5	20
Tension	30	30	5	25
Unmarried				
Unstable worrying	25	0	0	10
Unworthiness & failed feelings	10	0	0	5
Visual hallucinations	5	5	0	45
Withdrawn & intro- versive	15	5	0	0

\* significant from the general abnormal sample at the .05 level.

Table 5

Significant Item Frequencies of the Randomly Selected  
Paranoid Schizophrenia Sample vs the  
General Abnormal Sample

Item	Randomly Selected Paranoid Schiz. Sample	General Abnormal Sample
Assaultive	5	0
Auditory hallucinations	45	20
Delusional (non- paranoid)	20*	0
Gun reference	30*	5
Paranoid delusions (bizarre)	20*	0
Paranoid trends	20*	0
Suspicious	20*	0
Visual hallucinations	5	5

\* Significantly different from the general abnormal sample at the .05 level.

sample. Those five items were: delusional (non-paranoid), gun reference, paranoid delusions, paranoid trends, and suspicions.

Within the high Factor VII sample (Table 6), ten items significantly different from the general abnormal sample were noted. Those items were: auditory hallucinations, assaultive, hostile, suspicious, ideas of reference and persecution, paranoid trends, religious, visual hallucinations, fire, and forgetfulness. In all cases, the high Factor VII sample manifested the greater number of these items.

In addition to discriminating between the general abnormal sample and the low Factor VII sample, the high Factor VII sample also lists more items significantly different from the general abnormal sample than the randomly selected paranoid schizophrenia sample.

Within the low Factor VII sample (Table 7), none of the checklist items occurred at a frequency significantly greater than the frequency with which these items occurred in the general abnormal sample. In fact, the low Factor VII sample exhibited frequencies numerically greater than the general abnormal sample on only 13 out of 153 items. Those items are listed in Table 7. An examination of those items reveals that

Table 6

Significant Item Frequencies of the High Factor VII  
vs the General Abnormal Sample

Item	High Factor VII Sample*	General Abnormal Sample
Assaultive	20	0
Auditory hallucinations	55	20
Fire	20	0
Forgetful	20	0
Hostile	40	5
Ideas of reference and persecution	35	5
Paranoid trends	25	0
Suspicious	30	0
Religious	20	0
Visual hallucinations	45	5

\* All significant at the .05 level.

Table 7

Significant Item Frequencies of the Low Factor VII and  
the General Abnormal Samples

Item	Low Factor VII Sample	General Abnormal Sample
Auditory hallucinations	25	20
Divorced or separated	no	20
Evasive and defensive	15	5
Forgetfulness	5	0
Hostile	10	5
Ideas of reference and persecution	15	5
Nightmares	10	5
Paranoid delusions (bizarre)	10	0
Paranoid trends	5	0
Poor work adjustment	5	10
Religious	5	0
Suspicious	5	0
Gun reference	20	5

seven of those items are significantly different from the general abnormal sample in both the randomly selected and the high Factor VII paranoid schizophrenia samples. Four of the 153 checklist items occurred with significantly less frequency in the low Factor VII sample than in the general abnormal sample.

Table 8 compares the frequency of occurrence of checklist items among the randomly selected paranoid schizophrenia sample, the high Factor VII sample and the low Factor VII sample. Ten items occur with a significantly greater frequency within the high Factor VII group than within the low Factor VII group. These items are: assaultive, auditory hallucinations, forgetfulness, fire, gun reference, hostile, ideas of reference and persecution, paranoid trends, religious, suspicious, and visual hallucinations.

Two of these items, hostile and visual hallucinations, also occur with a greater frequency in the high Factor VII sample than in the general abnormal sample. One item, delusional (non-paranoid), occurs in randomly selected paranoid schizophrenia sample with a frequency greater than in the low Factor VII sample. No items in the randomly selected paranoid schizophrenia sample or the low Factor VII sample occurred with a greater frequency than in the high Factor VII sample.

Table 8

Significant Item Frequencies of the Paranoid  
Schizophrenic Samples

Item	High Factor VII Sample	Randomly Selected Paranoid Schiz. Sample	Low Factor VII Sample
Assaultive	20xy	5	0
Auditory hallucination	55xy	45	25
Delusional, (non- paranoid)	10	20y	0
Fire	20	0	0
Forgetfulness	20x	10	0
Gun reference	30xy	20	20
Hostile	40xyz	15	10
Ideas of reference & persecution	35x	15	15
Paranoid delusions, bizarre	5	20x	10
Paranoid trends	25x	20x	5
Religious	20x	10	5
Suspicious	30xy	20x	5
Visual hallucinations	45xz	5	0

x Significantly greater than the general abnormal sample at the .05 level.

y Significantly greater than the low factor VII sample at the .05 level.

z Significantly greater than the random paranoid schizophrenic sample at the .05 level.

No item in the low Factor VII sample occurred with a significantly greater frequency than in the other two paranoid schizophrenia samples.

In order to construct a Factor profile for each sample, the nine factor T scores for each individual were computed, summed across that sample, and averaged for each sample. The mean T scores for each sample were then utilized to generate the profiles in Figures 10-13.

The quartile distribution of the Factor 7 scores is contained in Table 9. The first quartile range was 40-42.5. and yielded a frequency of five paranoid schizophrenics. The second quartile range was 42.5-46.99 and six paranoid schizophrenics were found in this quartile. The third quartile contained 11 paranoid schizophrenics. The fourth quartile contained 19 paranoid schizophrenics, a number larger than the sum of any two of the first three quartiles. General abnormal frequencies in the first four quartiles were 64, 63, 59, and 50 respectively. A chi-square test of significance was carried out in a contingency table (Table 10) relating quartile and diagnostic category. A  $X^2$  of 14.09 was obtained ( $df = 3$ ,  $p$  less than .01).

Mean scale scores of the standardization paranoid schizophrenia sample and the new sample

Figure 10

## General Abnormal Factor Profile

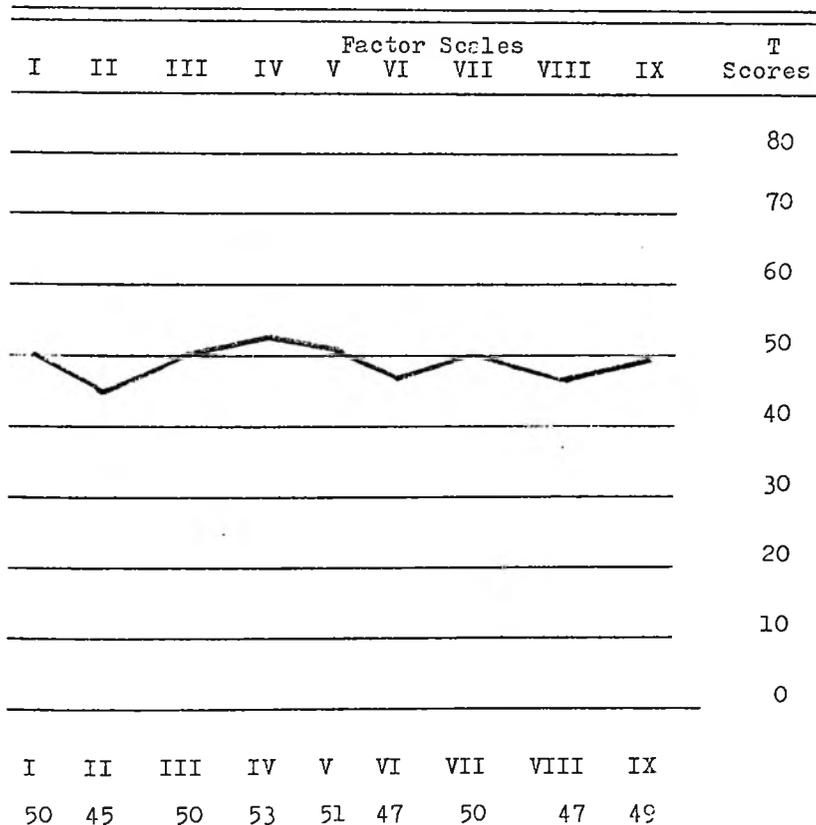


Figure 11

## Low Factor VII Profile

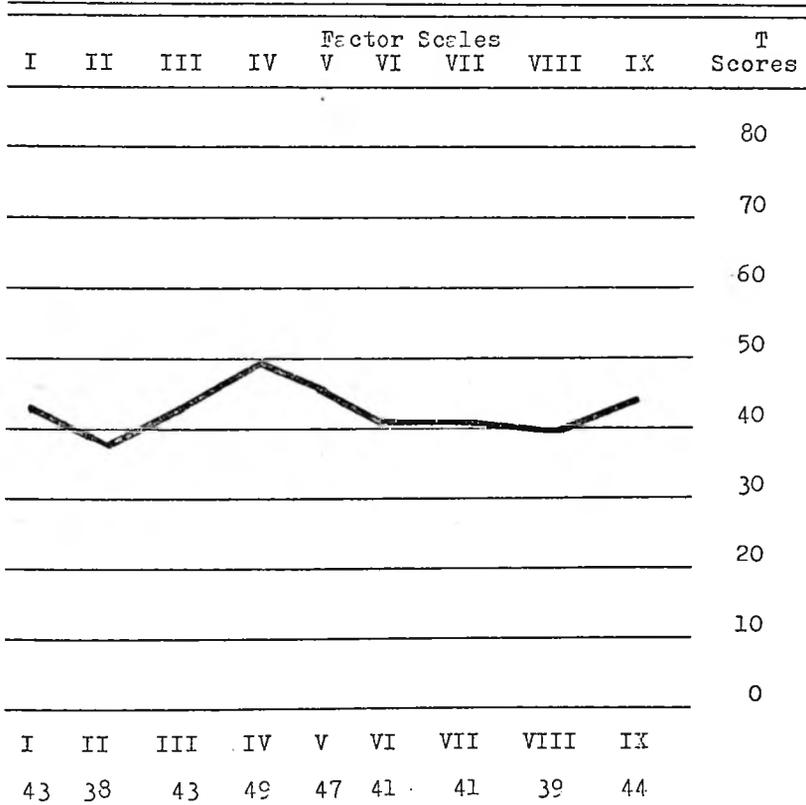


Figure 12

## Random Paranoid Schizophrenia Sample

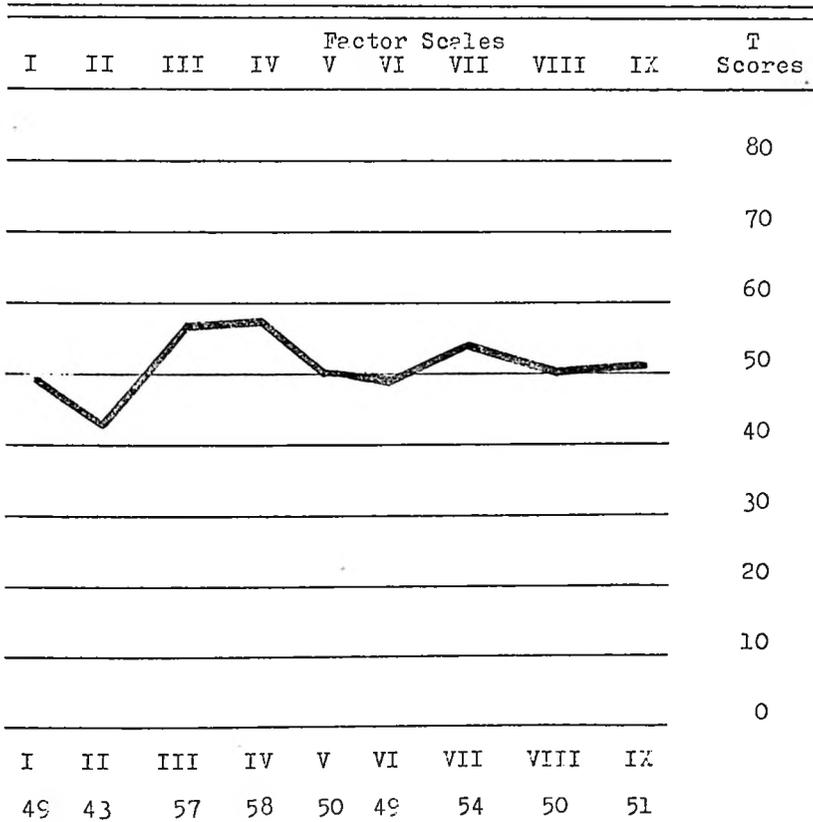


Figure 13

## High Factor VII Profile

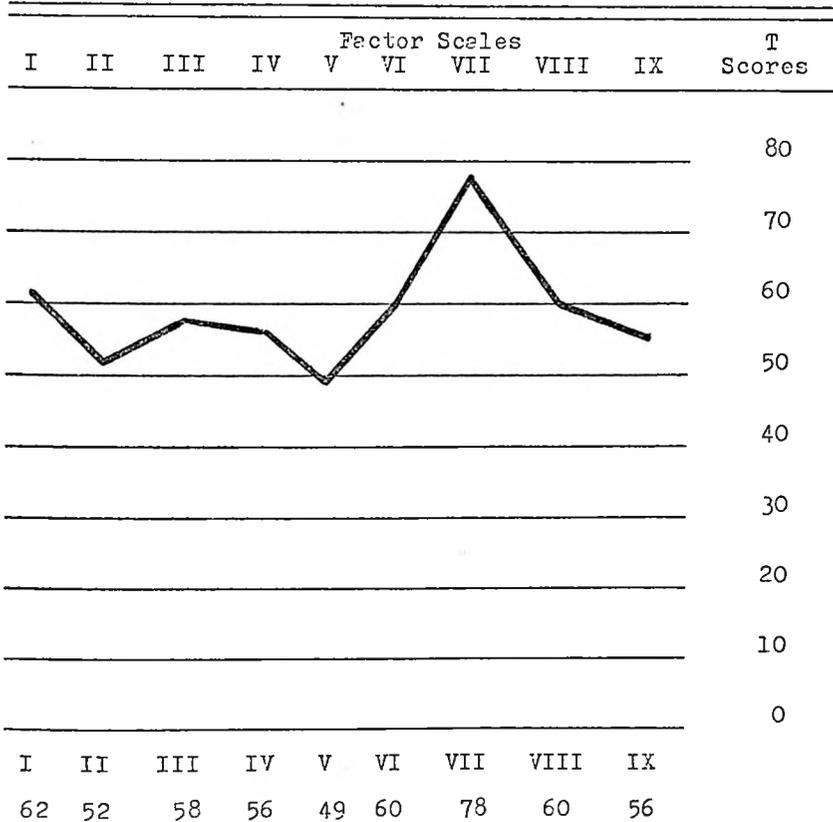


Table 9

## Quartile Distribution

Quartile	T Score Range	Paranoid Schizophrenia Frequency	General Abnormal Frequency	Percentage Paranoid Schizophrenia Sample
1	40-42.5	5	64	12.2
2	42.51-46.99	6	63	14.6
3	47-56.99	11	59	26.8
4	57-90	19	50	46

Table 10

Paranoid Schizophrenia Sample Frequency and General  
Abnormal Sample Frequency Contingency Table

	Paranoid Schizophrenia Sample Frequency	General Abnormal Sample Frequency	Row Sums
First Quartile	10.21	58.79	69
	5	64	
Second Quartile	10.21	55.79	69
	6	63	
Third Quartile	10.21	59.63	70
	11	59	
Fourth Quartile	10.21	58.79	69
	19	50	
Column Sums	41	236	277

$$\chi^2 = 14.09$$

$$df = 3$$

$$p = .01$$

paranoid schizophrenia sample are presented in Table 11. This application of analysis of variance technique to each of the factor scores separately resulted in no difference between groups means, significant at the .05 level.

A multivariate analysis (Morrison, 1967) was used to determine the discriminability of the new sample paranoid schizophrenia subjects from the general abnormal subjects of the new sample. The method of maximum likelihood (Table 12) was used and it placed 70% of the paranoid schizophrenic subjects in the correct group. Twelve of the 41 paranoid schizophrenic subjects were placed in the incorrect group. Fifty-nine of the 236 general abnormal subjects were placed in the incorrect group. Seventy-five percent of the general abnormal subjects were placed in the correct group.

A discriminant analysis resulted in an overall  $F$  of 4.010. This measure indicated that the paranoid schizophrenia sample and the general abnormal sample are significantly different at the .0002 level. See Table 13.

Table 13 also contains the Pearson Product Moment Correlation (D.S.R.) between each of the nine factor scores and the discriminant score used to discriminate between the paranoid schizophrenia sample and

Table 11

Univariate F Tests Standardization Sample and New Sample  
Paranoid Schizophrenia Subjects

Factor Scales	Standardization Sample	New Sample	F	P
I	54.51	50.62	3.13	0.07
II	46.19	44.45	1.03	0.31
III	51.38	49.22	1.08	0.31
IV	54.58	52.38	1.13	0.29
V	52.17	49.77	1.46	0.22
VI	52.77	50.10	1.37	0.24
VII	57.32	54.67	0.96	0.67
VIII	51.25	48.64	1.25	0.26
IX	54.78	51.20	2.23	0.13

Degrees of Freedom Between = 1

Degrees of Freedom Within = 145

Table 12

A Multivariate Analysis of MMPI Factor Scores Utilizing  
the Method of Maximum Likelihood

Actual Group Membership Paranoid Schizophrenic	Predicted Group Membership Paranoid Schizophrenic    General Abnormal	
Paranoid Schizophrenia	29	12
General Abnormal	59	178

the general abnormal sample Factor VII correlates highest (.647) followed by Factor IV (.629).

The relative importance of the factor VII score in contributing to the discriminant score is also reflected in the discriminant weights (D.W.T. Table 11); Factor VII .6631, Factor I-.4650, Factor IV.4229, Factor III-.3619, Factor V-.3438, Factor VI-.2105, Factor VIII-.1772, Factor IX-.1681 and Factor II-.1616.

Comparisons between the factor scale means of the paranoid schizophrenia sample and the general abnormal sample revealed significantly higher scores for the paranoid schizophrenia sample on scales VII (.000), IV (.001), and I (.01) (see Table 14).

Table 13

## Discriminant Function Analysis

---

Group 1	41 Subjects	GR1 Paranoid Schizophrenia				
Group 2	236 Subjects	GP2 General Abnormal				
Degrees of Freedom	9 and 276					
F-Ratio	4.010	F	0.0002			
		1	2			
Group Centroids	43.2499	35.1663				
Standard Deviation	4.5497	4.4159				
	I	II	III	IV	V	VI
DS-R	0.4288	0.0812	-0.1617	0.6291	0.3229	0.294
D Weights	-0.4650	-0.1616	-0.3619	0.4229	0.3438	0.2105
	VII	VIII	IX			
DS-R	0.6472	0.1172	0.3154			
D Weights	0.6631	0.1772	0.1681			

---

Table 14

Univariate F Tests Between Paranoid Schizophrenia  
Sample and General Abnormal Sample

Factor Scales	Paranoid Schizophrenia Sample		General Abnormal Sample		F	P
	Mean	SD	Mean	SD		
I	54.5	10.58	50.33	9.84	6.16	0.013
II	46.20	8.87	45.45	9.53	0.22	0.644
III	51.38	13.24	53.07	10.27	0.86	0.644
IV	54.58	11.38	49.41	7.64	13.61	0.001
V	52.18	11.49	49.13	9.36	3.46	0.60
VI	52.77	12.08	49.32	12.03	2.86	0.087
VII	57.32	12.48	50.26	10.80	14.44	0.000
VIII	51.26	12.59	49.95	11.32	0.45	0.508
IX	54.78	12.32	51.09	11.94	3.32	0.066

Degrees of Freedom Between = 1 Degrees of Freedom

Within = 275

## DISCUSSION

This investigation tests the assumption that individuals placed in the same diagnostic categories exhibit a certain commonality in their overt and covert responses to stimuli. The nosological category of paranoid schizophrenia is the diagnostic category addressed here. Specifically, this research asks; Are there sufficient behavioral and psychometric responses common to this diagnostic category to differentiate it from other diagnostic categories on the basis of behavioral or test responses?

Earlier research has tended to attempt to correlate instrumental response groups (i.e. Gilberstadt and Dyker's (1965) 8-6 MMPI profile) with symptom syndromes and diagnostic categories. It is important to note here that symptom syndromes appear to be extrapolations from psychiatric case studies. In short, there appears to be no (or at best few) validations of the symptom syndromes associated with diagnostic categories. A distinction is being made here between validations of a diagnostic category and validation of diagnostic category within parameters, i.e. paranoid schizophrenics whose MMPI profiles are 4-8-2 or 8-6, and the empirical validation of persons who have been

diagnosed paranoid schizophrenic without regard to MMPI scale derivations or BFI scores.

One of the effects of omitting this fundamental diagnostic category describing step is to generate descriptions that are inconsistent with the symptom picture. For example, Gilberstadt and Duker's (1965) 8-6 profile and Marks and Seeman's 4-8-2 (1963) profile lists blunted inappropriate affect. Marks and Seeman's (1963) 4-8-2 profile also lists suicide attempt as significant. Both of these behaviors are inconsistent with the descriptions of paranoid schizophrenia in The Diagnostic and Statistical Manual, (2nd edition) of the American Psychiatric Association (1968). It is also noted that there appears to be some disagreement as to which MMPI code type is indicative of paranoid schizophrenia. The inclusion of MMPI scale 8 in both of the profile types suggests some agreement. It is probable that both profiles are testing different facets of a complex syndrome. However, the absence of certain prototypic symptoms i.e. auditory hallucinations (Palmer, 1970), (Clark and Miller, 1971), (Gilberstadt and Duker, 1965) and visual hallucinations (Palmer, 1970), (Clark and Miller, 1971) raises some question as to the appropriateness of that diagnostic label for that (4-8-2) profile type.

Table 15

Reported Proficiency of Psychometric Instruments  
in Diagnosing Paranoid Schizophrenia

Investigator (s)	Instrument	Profile Type	Percent- age Correct Prediction	Applica- bility Rate
Super (1942)	BPI	NA <sup>a</sup>	N.S.F.C. <sup>b</sup>	
Rubin (1948)	MMPI	6	N.S.F.C.	
Rosen (1956)	MMPI	Pz	60	
Karson & Freud (1956)	MMPI	8-6	28-40%	
Huff (1965)	MMPI	4-8-2		1.9%
Silver & Sines (1960)	MMPI	8-6		5%
Owen (1970)	MMPI	8-6		2.2%
Palmer (1970)	MMPI	4-8-2		4.7%
Palmer (1970)	MMPI	8-6		.75%
Merkle & Gerriste (1970)	MMPI	8-6		4.5%
Merkle & Gerriste (1970)	MMPI	4-8-2		0.9%
Clark (This study) (1971)	MMPI	4-8-2	30%	0.7%
Clark (This study) (1971)	MMPI	8-6	35%	0.71%
Clark (This study) (1971)	MMPI Factor	VII Factor	67%	5%

<sup>a</sup> NA Not applicable

<sup>b</sup> N.S.F.C. Not significant from chance

Perhaps some of the difficulty of relating MMPI scales configurations (Table 15) to the diagnostic categories of paranoid schizophrenia can be attributed to the factorial complexity of the MMPI scales involved. The complex nature of the MMPI paranoid scale, has previously been noted by Comrey (1958) and Barker, Fowler and Peterson (1970). The other MMPI scales used to diagnose paranoid schizophrenia (4-8-2) have yielded nine (Comrey, 1957b), five (Comrey and Maggaff, 1958) and ten (Comrey, 1957b) factors respectively. These scales are not only complex, but appear to be measuring several different dimensions.

The Barker, Fowler, Peterson (1970) Factor scales appear to represent more homogeneous response measures. The item content of Factor VII (see appendix K) is drawn from MMPI scales F-4-8,6. Hence the relationships of the Gilberstedt and Duker (1965) 8-6 and Marks and Seeman (1963) 4-8-2 profiles to the Barker, Fowler and Peterson (1970) Factor VII profile seems obvious. It follows then that if these measures are related then they may be measuring facets of the same diagnostic category. If this is true then the Factor VII scale, because of its greater specificity, should be more sensitive with respect to this diagnostic category than the other two measures. The same holds

true for the relationships of the applicability and discriminating power of the three measures.

The results derived from the checklist evaluations (Tables 4-8) show an unequal distribution of significant items in the three paranoid schizophrenia samples. The high Factor VII paranoid schizophrenia sample exhibited 10 items significantly higher (.05) than the general abnormal sample. The randomly selected paranoid schizophrenia sample exhibited five significantly higher items and none of the checklist items occurred in the low Factor VII paranoid schizophrenia sample at a rate significantly higher than in the general abnormal sample.

Within the high Factor VII sample, the following items: assaultive, auditory hallucinations, fire, forgetful, hostile, ideas of reference and persecution, paranoid trends, suspicious, religious, and visual hallucinations, were significant at the .05 level. One other item, gun reference, showed strong trends toward significance ( $P = .10$ ). These results offer strong support for the hypotheses (I & II) that the paranoid schizophrenia sample would exhibit significantly more of the above items and that the high Factor VII sample would exhibit significantly more of the items than the low Factor VII sample.

The low Factor VII sample (Table 7) exhibited no item frequencies that were significantly greater than the general abnormal sample's frequencies. However, it did exhibit numerically higher frequencies on 13 checklist items. These items were: auditory hallucinations, evasive and defensive, forgetfulness, ideas of persecution and reference, nightmares, paranoid delusions (bizarre), paranoid trends, religious, suspicious, gun reference, hostile, poor work adjustment, and divorced or separated. Ten of these thirteen items occurred with significantly (.05) higher frequency in both the high Factor VII and in the Random paranoid schizophrenia sample. This resemblance tends to indicate a greater behavioral relationship between the low Factor VII sample and the other paranoid schizophrenic samples than between the low Factor VII sample and the general abnormal sample. These consequences could not have been deduced from the mean profiles. The general abnormal profile (Figure 10) and the low Factor VII profile (Figure 11) are markedly similar. Both mean profiles would have a two point code of 4-5. One fourth of the low Factor VII group were diagnosed as paranoid schizophrenics in remission. This diagnosis, in addition to the low frequency of occurrence of checklist items, appears to indicate a lack of current pathological symptoms in the individuals

that score low on Factor VII. These results are in strong accord with the hypothesis (III) that the low Factor VII sample would exhibit a higher frequency of the above items than would the general abnormal sample.

The discriminating powers and applicability rates of BFI scores, Marks and Seeman's (1963) 4-8-2 MMPI profile or Gilberstadt and Duker's (1965) 8-6 profile, vis a vis paranoid schizophrenia is sparsely represented in current research reports. Rubin (1947) reported that no significant differentiation between diagnostic categories could be made from individual MMPI scale heights. Super (1942) reported that Bernreuter Personality Inventory (BPI) could not differentiate between diagnostic categories. Rosen (1952) constructed a scale (Pz) to identify paranoid schizophrenics and reported that he could identify 60% of the paranoid schizophrenics tested. His monograph contained no data on what percent of the target population could be identified or by scale scores, i.e. applicability rates. Palmer (1970) reported applicability rates of 4.7% for Marks and Seeman's (1963) 4-8-2 profile and .75% for Gilberstadt and Duker's (1965) 8-6 profile but reported no data on the percentage of correct predictions. Owen (1970) reported applicability rates of 1.4% and 2.2% for Marks and Seeman's (1963)

4-8-2 profile and Gilberstadt and Duker's (1965) 3-6 profile respectively. Karson and Freud (1956) reported a correct prediction percentage of from 28-40% and no applicability rate for Gilberstadt and Duker's (1965) 8-6 profile.

Within this study forty four percent of the factor VII profiles were correctly identified as paranoid schizophrenics. Thirty five percent of the subjects were correctly placed using Gilberstadt and Duker's (1965) 8-6 rules and 30% with Marks and Leeman's (1963) 4-8-2 rules (see table 15).

Gilberstadt and Duker (1965), for the 8-6 profile, listed paranoid schizophrenia as the most frequently occurring diagnosis. Palmer (1970), Clark and Miller (1971) selected cases that satisfied Gilberstadt and Duker's (1965) 8-6 rules and had previously been diagnosed as paranoid schizophrenics. Karson and Freud (1956), Owens (1970), Merkle and Gerriste (1970), and Silver and Sines (1960), selected cases for their sample utilizing Gilberstadt and Duker's rules but without listing the percentage of paranoid schizophrenics or other diagnostic categories. For the above reasons, no direct comparison can be made between the percentage of paranoid schizophrenics that satisfy Gilberstadt and Duker's (1965) 8-6 profile rules in this investigation with previous investigations. The

30% classification rate of paranoid schizophrenics with Marks and Secman's (1963) 4-8-2 profile is less than the 70% reported by Marks and Secman (1963) but agrees with the 30% reported by Palmer (1970).

The above evidence lends partial support to the hypothesis (IV) that the Factor VII profile discriminates between the general abnormal sample and paranoid schizophrenia sample with greater reliability than the other psychometric measures.

A frequency tabulation of Factor profiles that exhibited 1) Factor VII as high point and 2) Factor VII equal to or greater than a T score of 70, yielded fifteen profiles that met these standard code criteria. Ten of the profiles were generated by subjects that had been diagnosed as paranoid schizophrenics. This yields a classification rate of 67% which strongly supports the hypothesis (V) that predicted that the above conditions would result in a classification rate greater than that reported by Rosen (1956) for his Pz scale.

The quartile distribution of Factor VII scores was presented in Table 9. Inspection of the quartile frequencies indicates that the distribution is negatively skewed. Table 10 presents the chi-square test for significance. The paranoid schizophrenia

subjects were found to be unequally distributed within the four quartiles, with 46% of the paranoid schizophrenic subjects in the fourth quartile.

Nineteen of 41 paranoid schizophrenics were found in the fourth quartile. The significantly unequal distribution of subjects, diagnosed as paranoid schizophrenics, as a function of the height of Factor VII tends to corroborate an association between this diagnosis and the probability of endorsement of VII items. These results strongly support the hypothesis that the proportion of paranoid schizophrenics would be significantly greater in the upper quartile ranges.

Table 11 indicates that two paranoid schizophrenic samples (1) 1956-69, (2) 1970-71, exhibited no statistical difference. This indicates some constancy in the Factor profile across this five year span.

When the method of maximum likelihood was applied to the new sample (Table 12) it correctly categorized 75% of the general abnormal sample and 70% of the paranoid schizophrenia sample. The discriminant correlations (DS.R) yielded are in Table 13. Factor VII is found to be most highly correlated with the discriminant score, and the analysis itself differentiates between the paranoid schizophrenic sample and the general abnormal sample with greater

proficiency than has previously been reported in MMPI research. These results strongly support the hypotheses (VII and VIII) that a discriminant analysis applied to Factor profile elevations of recent admissions would result in discriminant functions that would reliably separate the paranoid schizophrenic sample and the general abnormal sample and that these functions would be correlated highest with Factor VII.

## SUMMARY

Previous attempts to discriminate paranoid schizophrenics from other nosological groups have not been notably successful. This lack of success appears to hold across psychometric instruments (Super, Bernreuter's Personality Inventory, 1942; Rubin MMPI 1948) and within a specific instrument's profiles (Palmer, 1970, Morkle and Gerriste, 1970). Seeman and Marks (1963) reported a 70% correct classification rate for their 4-8-2 MMPI profile. Rosen (1956) reported a 60% correct classification rate for his MMPI Pz scale and Bernreuter (1938) reported no classification rates but claimed a general applicability across psychiatric groups, subsequent investigators (Table 14) were not able to replicate these high classification rates.

Three distinct MMPI high point codes, one experimental MMPI scale and cutting scores on the Bernreuter Personality Inventory have been used with varying amounts of success to diagnose paranoid schizophrenia. They are Rosen's (1956) Pz scale, the MMPI scale 6 profile (Rubin, 1948), the 8-6 profile (Gilberstadt and Duker, 1965) and the 4-8-2 profile (Marks and Seeman, 1963). Only two of these measures,

the 8-6 profile and the 4-8-2 profile, have been subjected to a checklist rating procedure in order to determine empirically their relationship to the cluster of behaviors that delineate the symptom syndrome that they purported to identify. The behaviors of patients obtaining 8-6 or 4-8-2 MMPI profile types are not necessarily identical with those considered diagnostic of paranoid schizophrenia.

This investigation, designed to evaluate the Barker, Fowler, Peterson (1970) Factor VII scale as an indicator of paranoid schizophrenia, investigated its reliability across time, compared the efficiency of this scale with other scales used to diagnose paranoid schizophrenia and investigated the relationship between subjects that scored high on this scale and subjects that score low on this scale, with respect to the behavioral symptoms of paranoid schizophrenia. All MMPI protocols used in this study were generated by male veterans who were in-patients at the Tuscaloosa Veterans Hospital at Tuscaloosa, Alabama. These subjects were divided into two samples, a paranoid schizophrenia sample and a general abnormal sample. Subjects in the first group were diagnosed as paranoid schizophrenics on admission and during a treatment planning conference. They had no history of brain damage or habitual

excessive drinking. Their age range was from 18-59 years and they had completed at least six years of education.

Subjects in the general abnormal group met the same criteria except that only subjects with a diagnosis other than paranoid schizophrenia were included. For both groups the MMPI was administered within seven days of admission to the hospital.

The sample consisted of 20 paranoid schizophrenia subjects that had generated high Factor VII profiles, 20 paranoid schizophrenia subjects that were randomly selected, 20 paranoid schizophrenia subjects that had generated a low Factor VII profile, and 20 non-paranoid schizophrenia subjects that were selected from the general abnormal sample. These samples were drawn from the pool of 1575 Tuscaloosa Veterans Hospital patients that were used in the development of the Barker, Fowler, Peterson (1970) factors.

Checklist evaluation of the paranoid schizophrenia samples yielded eight checklist items (Table 8) in the randomly selected paranoid schizophrenia sample, 10 checklist items in the high Factor VII sample and none of the items in the low Factor VII sample, with a frequency significantly greater (.05) than the general abnormal samples' frequency. Thirteen items

occurred with a higher numerical frequency in the low Factor VII sample than in the general abnormal sample.

The results of this study indicate that a high Factor VII score is more indicative of a severe behavioral disturbance than a low Factor VII score. The symptom syndrome described by the Diagnostic and Statistical Manual (1968) as paranoid schizophrenia closely resembles the significant items in Table 6. This marked similarity strongly implies that the Barker, Fowler, and Peterson (1970) Factor VII scale is an indicator of paranoid schizophrenia.

In order to assess the ability of the Barker, Fowler, Peterson (1970) Factor scales to identify paranoid schizophrenia and the relative contribution of Factor VII to this process, this study utilized a second pool of subjects that were not part of the original subject pool used in the development of the Barker, Fowler, and Peterson (1970) factors. The selection procedures were used to select the paranoid schizophrenia and general abnormal sample were similar to those used for the first sample and they were also in-patients at the Tuscaloosa Veteran Administration Hospital at Tuscaloosa, Alabama.

Forty-one subjects were selected for the paranoid schizophrenia sample and 237 subjects were selected for the general abnormal sample. On a

multivariate analysis of this sample, prediction of group membership by the method of maximum likelihood correctly identified 70% of the paranoid schizophrenia sample and 75% of the general abnormal sample.

The hypotheses tested predicted behavioral concomitants of high and low Factor VII Factor profiles, that paranoid schizophrenics would have a higher tendency to endorse Factor VII items than the general abnormal sample, the superiority of Factor VII as an indicator of paranoid schizophrenia, and greater discriminating power for the factor scales with Factor VII contributing the most weight in separating paranoid schizophrenic protocols from general abnormal protocols. These hypotheses were subsequently supported by the obtained results.

It is concluded that the Factor VII scale possesses great potential for the identification of paranoid schizophrenia and the refinement of the behavioral description of that symptom syndrome.

## APPENDICES

## Appendix A

## Four Richman Factor Codes

High 1234. MMPI 21\* 43"6 '9- F'L/K:

High ratings--disability 86%, somatic 81%, depression 57%, severe anxiety 36%, arrests 29%, hallucinations 21%, mania 21%, chronicity 62%, failure to gain privileges 44%.

Low ratings--impulsivity 0%.

High 123. MMPI 21\*"74 86-9/ F-LK/:

High ratings--anxiety 78%, confusion 44%, somatic 68%, severe somatic 33%, chronicity 88%, and suicidal acts 22%.

Low ratings--length of hospitalization 0%, arrests 0%, sexual deviance 0%, delusions 0%, suspicious 0%, mania 0%, impulsivity 11%, disability 33%, alcohol 33%.

High 124. MMPI 28" 486'31-9/ F-L/K:

High ratings--depression 86%, hallucinations 44%, severe anxiety 29%, hostility 29%, mania 29%, failure to gain privileges 40%, arrests 43%, suicidal acts 54%, disability 71%.

Low ratings--irregular discharge 1%, confusion 0%, impulsivity 14%.

## Appendix A (Continued)

High 123. MMPI 1\*8237"369' F'L/K:

High ratings--anxiety 86%, severe anxiety 43%,  
withdrawal 71%, severe withdrawal 29%, confusion 29%,  
hostility 29%, somatic 86%, severe somatic 43%, dis-  
ability 71%, failure to gain privileges 50%, alcohol 86%.

Low ratings--suicidal acts 0%.

## Appendix B

MMPI Items with Factor Loadings of  $\pm .3$  or Greater

Factor	Items
I	275, 278, 291, 293, 301, 303, 305, 308, 312, 314, 315, 317, 320, 321, 323, 324, 325, 326, 327, 328, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 374, 383, 397, 398, 406, 461
II	2, 3, 7, 9, 10, 13, 23, 29, 31, 32, 34, 41, 43, 44, 46, 47, 51, 55, 62, 68, 72, 103, 107, 108, 114, 119, 125, 130, 152, 153, 159, 160, 161, 163, 174, 175, 178, 186, 187, 188, 189, 190, 191, 192, 214, 230, 238, 242, 243, 251, 263, 273, 274, 281, 288, 290, 330

## Appendix B (Continued)

Factor	Items
III	21, 30, 38, 39, 45, 59, 61, 64, 75, 90, 94, 105, 109, 111, 118, 120, 127, 134, 181, 195, 208, 215, 217, 224, 225, 226, 231, 277, 282, 285, 308, 311, 322
IV	20, 37, 54, 65, 98, 111, 113, 115, 133, 164, 169, 177, 198, 214, 220, 249, 257, 258, 262, 276, 302, 306, 309, 310, 347
V	4, 8, 25, 69, 73, 77, 78, 87, 95, 99, 126, 132, 144, 165, 173, 203, 204, 206, 207, 219, 221, 229, 232, 254, 261, 283, 295, 318
VI	32, 41, 52, 57, 67, 76, 82, 86, 94, 106, 107, 138, 142, 147, 159, 162, 171, 172, 180, 182, 191, 201, 217, 236, 238, 259, 267, 278, 292, 301, 304, 305, 317, 321, 328, 335, 353, 374

## Appendix B (Continued)

Factor	Items
VII	16, 21, 22, 24, 27, 28, 35, 40, 42, 48, 49, 50, 52, 66, 76, 85, 97, 104, 106, 110, 121, 123, 139, 145, 151, 157, 179, 184, 197, 200, 202, 205, 212, 216, 245, 252, 275, 282, 284, 291, 293, 315, 331, 333
VIII	26, 89, 93, 112, 117, 124, 136, 265, 280, 298, 316, 319, 406
IX	209, 210, 218, 250, 256, 269, 271, 275, 286, 291, 312, 324

## Appendix C

## Grandiose Delusional Type

Item	Content
19.	When I take a new job, I like to be tipped off on who should be gotten next to.
136.	I commonly wonder what hidden reason another person may have for doing something nice for me.
232.	I have been inspired to a program of life based on duty which I have since carefully followed.
280.	Most people make friends because friends are likely to be useful to them.
420.	I have had some very unusual religious experiences.
432.	I have strong political opinions.
476.	I am a special agent of God.
334.	Peculiar odors come to me at times.
332.	I have had very peculiar and strange experiences.
93.	I think most people would lie to get ahead.
160.	I have never felt better in my life than I do now.
284.	I am sure I am being talked about.

## Appendix D

## Sensitive Inadequate Withdrawn Type

Item	Content
551.	Sometimes I am sure that other people can tell what I am thinking.
510.	Dirt frightens or disgusts me.
482.	While in trains, buses, etc., I often talk to strangers.
429.	I like to attend lectures on serious subjects.
291.	I love to go to dances.
358.	Bad words, often terrible words come into my mind and I cannot get rid of them.
346.	I have a habit of counting things that are not important, such as bulbs on electric signs and so forth.
319.	Most people inwardly dislike putting themselves out to help other people.
37.	I have never been in trouble because of my sex behavior.
297.	I wish I were not bothered by thoughts about sex.
280.	Most people make friends because friends are likely to be useful to them.
278.	I wish I were not bothered by thoughts about sex.
221.	I like science.
138.	Criticism or scolding hurts me terribly.
136.	I commonly wonder what hidden reason another person may have for doing something nice for me.

## Appendix E

## Paranoia I

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Item	Content
24.	No one seems to understand me.
35.	If people had not had it in for me I would have been much more successful.
110.	Someone has it in for me.
121.	I believe I am being plotted against.
284.	I am sure I am being talked about.

## Appendix E (Continued)

## Paranoia II

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Item	Content
35.	If people had not had it in for me I would have been much more successful.
121.	I believe I am being plotted against.
151.	Someone has been trying to poison me.
157.	I feel that I have often been punished without cause.
275.	Someone has control over my mind.
291.	At one or more times in my life I have felt that someone were making me do things by hypnotizing me.
293.	Someone has been trying to influence my mind.
338.	I have certainly had more than my share of things to worry about.
364.	People say insulting and vulgar things about me.
365.	I feel uneasy indoors.

## Appendix F

## Paranoia III

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Item	Content
27.	Evil spirits possess me at times.
110.	Someone has it in for me.
121.	I believe I am being followed.
123.	I believe I am being plotted against.
275.	Someone has control over my mind.

## Appendix G

## Defeated Paranoia

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Item	Content
16.	I am sure I get a raw deal from life.
35.	If people had not had it in for me I would have been much more successful.
157.	I feel that I have often been punished without cause.
202.	I believe I am a condemned person.
156.	I have had periods in which I carried on activities without knowing later what I had been doing.
273.	I have numbness in one or more regions of my skin.

## Appendix H

## Paranoie (Sc)

Item	Content
52.	I prefer to pass by school friends or people I have not seen for a long time unless they speak to me first.
121.	I believe I am being plotted against.
202.	I believe I am a condemned person.
241.	I dream frequently about things that are best kept to myself.
291.	At one or more times in my life I have felt that someone was making me do things by hypnotizing me.
315.	I am sure I get a raw deal from life.
323.	I have had very strange and peculiar experiences.
331.	If people had not had it in for me I would have been much more successful.
333.	No one seems to understand me.
364.	People say insulting and vulgar things to me.

## Appendix I

## INSTRUCTIONS TO BE READ TO JUDGES

You are taking part in an attempt to validate a diagnostic instrument profile. In order to do this we are using a checklist of traits, complaints, and symptoms, that has been modified by Clark and Miller (1970) in a previous investigation.

This checklist consists of 153 adjectives. If an item appears in the section of the clinical folder, nursing notes or TPC record, delineated by red marker pins, place a check on the line adjacent to that adjective. Do not infer from descriptive material that the adjective is implied. Synonyms are acceptable, i.e., sobbing and crying. If there is some doubt about the applicability of a synonym bring it to the attention of the investigator and it will be recorded and later consensually judged.

The absence of an adjective is sometimes as important as its presence, hence, you are asked to work carefully and rapidly. Each set of records has a face sheet, please sign that sheet when you have completed the checklist for that patient. If a face sheet has three signatures, do not rate that record.

Do not discuss your ratings with other raters, during the time you are rating or during the course of this investigation.

The rating sheets will be on the table nearest the door. After you have finished rating a subject, place the checklist in the box marked "Completed Checklists." Records that have not been rated will be in the box marked "records to be rated."

Please do not temporarily remove either the rating sheets or records from this room.

Take a moment now and go over the items on the checklist. If some items are not clear, please feel free to ask for clarification.

After you have completed your examination of the checklist, you may begin rating.

## Appendix J

## Checklist of Complaints, traits and symptoms

<input type="checkbox"/> Age S M D W	<input type="checkbox"/> Nervousness
<input type="checkbox"/> Acting out	<input type="checkbox"/> Religious Conflict
<input type="checkbox"/> Apathetic	<input type="checkbox"/> Loss interest
<input type="checkbox"/> Assaultive	<input type="checkbox"/> Homosexual trends
<input type="checkbox"/> Check writer, embezzler	<input type="checkbox"/> Dependent
<input type="checkbox"/> Circumstantial	<input type="checkbox"/> Immature
<input type="checkbox"/> Compulsive	<input type="checkbox"/> Quiet
<input type="checkbox"/> Crying, tearfulness	<input type="checkbox"/> Religious
<input type="checkbox"/> Exhibitionist, voyeur	<input type="checkbox"/> Schizoid
<input type="checkbox"/> Heavy drinking	<input type="checkbox"/> Rigid
<input type="checkbox"/> Heavy drugs	<input type="checkbox"/> Passive
<input type="checkbox"/> Hostile	<input type="checkbox"/> Impulsive
<input type="checkbox"/> Hyperactive	<input type="checkbox"/> Agitated
<input type="checkbox"/> Irritable	<input type="checkbox"/> Anxiety
<input type="checkbox"/> Evasive, defensive	<input type="checkbox"/> Apprehension
<input type="checkbox"/> Restless	<input type="checkbox"/> Panic state
<input type="checkbox"/> Retarded	<input type="checkbox"/> Depression
<input type="checkbox"/> Speech difficulty	<input type="checkbox"/> Elated
<input type="checkbox"/> Suicide attempt	<input type="checkbox"/> Guilt
<input type="checkbox"/> Suspicious	<input type="checkbox"/> Inadequacy
<input type="checkbox"/> Talkative	<input type="checkbox"/> Inferiority

## Checklist of Complaints, Traits and Symptoms (Cont.)

- |   |  |
|---|--|
| <input type="checkbox"/> Somatic delusions              | <input type="checkbox"/> Paranoid trends                   |
| <input type="checkbox"/> Visual hallucinations          | <input type="checkbox"/> Phobias                           |
| <input type="checkbox"/> Depersonalization              | <input type="checkbox"/> Ulcer                             |
| <input type="checkbox"/> Abdominal pain                 | <input type="checkbox"/> Weight loss                       |
| <input type="checkbox"/> Amnesia                        | <input type="checkbox"/> Weak, tired, fatigued             |
| <input type="checkbox"/> Arthritis                      | <input type="checkbox"/> Father passive, weak              |
| <input type="checkbox"/> Back pain                      | <input type="checkbox"/> Father alcoholic                  |
| <input type="checkbox"/> Buzz, click, ring in ear       | <input type="checkbox"/> Father died before patient age 12 |
| <input type="checkbox"/> Cardiac complaint              | <input type="checkbox"/> Father deserted                   |
| <input type="checkbox"/> Chest pain                     | <input type="checkbox"/> Father domineering                |
| <input type="checkbox"/> Colitis                        | <input type="checkbox"/> Father rigid                      |
| <input type="checkbox"/> Constipation                   | <input type="checkbox"/> Father mentally ill               |
| <input type="checkbox"/> Convulsive seizures            | <input type="checkbox"/> Father physically ill             |
| <input type="checkbox"/> Dermatitis                     | <input type="checkbox"/> Father poor supporter             |
| <input type="checkbox"/> Difficulty walking             | <input type="checkbox"/> Father punishing                  |
| <input type="checkbox"/> Diarrhea                       | <input type="checkbox"/> Father rejecting                  |
| <input type="checkbox"/> Disfigurations                 | <input type="checkbox"/> Father religious                  |
| <input type="checkbox"/> Dizziness                      | <input type="checkbox"/> Father strict                     |
| <input type="checkbox"/> Dyspnea, respiratory complaint | <input type="checkbox"/> Mother complaining                |
| <input type="checkbox"/> Edema                          | <input type="checkbox"/> Mother died before patient age 12 |
| <input type="checkbox"/> Epigastric                     | <input type="checkbox"/> Mother domineering                |
| <input type="checkbox"/> Genitals                       |  |
| <input type="checkbox"/> Headache                       |  |
| <input type="checkbox"/> Hypertension                   |  |

## Checklist of Complaints, Traits and Symptoms (Cont.)

- |   |  |
|---|--|
| <input type="checkbox"/> Combative when drunk       | <input type="checkbox"/> Tension   |
| <input type="checkbox"/> Withdrawn, introversive    | <input type="checkbox"/> Emotional instability                           |
| <input type="checkbox"/> Conflict with girlfriend   | <input type="checkbox"/> Unworthiness and failed feeling                 |
| <input type="checkbox"/> Conflict with sibling      | <input type="checkbox"/> Moodiness                                       |
| <input type="checkbox"/> Conflict with Parent       | <input type="checkbox"/> Blunted, inappropriate affect                   |
| <input type="checkbox"/> Conflict with wife         | <input type="checkbox"/> Feelings of hostility & Homicidal preoccupation |
| <input type="checkbox"/> Difficulty with co-workers | <input type="checkbox"/> Feeling sex inadequacy                          |
| <input type="checkbox"/> Financial poor             | <input type="checkbox"/> Sexual difficulty                               |
| <input type="checkbox"/> Poor work adjustment       | <input type="checkbox"/> Feeling maladjustment                           |
| <input type="checkbox"/> Vocational maladjustment   | <input type="checkbox"/> Auditory hallucinations                         |
| <input type="checkbox"/> Wife pregnant or post      | <input type="checkbox"/> Olfactory hallucinations                        |
| <input type="checkbox"/> Disturbed by relatives     | <input type="checkbox"/> Confusion (organic)                             |
| <input type="checkbox"/> Daydreams                  | <input type="checkbox"/> Confusion (non-organic)                         |
| <input type="checkbox"/> Difficult concentration    | <input type="checkbox"/> Disoriented                                     |
| <input type="checkbox"/> Forgetfulness              | <input type="checkbox"/> Grandiose delusions                             |
| <input type="checkbox"/> Fearful                    | <input type="checkbox"/> Ideas of reference & Persecution                |
| <input type="checkbox"/> Indecision                 | <input type="checkbox"/> Paranoid delusions (bizarre)                    |
| <input type="checkbox"/> Nightmares                 |  |
| <input type="checkbox"/> Obsessions                 |  |
| <input type="checkbox"/> Suicidal preoccupations    |  |
| <input type="checkbox"/> Rumination                 |  |
| <input type="checkbox"/> Unstable                   |  |
| <input type="checkbox"/> Worrying                   |  |

## Checklist of Complaints, Traits and Symptoms (Cont.)

- |   |  |
|---|--|
| <input type="checkbox"/> Insomnia                                     | <input type="checkbox"/> Mother mentally ill                                       |
| <input type="checkbox"/> Arm and hand pain                            | <input type="checkbox"/> Mother overprotective                                     |
| <input type="checkbox"/> Leg or knee pain                             | <input type="checkbox"/> Mother passive  |
| <input type="checkbox"/> Anorexia (loss of appetite) nausea, vomiting | <input type="checkbox"/> Mother rejecting  |
| <input type="checkbox"/> Loss consciousness                           | <input type="checkbox"/> Mother strict   |
| <input type="checkbox"/> Neck pains and throat complaints             | <input type="checkbox"/> Mother nervous  |
| <input type="checkbox"/> Other pain                                   | <input type="checkbox"/> Mother punitive   |
| <input type="checkbox"/> Paresthesia, itching                         | <input type="checkbox"/> Started fire or fire occurred in his presence while alone |
| <input type="checkbox"/> Paresis, paralysis                           | <input type="checkbox"/> Painted face of denied race                               |
| <input type="checkbox"/> Stiffness                                    | <input type="checkbox"/> Stomach operation   |
| <input type="checkbox"/> Soreness                                     | Dx _____   |
| <input type="checkbox"/> Perspiration                                 | <input type="checkbox"/> Anxiety reaction  |
| <input type="checkbox"/> Tremor and trembling                         | <input type="checkbox"/> Depressive reaction                                       |
| <input type="checkbox"/> Gun reference                                | <input type="checkbox"/> Schizophrenic reaction                                    |
| <input type="checkbox"/> Delusions (non-paranoid)                     | <input type="checkbox"/> Other _____   |
| <input type="checkbox"/> Suspicious of Wife's fidelity                |  |
| <input type="checkbox"/> Tachycardia                                  |  |

## Appendix K

## Item Content of Factor VII

16. I am sure I get a raw deal from life.
21. At times I have very much wanted to leave home.
22. At times I have fits of laughing and crying that I cannot control.
24. No one seems to understand me.
27. Evil spirits possess me at times.
28. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.
35. If people had not had it in for me I would have been much more successful.
40. Most any time I would rather sit and daydream than to do anything else.
42. My family does not like the work I have chosen (or the work I intend to choose for my life work.)
48. When I am with people I am bothered by hearing very queer things.
49. It would be better if almost all laws were thrown away.
50. My soul sometimes leaves my body.
52. I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.
66. I see things or animals or people around me that others do not see.
76. Most of the time I feel blue.

## Appendix K (Continued)

85. Sometime I am strongly attracted by the personal articles of others such as shoes, gloves, etc., so that I want to handle or steal them though I have no use for them.
97. At times I have a strong urge to do something harmful or shocking.
104. I don't seem to care what happens to me.
106. Much of the time I feel as if I have done something wrong or evil.
110. Someone has it in for me.
121. I believe I am being plotted against.
123. I believe I am being followed.
139. Sometimes I feel as if I must injure either myself or someone else.
145. At times I feel like picking a fist fight with someone.
151. Someone has been trying to poison me.
157. I feel that I have often been punished without cause.
179. I am worried about sex matters.
184. I commonly hear voices without knowing where they come from.
197. Someone has been trying to rob me.
200. There are persons who are trying to steal my thoughts and ideas.
202. I believe I am a condemned person.
205. At times it has been impossible for me to keep from stealing or shoplifting something.
212. My people treat me more like a child than a grown-up.
216. There is very little love and companionship in my family as compared to other homes.

## Appendix K (Continued)

245. My parents and family find more fault with me than they should.
252. No one cares much what happens to you.
275. Someone has control over my mind.
282. Once in a while I feel hate toward members of my family whom I usually love.
284. I am sure I am being talked about.
291. At one or more times in my life I felt that someone was making me do things by hypnotizing me.
314. Once in a while I think of things too bad to talk about.
315. I am sure I get a raw deal from life.
331. If people had not had it in for me I would have been much more successful.
333. No one seems to understand me.

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