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CORRELATIONS BETWEEN THE
BERNREUTER PERSONALITY INVENTORY
AND THE
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY
AT THE COLLEGE LEVEL

by

William Walter Farquhar

SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the

GRADUATE SCHOOL

of the

UNIVERSITY OF OMAHA

1951

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CHAPTER I

THE PROBLEM

Definition of the Problem

The basic problem of the study was to determine the extent of relationship between the Bernreuter Personality Inventory and the Minnesota Multiphasic Personality Inventory at the college level. Primarily this is a problem of method.

Need for the Study

Much research has been done on the Bernreuter Personality Inventory since it was first published in 1931. The underlying problem of this research has been to establish a valid criterion-group in order to better determine the predictive powers of the inventory. The results of these experiments have been far from conclusive and indicate that much more work is needed if a proper evaluation is to be realized.*

It is apparent that this study is warranted because the relatively new clinical tool, the Minnesota multiphasic Inventory, which offers the field of personality study a new approach via the external criterion-group method, has not been statistically compared with the Bernreuter Personality Inventory in total./

Delimitations

To properly evaluate the relationship between the Bernreuter Personality Inventory and the Minnesota Multiphasic Personality Inventory, criterion-groups from the six areas of the former inventory—high school

* See Chapter II

/ Some of the items in the Minnesota Multiphasic Personality Inventory were abstracted from the Bernreuter Personality Inventory by Hathaway and McKinley.

boys and girls, adult men and women, and college men and women--and from the general areas of the latter--normal and abnormal--would have to be used. Because of the pressures of time this study has been limited to the comparison of the results obtained from administering both tests to freshmen college males who were considered normal--that is, who were not institutionalized.

Definition of Personality

The number of definitions of personality is probably only equalled by the number of books and articles on the subject. Certain basic ideas, however, are common to all of the otherwise distinct definitions.

Murphy's(24) triadic definition of personality is an attempt to summarize the traditional and prevailing approaches:

1. A personality is a distinguishable individual, definable in terms of the qualitative and quantitative differentiation from other such individuals.
2. A personality is a structured whole, definable in terms of its own distinctive structural attributes.
3. A personality is a structured organism-environment field, each aspect of which stands in dynamic relation to each other aspect. There is organization within the organism and organism within the environment, but it is the cross organization of the two that is investigated in personality research.

The first approach has been used primarily by the sociologist, the second by the traditional research psychologist, and the latter by the more recent clinicians.

Ogburn and Ninkoff(25) exemplify the sociologist's approach to personality when they define it in the following way:

At birth the babe is a human animal. He is different from both lower animals and other human animals. He is an indivisible, identifiable, biological specimen; hence we call him an individual. But he lacks many things which the term human connotes. He cannot talk, he does not wear clothes, he has no manners, he lacks ideals. After birth, however, things begin to change. The child associates with other human beings and comes under the sway of their culture; he becomes a member of society and achieves human personality. Socialization is the term used by the sociologist to designate this process whereby the individual is converted into the person.

This approach, by itself, has little applicability to the present problem, for we must consider the individual as "divisible" if measurement of

distinguishable traits is to be attempted. (This does not, of course, justify the position that the individual is composed of integral parts, but the success of measuring devices in distinguishing intra-trait differences does tend to support this position.)

The second approach—the approach of the traditional research psychologists—is most applicable to this study; for by considering the individual as a "structured whole, definable in terms of its own distinctive structural attributes," a basis is established for measuring personality.

Super's(30) definition of personality as "A pattern of traits or ways of reacting to external stimuli," and Allport's(1) definition of personality as ". . . the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment," both exemplify this position.

The third approach—consideration of the personality as a structured organism-environment field—has much to offer by combining the first two approaches. However, its place in this study would be in the application of the results toward better understanding of the measuring tool when determining the process of inter-action. Cameron's(6) view of personality is essentially the same as the third approach, for he defines personality as:

The dynamic organization of interlocking behavior systems that each of us develops through learning processes, as he grows from a biological newborn to a biosocial adult in an environment of other individuals and culture products.

One's position in defining personality is largely a question of emphasis, whether on the environment, structure of the individual, or the inter-action of both of these factors. The last choice, in all probability, gives the most nearly complete picture of the individual. In any case we do not and cannot know the total individual: we only infer from representative data. To facilitate understanding of the representative data this study places emphasis on the structure of the individual.

CHAPTER II

RELATED RESEARCH

General

The research that relates to this study is relatively large for the Bernreuter Personality Inventory, but very limited for the Minnesota Multiphasic Personality Inventory.

That research which is concerned with the validity of the Bernreuter Personality Inventory in selection of "abnormals," and that which is concerned with the correlation of the Minnesota Multiphasic Personality Inventory with tests comparable to the Bernreuter Personality Inventory is the research that is most applicable to this study.

Research Related to the Bernreuter Personality Inventory

In 1931 Robert G. Bernreuter published the Bernreuter Personality Inventory. By 1936 the inventory had become so popular that Pallister(27) found it to be the best-known in his canvass of the American psychologists.

Not only was the inventory widely used during the thirties, but it was also the subject of a prodigious amount of research. In 1942 Super(33) summarized the publications of research on the Bernreuter Personality Inventory and found the following trends:

1932, 7 distinct published studies; 1933, 21; 1934, 19; 1935, 23; 1936, 17; 1937, 12; 1938, 18; 1939, 8; and 1940, 8. It seems that publication reached its peak in 1935, declined, rose again in 1938, and was stabilized at a somewhat lower, but still fairly high, point during the last two years.

A total of more than 135 different published studies using one psychological test is an impressive record.

Reviewing the Psychological Abstracts since 1940 revealed the following trends in publication:

Table I
Research on the Bernreuter Personality Inventory

Yr.	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
No.	6	7	3	1	4	2	3	0	1	0

This would appear to indicate a declining interest in the inventory from a research stand-point. (This decline is probably explained by a surge of interest for the projective techniques that started in the early forties.) Nevertheless, the inventory continues to be an important tool in the field of clinical psychology.(31)

The research that applies most directly to this study was, as stated, that which evaluates the Bernreuter Personality Inventory as a diagnostic tool in the selection of the "abnormal" from the "normal."

Marshall(16) started the movement by giving the inventory to 371 patients, 106 of whom were neurotics, the remaining patients being various types of psychotics. The results indicated that 50 per cent of the neurotics scored higher on the neurotic scale and the self-sufficiency scale than 80 per cent of Bernreuter's normal group. Furthermore, 20 per cent of these men and 10 per cent of the women made higher scores than any of the subjects in the normal group. Paranoids all scored below the 50th percentile on the neurotic scale. Of the schizophrenics, 80 per cent of the autistic males and 60 per cent of the autistic females exceeded the 50th percentile of the normal group on the neurotic scale. All of the manics scored below the 50th percentile on the introversion scale, and the depressed cases were all above the 80th percentile on the same scale.

Yu(36) reported that a tendency toward higher scores on the introversion, neurotic, and submissive scales was recorded on the Bernreuter Personality Inventory when administered to 127 schizophrenics and 34 manic-depressives.

Page found a significant difference between a matched group of 100

diagnosed psychoneurotics and 100 normal army trainees, as diagnosed by the Bernreuter Personality Inventory, but concluded that the difference cannot be, "considered to be indicative of any definite relationship." (26)

Two studies on the clinical validity of the Bernreuter were made by Landis and Katz. (13) In the first investigation they found that when they analyzed the scores of 184 house-patients and 40 out-patients on the neurotic scales that 38 per cent of the neurotics scored between the 90th and the 100th percentile on the neurotic scale. Of these neurotics 65 per cent were above the 70th percentile on the neurotic scale. Manics all scored above the 50th percentile. Of the depressed cases 20 per cent were above the 90th percentile while 48 per cent of the depressed cases were above the 70th percentile. The second study was based on the results obtained from 250 non-institutionalized subjects. The 16 who scored the highest and the 18 who scored the lowest were selected. Clinical diagnosis revealed that 9 of the highest group were normal and 9 were neurotic. Moreover, 6 of the second group were normal and 12 were neurotic. Landis and Katz concluded that high scores on the neurotic scale indicated a neurotic tendency but that low scores did not necessarily indicate freedom from neuroticism.

Landis, Zubin, and Katz (14) made a study with 125 normals, 28 neurotics, and 97 psychotics as the criterion-groups and concluded that none of the abnormals were differentiated from the other groups.

Darley and Ingle (7) found the Bernreuter Personality Inventory to be ineffective in identifying the emotional maladjustments of 26 diagnosed psychotics.

DeAngelis (8) found that only 40 per cent of 120 patients at the New York State Psychiatric Institute scored above the 84th percentile on the diagnostic scales.

Patterson and associates (28) found a tendency for the inventory to select the neurotic and the psychotic from the normal, but many of the maladjusted cases made acceptable scores.

An early study by Hathaway(9) found that all 9 of the psychopathic inferiors that he tested scored either no higher than 10 per cent or were off the scale entirely in the non-neurotic scale.

Those studies which indicate that the Bernreuter Personality Inventory can discriminate the normals from the abnormals have separated the psychotics from the psychoneurotics. Marshall, Yu, Page, and Patterson and associates followed this procedure. In concluding that the Bernreuter can distinguish the psychotic and neurotic from the normal, the reservation is made that this selection is of only moderate reliability for groups and very questionable for individuals. Moreover, it is to be noted that those cases in which the results indicated no discriminatory power in selection of the normals and in which the psychotics were separated from the neurotics, smaller groups were used for the criterion-groups.

From the mass of research literature several pertinent generalizations stand out clearly:

1. Conclusions based on the inventory are somewhat limited in selecting the normal from the abnormal.
2. Group tendencies can be indicated with more assurance than individual tendencies.
3. Extreme scores in the non-desirable direction may indicate some form of abnormality.
4. Extreme scores in the desirable direction do not necessarily indicate that the testee or testees are free from abnormality.

Research Related to the Minnesota Multiphasic Personality Inventory

Correlations were made between the Guilford-Martin Inventory of Factors STDGR by Loth.(15) The results indicated that there was some relationship between the two tests; however, not necessarily in the areas expected. It was found that there is only a moderate correlation between the depression scales of the two inventories, that the psychasthenia scale of the Minnesota

Multiphasic Personality Inventory correlated most highly with the first four factors—S(social introversion), T(thinking introversion), D(depression), and C(cycloid disposition)—of the STDOR than with any other of the scales of the Minnesota Multiphasic Personality Inventory. It was also found that each of the scales of the Guilford-Martin Inventory showed several correlations with some of the scales of the Minnesota Multiphasic Personality Inventory, but that there was a higher intra-correlation of the STDOR factors than inter-correlation with any of the Minnesota Multiphasic Personality Inventory scales. Loth concluded that the Guilford-Martin Inventory did not have much applicability for differential diagnosis of personality disorders at the college level.

Wesley(34) correlated the results of the Guilford-Martin Personality Inventory Factors O(object), Ag(agreeable), Co(cooperative) with the results of the Minnesota Multiphasic Personality Inventory. The findings and conclusions were essentially the same as those of Loth—namely that neither of the Guilford-Martin tests had any definite relationship with the Minnesota Multiphasic Personality Inventory.

CHAPTER III

METHOD OF THE STUDY

The Criterion-Group

The criterion-group was composed of fifty males who entered the University of Omaha in September, 1950. An original sample of one hundred and five was selected from the school files by the use of a table of randomly assorted digits.(29) All of the one hundred and five were contacted by telephone and asked to take the test. Because of outside work, school activities, lack of extra-time, and leaving for the armed services, only fifty were able to complete the two tests. Their results are used as the basis of this study.

Description of the Tests

Two tests were used in this study--the Bernreuter Personality Inventory* and the Minnesota Multiphasic Personality Inventory.**

The Bernreuter is a self-administered inventory consisting of one hundred and twenty-five questions which are concerned with the testee's generalized behavior and attitude. The testee responds by circling "yes," "no," or "?" depending on which is most appropriate. Scoring is by means of six separate keys which fit over the answer sheet. The possible responses are differently weighted according to each item's diagnostic value. The weights range from 7 to -7. The raw score is obtained by adding algebraically the weights of the responses for each scale.

Resultant scale-scores are changed to percentiles by the use of a table of Tentative Percentile Norms.(3)

* Hereafter will be referred to as the Bernreuter.

** Hereafter will be referred to as the MMPI.

The Bernreuter purports to measure in six areas. They are:(2)

B1-N A measure of neurotic tendency. Persons scoring high on this scale tend to be emotionally unstable. Those scoring above the 98 percentile would probably benefit from psychiatric or medical advice. Those scoring low tend to be very well balanced emotionally.

B2-S A measure of self-sufficiency. Persons scoring high on this scale prefer to be alone, rarely ask for sympathy or encouragement, and tend to ignore the advice of others. Those scoring low dislike solitude and often seek advice and encouragement.

B3-I A measure of introversion-extroversion. Persons scoring high on this scale tend to be introverted; that is, they are imaginative and tend to live within themselves. Scores above the 98 percentile bear the same significance as do similar scores on the B1-N scale. Those scoring low are extroverted; that is, they rarely worry, seldom suffer emotional upsets, and rarely substitute daydreaming for action.

B4-D A measure of dominance-submission. Persons scoring high on this scale tend to dominate others in face-to-face situations. Those scoring low tend to be submissive.

F1-C A measure of confidence in oneself. Persons scoring high on this scale tend to be hamperingly self-conscious and to have feelings of inferiority; those scoring above the 98 percentile would probably benefit from psychiatric or medical advice. Those scoring low tend to be wholesomely self-confident and to be very well adjusted to their environment.

F2-S A measure of sociability. Persons scoring high on this scale tend to be nonsocial, solitary, or independent. Those scoring low tend to be sociable and gregarious.

The first four scales--the neurotic, self-sufficiency, introversion-extroversion, dominance-submission--were formulated by Bernreuter in 1931. The items for these scales were selected from the four parent-forms in much the same manner as the items were selected for the parent-forms, that is on the basis of the diagnostic significance of the item in the author's clinical experience. Validation of the items was on the basis of internal consistency and correlation with the parent-forms. The individual scales were named by their author after examination of the content of the items.(4)

The last two scales--self-confidence and sociability--were abstracted from the original four scales by J. C. Flanagan in 1935 by the use of the Hotelling Method of Principal Components.

There is a high degree of inter-correlation of the scales as revealed by the following table:(2)

Table II
Coefficients of Intercorrelation
The Pennsylvania State College (Men) Engineering Students

	B2-S	B3-I	B4-D	F1-C	F2-S
B1-N	-.37	.95	-.80	.95	.32
B2-S		-.31	.47	-.54	.60
B3-I			-.69	.90	.39
B4-D				-.88	.07
F1-C					.11

N = 157

The reliability was reported to range from $r = .78$ to $.92$ over a three month period.(2)

The correlations of the original scales with the parent-forms ranged from $.67$ to $.94$.

The MMPI is also a self-administered inventory. It appears in two forms--the Individual (Card) Form and the Group (Booklet) Form. It has been found that there is no essential difference between the results obtained from use of the two different forms.(35) The Group (Booklet) Form was used in this study.

The questions on this form are also concerned with the testee's generalized behavior and attitude; however, a great many of the questions concern specific action and events. The testee responds by categorizing his answers into three general areas--true, false, and cannot say. Those items which are unusual responses for each of the areas of the test are scored, and the raw scores converted to T-scores by means of the tables in the manual.

The MMPI has four validity scales and purports to measure in nine areas (clinical scales).(10)

The Validity Scales

The Question Score (?)

The Question score is a validating score consisting simply of the total number of items put in the Cannot say category; the size of this score affects the significance of the other scores. Large Question scores invalidate all others. A "borderline" Question score probably means that the subject's actual score, if he had not used the Cannot say category at all, would deviate farther from the average than his observed score indicates. In its own right the Question score is an indicator of personality factors, but no specific clinical material on it has been analyzed. High scores have often been observed to occur in psychasthenic and retarded depression patients.

The Lie Score (L)

The L score is also a validating score that affords a measure of the degree to which the subject may be attempting to falsify his scores by always choosing the response that places him in the most acceptable light socially. A high L score does not entirely invalidate the other scores but indicates that the true values are probably higher than those actually obtained. In some cases the L score may be of interest in its own right as a measure of a special personality trend.

The Validity Score (F)

The F score is not a personality scale but serves as a check on the validity of the whole record. If the F score is high, the other scales are likely to be invalid either because the subject was careless or unable to comprehend the items, or because extensive scoring or recording errors were made. A low F score is a reliable indication that the subject's responses were rational and relatively pertinent.

The K Score (K)

The K score is used essentially as a correction factor to sharpen the discriminatory power of the clinical variables measured by the Inventory. As such, K acts as a suppressor variable.

If it is to be given any concrete nonstatistical meaning, the K score is to be thought of as a measure of test-taking attitude, and is related to the L and F attitudes but is somewhat more subtle and probably taps a slightly different set of distorting factors. A high K score represents defensiveness against psychological weakness, and may indicate a defensiveness that verges upon deliberate distortion in the direction of making a more "normal" appearance. A low K score tends to indicate that a person is, if anything, overly candid and open to self-criticism and the admission of symptoms even though they may be minimal in strength. A low K score can also result from a deliberate attempt to obtain bad scores or to make a bad impression ("plus-getting").

The Clinical Scales

The Hypochondriasis Scale (Hs)

The Hs scale is a measure of amount of abnormal concern about bodily functions. Persons with high Hs scores are unduly worried over their health. They frequently complain of pains and disorders which are difficult to identify and for which no clear organic basis can be found. It is characteristic of the hypochondriac that he is immature in his approach to adult problems, tending to fail to respond with adequate insight.

Hypochondriacal complaints differ from hysterical complaints of bodily malfunction in that the hypochondriac is often more vague in describing his complaints and in that he does not show such clear evidence of having got out of an unacceptable situation by virtue of his symptoms as does the hysteric. The hypochondriac more frequently has a long history of exaggeration of physical complaints and of seeking sympathy.

With psychological treatment a high score may often be improved, but the basic personality is unlikely to change radically. Common organic sickness does not raise a person's score appreciably, for the scale detects a difference between the organically sick person and the hypochondriac.

The Depression Scale (D)

The D scale measures the depth of the clinically recognized symptom or symptom complex, depression. The depression may be the chief disability of the subject or it may accompany, or be a result of, other personality problems. A high D score indicates poor morale of the emotional type with a feeling of uselessness and inability to assume a normal optimism with regard to the future. In certain cases the depression may be well hidden from casual observation. This is the so-called "smiling depression." The depressive undercurrent is revealed in such cases by the subject's specific discourse and his outlook on the future. Often such persons insist that their attitude is the only realistic one, since death is inevitable and time passes. Though this may be true, the average person is—possibly erroneously—not so deeply concerned with the grim realities of life. A high score further suggests a characteristic personality background in that the person who reacts to stress with depression is characterized by lack of self-confidence, tendency to worry, narrowness of interests, and introversion. This scale, together with the Hs and Hy scales, will identify the greater proportion of those persons not under medical care who are commonly called neurotic, as well as individuals so abnormal as to need psychiatric attention.

Some high-scoring persons will change rather rapidly in response to improved environment or to pep talks and psychotherapy, but such individuals will be likely to remain subject to other attacks. The greater number, on the other hand, will not respond readily to treatment, but their scores will slowly tend to approach the normal level with the mere passage of time.

The Hysteria Scale (Hy)

The Hy scale measures the degree to which the subject is like patients who have developed conversion-type hysteria symptoms. Such symptoms may be general systemic complaints or more specific

complaints such as paralyzes, contractures (writer's cramp), gastric or intestinal complaints, or cardiac symptoms. Subjects with high Hysteria scores are also especially liable to episodic attacks of weakness, fainting or even epileptiform convulsions. Definite symptoms may never appear in a person with a high score, but under stress he is likely to become overtly hysterical and solve the problems confronting him by the development of symptoms. It has been found that this scale fails to identify a small number of very uncomplicated conversion hysterics which may be quite obvious clinically and with a single or very few conversion symptoms.

The hysterical cases are more immature psychologically than any other group. Although their symptoms can often be "miraculously" alleviated by some conversion of faith or by appropriate therapy, there is always the likelihood that the problem will reappear if the stress continues or recurs. As in the case of hypochondriasis, the subject with a high Hysteria score may have real physical pathology, either as a primary result of concurrent disease, such as diabetes or cancer, or as a secondary result of the long-time presence of the psychological symptoms. For instance, constant fears are a frequent background for the development of demonstrable ulcers of the stomach. This interrelationship is particularly important to the physician who undertakes therapy for the individual.

The Psychopathic Deviate Scale (Pd)

The Pd scale measures the similarity of the subject to a group of persons whose main difficulty lies in their absence of deep emotional response, their inability to profit from experience, and their disregard of social mores. Although sometimes dangerous to themselves or others, these persons are commonly likable and intelligent. Except by the use of an objective instrument of this sort, their trend toward the abnormal is frequently not detected until they are in serious trouble. They may often go on behaving like perfectly normal people for several years between one outbreak and another. Their most frequent digressions from the social mores are lying, stealing, alcohol or drug addiction, and sexual immorality. They may have short periods of true psychopathic excitement or depression following the discovery of a series of their asocial or antisocial deeds. They differ from some criminal types in their inability to profit from experience and in that they seem to commit asocial acts with little thought of possible gain to themselves or of avoiding discovery.

No therapy is especially effective in improving persons with high Pd scores, but time and careful, intelligent guidance may lead to an adequate adaptation. Institutionalization of the more severe cases is probably no more than a means of protecting society and the offender. Some active professional persons have high Pd scores, but their brains, if any, are either disregarded by others or effectively concealed.

The Interest Scale (Ii)

This scale measures the tendency toward masculinity or femininity of interest pattern; separate T scores are provided for the two sexes. In either case a high score indicates a deviation of the basic interest pattern in the direction of the opposite sex. The items were originally selected by a comparison of masculine with feminine males and of the two sexes.

Every item finally chosen for this scale indicated a trend in the direction of femininity on the part of male sexual inverts. Males with very high Mf scores have frequently been found to be either overt or repressed sexual inverts. However, homosexual abnormality must not be assumed on the basis of a high score without confirmatory evidence. Among females high scores cannot yet be safely assumed to have similar clinical significance, and the interpretation must be limited to measurement of the general trait.

The Mf score is often important in vocational choice. Generally speaking, it is well to match a subject vocationally with work that is appropriate to his Mf level.

The Paranoia Scale (Pa)

The Pa scale was derived by contrasting normal persons with a group of clinic patients who were characterized by suspiciousness, oversensitivity and delusions of persecution, with or without expansive egotism. The diagnoses were usually paranoia, paranoid state or paranoid schizophrenia. Here again, however, we have observed a few very paranoid persons who have successfully avoided betraying themselves in the items of this scale.

Persons with an excess amount of paranoid suspiciousness are common and in many situations are not especially handicapped. It is difficult and dangerous to institutionalize or otherwise protect society from the borderline paranoid because he appears so normal when he is on guard and he is so quick to become litigious or otherwise to take action vengefully against anyone who attempts to control him. It should be needless to add that persons receiving very high scores on this scale must be handled with special appreciation of these implications. Although valid scores of 80 and above on this scale are nearly always significant of disabling abnormality, the range from 70 to 80 must also be checked by clinical judgment.

The Psychasthenia Scale (Pt)

The Pt scale measures the similarity of the subject to psychiatric patients who are troubled by phobias or compulsive behavior. The compulsive behavior may be either explicit, as expressed by excessive hand washing, vacillation, or other ineffectual activity, or implicit, as in the inability to escape unless thinking or obsessive ideas. The phobias include all types of unreasonable fear of things or situations as well as overreaction to more reasonable stimuli.

Many persons show phobias or compulsive behavior without being greatly incapacitated. Such minor phobias as fear of snakes or spiders and such compulsions as being forced to count objects seen in arrays or always to return and check a locked door are rarely disabling. Frequently a psychasthenic tendency may be manifested merely in a mild depression, excessive worry, lack of confidence, or inability to concentrate.

Pt is correlated to a negligible degree with the other scales, except for the Sc scale. There is an understandable tendency for depression to accompany abnormally high scores. The basic personality pattern of the psychasthenic individual is relatively difficult to change, but insight and relief from general stress may lead to good adjustment. As in the Pa scale the valid T

scores above 80 are likely to represent disabling abnormality, but the range of 70 to 80 should be checked by clinical judgment since with a favorable environment or with other compensatory factors the subject may not be markedly handicapped.

The Schizophrenia Scale (Sc)

The Sc scale measures the similarity of the subject's responses to those patients who are characterized by bizarre and unusual thought or behavior. There is a splitting of the subjective life of the schizophrenic person from reality so that the observer cannot follow rationally the shifts in mood or behavior.

The Sc scale distinguishes about 60 per cent of observed cases diagnosed as schizophrenia. It does not identify some paranoid types of schizophrenia, which, however, usually score high on the Pa, and certain other cases which are characterized by relatively pure schizoid behavior. It is probable that one or two additional scales will be necessary to identify the latter cases, but this is not surprising in the light of the frequently expressed psychiatric opinion that schizophrenia is not a clinical entity but a group of rather heterogeneous conditions.

Most profiles with a high Sc score will show several other high points, and further clinical sorting will need to be carried out by subjective study of the case. Exceptional to other scale intercorrelations, the correlation of Sc with Pt for normal cases is .84. Both experience and the fact that this correlation drops to .75 on abnormal cases lead us to feel that, at least for the present, there is value in using both scales. Clinical experience shows that about twice as many cases diagnosed as schizophrenia obtain above borderline Sc scores as obtain such scores on Pt. An appreciable number of clinic cases not diagnosed as schizophrenia score high on the scale. These cases are nearly always characterized by complicated symptomatic patterns. The clinician should be very hesitant to apply the diagnostic term schizophrenia because of its bad implications.

The Hypomania Scale (Ma)

The Ma scale measures the personality factor characteristic of persons with marked overproductivity in thought and action. The word hypomania refers to a lesser state of mania. Although the real manic patient is the lay person's prototype for the "insane," the hypomanic person seems just slightly off normal. Some of the scale items are more accentuations of normal responses. A principal difficulty in the development of the scale was the differentiation of clinically hypomanic patients from normal persons who are merely ambitious, vigorous and full of plans.

The hypomanic patient has usually got into trouble because of undertaking too many things. He is active and enthusiastic. Contrary to common expectations he may also be somewhat depressed at times. His activities may interfere with other people through his attempts to reform social practice, his enthusiastic stirring up of projects in which he then may lose interest, or his disregard of social conventions. In the latter connection he may get into trouble with the law. A fair percentage of patients diagnosed psychopathic personality are better called hypomanic.

This scale clearly identifies about 60 per cent of diagnosed cases and yields a score in the 60-70 range for the remainder. For scores around 70 the problem of normality hinges more upon the direction of the overactivity rather than upon the absolute score. Even extreme cases tend to get better with time, but the condition tends to reappear periodically.

Items for the MMPI were selected from:

. . . several psychiatric examinations directions forms, from various textbooks of psychiatry, from certain of the directions for case taking in medicine and neurology, and from the original published scales from personal and social attitude.(11)

The items were then administered to a group of normals and to groups of abnormals who had been diagnosed abnormal in each of the respective classifications by extensive study at the University of Minnesota Hospital. Only those items which tended to differentiate the normal from the abnormal and the different classifications of abnormal were retained. Each item was given a score of "1."

In the development of the scales Hathaway and McKinley found that from 50 to 80 per cent of each of the psychiatrically diagnosed groups were differentiated from the normal groups.(10) Also, it was found that the groups were generally differentiated from each other by the scales for hysteria, hypomania, psychopathic deviation(19), hypochondriasis(17), psychasthenia(18), and depression(12). For those cases which were not significantly differentiated from the normal group it was found that significant trends were evident.

The test-retest reliabilities have been reported to range from .71 to .83 (32).

Statistical Procedure

Means and standard deviations were computed for all of the scales of both tests except the Question (?) scale of the MMPI. (The Group [Booklet] Form tends to cut the question responses to a minimum and for this sample the question count was negligible.) The following formula was used to compute the standard deviation:(29)

$$Sd = \frac{\sum x^2}{n-1}$$

The symbols are interpreted as follows: s equals the standard deviation; $\sum x^2$ equals the sum of the differences squared; and n equals the size of the sample.

To find the significance of the difference between the study-sample and the original Bernreuter-sample "t's" were computed. The following formula for computing the significance of the difference between two uncorrelated means, when the sample-sizes are not equal, was used.(29)

$$t = \bar{x}_1 - \bar{x}_2 \sqrt{\frac{n_1 n_2 (n_1 + n_2 - 2)}{(n_1 + n_2) (\sum x_1^2 + \sum x_2^2)}}$$

The symbols are interpreted as follows: \bar{x}_1 and \bar{x}_2 are the means of the respective samples; n_1 and n_2 the size of the samples; and $\sum x_1^2$ and $\sum x_2^2$ the sum of the differences squared.

Correlation coefficients were calculated on the raw scores by the use of McNemar's(20) scatter-gram technique which utilized a modification of the Pearson-Products Moment Correlation Coefficient Formula. The following formula for the correlation coefficient was used:

$$r = \frac{n(\sum dxdy) - (\sum dx)(\sum dy)}{\sqrt{n(\sum d^2x) - (\sum dx)^2} \sqrt{n(\sum d^2y) - (\sum dy)^2}}$$

The symbols are interpreted as follows: n , as before, is the size of the sample; the $\sum dy$ is the frequency of the sample on the y axis times the distance from the x axis; the $\sum dx$ is the frequency of the sample on the x axis times the distance from the y axis; the $\sum d^2y$ is the distance from the x axis squared times the frequency of the sample on the y axis; the $\sum d^2x$ is the distance from the y axis squared times the frequency on the x axis; $\sum dxdy$ is the distance from the x axis times the sample frequency times the distance from the y axis for each point on the distribution.

CHAPTER IV

RESULTS AND CONCLUSIONS

Comparison of the Groups*

Because the means, standard deviations, and size of the samples for the MMPI were not available, the comparison of the observed sample to the original standardization group was only possible with the Bernreuter. The results obtained in the present study appeared to indicate that the college group used for this study was comparable to that used by Bernreuter for his original standardization. The exception to this was the means of the two groups for the B3-1 (Introversion-Extroversion Scale). The sample of this study tested more in the extroversion direction. However, this difference was only significant at the .05 level. Flanagan's scales presented a different picture. There appeared to be a large discrepancy in the samples, for the means were significantly different at the .01 level. This would indicate that the criterion-group for this study was less self-confident and more non-social than that used by Flanagan for his standardization. In any event, the discrepancy is in the direction of the non-desirable and would tend to accent the relationships when compared to the MMPI which was so consciously standardized on abnormals.

Correlation Results**

To facilitate presentation of the results of the correlations, each of the Bernreuter scales, with the corresponding significant correlations, is presented separately.

B1-N (Neurotic): The Neurotic Scale correlated at the 1 per cent level of confidence with four of the MMPI scales--negatively with the K (correction factor) Scale; positively with the D (depression), Pt

* See Table III, page 29.

** See Table V, page 31.

(psychasthenia), and Sc (schizophrenia) Scales. A negative correlation which was significant at the 5 per cent level of confidence was found with the Ma (hypomania) Scale.

B2-S (Self-Sufficiency): The Self-Sufficiency Scale correlated significantly only with the Mf (interest) Scale and this correlation was significant at the 5 per cent level of confidence.

B3-I (Introversion-Extroversion): The Introversion-Extroversion Scale correlated at the 1 per cent level of confidence with three of the MMPI Scales—a negative correlation, also, with the K (correction factor) Scale; positive correlation with the D (depression) and Pt (psychasthenia) Scales. Correlations at the 5 per cent level of confidence were found with the Mf (interest) Scale and Sc (schizophrenia).

B4-D (Dominance-Submission): The Dominance-Submission Scale correlated at the 1 per cent level of confidence with two of the MMPI Scales—negatively with the D (depression) and the Ma (hypomania) Scales. Negative correlations at the 5 per cent level of confidence were found with the Pt (psychasthenia) and Sc (schizophrenia) Scales.

F1-C (Self-Confidence): The Self-Confidence scale correlated at the 1 per cent level of confidence with four of the MMPI Scales—negatively with the K (correction factor) and the Ma (hypomania) Scales; positively with the D (depression) and Pt (psychasthenia) Scales. It also correlated positively at the 5 per cent level of confidence with the Sc (schizophrenia) Scale.

F2-S (Sociability): The Sociability Scale correlated at the 1 per cent level of confidence with one MMPI Scale—Sc (schizophrenia)—only, and that was in a positive direction. Correlations at the 5 per cent level of confidence were found with the D (depression) and Mf (interest) Scale which were also positive.

Conclusions

Several striking facts are apparent from the correlation results.

1. Significant correlations of the Bernreuter with the MMPI Diagnostic Scales occur most frequently with the D (depression), Pt (psychasthenia), Sc (schizophrenia) and Ma (hypomania) Scales.

2. Significant correlations of the B1-N (neurotic), B3-I (Introversion-Extroversion), and F1-C (Self-Confidence) Scales with the K (correction factor) Scale were found. It would appear, then that people scoring low on these three scales (in the "desirable" direction) would tend to show "defensiveness against psychological weakness,"(10) on the MMPI. This would be in concordance with the study by Hathaway (supra page 7) in which he found 9 psychopathic deviates scoring in the "best" 10 per cent of the Neurotic Scale.

3. The frequency of significant correlations with the Pt (psychasthenia) Scale is in concordance with the work of Hathaway and Estes(21) in developing scale G for the MMPI. This scale was derived without the use of criteria external to the test, the selection of items being based on the inter-correlations of the items themselves. "The item content was that of a typical 'neurotic' or 'maladjusted' sort which predominates on a priori scale such as the Thurstone or the Bernreuter B1-N."(23) The scale had a reliability and validity coefficient of .93 or better; however, it was found to be useless in discriminating any clinical group. It correlated .91 with the Pt (psychasthenia) Scale.

4. Acceptance of Hathaway and McKinley's(17, 19, 12) criterion-group of neurotics, which was predominately diagnosed by the neurotic triad—the Hs (hypochondriasis), D (depression), and Hy (hysteria)—plus the observation that the most frequent correlations of the Bernreuter with the MMPI Scales were with the D (depression) Scale and that there were no significant correlations with the other two, leads to the conclusion that the type of neuroticism that Bernreuter was referring to was symptomatic depression.

5. The highest correlation found between the two scales was the B3-I (Introversion-Extroversion) Scale on the Bernreuter with the D (depression) Scale of the MMPI. Bingham's table(5) of the, "Values of Functions of r ," indicates that this is only 15.83 per cent better than chance.

CHAPTER V

SUMMARY

The basic problem of this study was to find the relationship between the Bernreuter and the MMPI. To do this fifty males who entered the University of Omaha in the fall of 1950 were given both tests, and correlation coefficients were computed on the resultant raw scores. Twenty-three of the sixty correlations were significant, with fourteen of these being significant at the 1 per cent level of confidence. However, none of the correlations are of practical significance for precise prediction of individual standings from one test to the other.

The implications of the study appear to be that extremely deviate scores on the Bernreuter have little diagnostic significance by themselves, or as McKinley, Hathaway, and Meehl concluded from their experience with the G Scale, ". . . persons who say certain things about themselves also have a tendency to say certain other things about themselves."(22)

The practical implications would be that the general clinical practice of administering the MMPI along with the Bernreuter is a valid one, for inferences based on the Bernreuter in diagnosing clinical abnormalities are very limited, at least among college students.

CHAPTER VI

SUGGESTION FOR FUTURE STUDY

From the structure and results of the study several suggestions for future studies become apparent:

1. Studies comparable to this one using females.
2. Studies comparable to this one, using criterion-groups of the same education and age as were used in the original standardization of the Bernreuter.
3. Comparison of the results of administering the two tests to a group of institutionalized abnormals who had been differentially diagnosed into the respective MMPI classifications.

BIBLIOGRAPHY

1. Allport, Gordon W., Personality, New York: Henry Holt and Company Inc., 1937, p. 48.
2. Bernreuter, Robert C., Manual for the Personality Inventory, Stanford University Press; Stanford, California, 1935.
3. _____, "The Personality Inventory", Stanford University Press: Stanford, California, 1935.
4. _____, "The Theory and Construction of the Personality Inventory", Journal of Social Psychology, Vol. 4 (April, 1933) pp. 387-405.
5. Bingham, Walter V. D., Aptitudes and Aptitude Testing, New York and London: Harper and Brothers Publishers, 1937, p. 258.
6. Cameron, Norman, The Psychology of Behavior Disorders, Boston: Houghton Mifflin Company, 1947, p. 16.
7. Darley, J. G. and Anderson, G. V. "Applications of Personality and Character Measurement", Review of Educational Research, Vol. 14, (Feb. 1944) pp. 67-80.
8. DeAngelis, L. A., "A Study of the Bernreuter Test With Psychiatric Cases", Unpublished Master's Thesis, Columbia University, 1932.
9. Hathaway, S. R., "The Personality Inventory as an Aid in the Diagnosis of Psychopathic Inferiors", Journal of Consulting Psychology, Vol. 3, (Feb. 1939) pp. 112-117.
10. Hathaway, S. R., and McKinley, J. C., Minnesota Multiphasic Personality Inventory Manual, New York: The Psychological Corporation, Revised 1951, pp. 18-21.
11. _____, "A Multiphasic Personality Schedule (Minnesota)" Journal of Psychology, Vol. 10, (April, 1940) p. 249.
12. _____, "A Multiphasic Personality Schedule (Minnesota); III. The Measurement of Symptomatic Depression", Journal of Psychology, Vol. 14, (Feb. 1942) pp. 73-84.
13. Landis, C., and Katz, S. E., "The Validity of Certain Questions Which Purport to Measure Neurotic Tendencies", Journal of Applied Psychology, Vol. 18, (May, 1935) p. 343-356.
14. Landis, C., Zubin, J., Katz, S. E., "Empirical Evaluation of Three Personality Adjustment Inventories", Journal of Educational Psychology Vol. 26, (May, 1935) pp. 321-330.
15. Loth, Nancy H., "Correlations Between the Guilford-Martin Inventory of Factors STDGR and the Minnesota Multiphasic Personality Inventory at the College Level", Unpublished Master's Thesis, University of Minnesota, 1945.

16. Marshall, H., "Clinical Applications of the Bernreuter Personality Inventory" (Abstract), Psychological Bulletin, Vol. 30, (May, 1933) pp. 601-602.
17. McKinley, J. C. and Hathaway, S. R. "A Multiphasic Personality Schedule (Minnesota), II A Differential Study of Hypochondriasis", Journal of Psychology, Vol. 10, (March, 1940) pp. 255-260.
18. _____, "A Multiphasic Personality Schedule (Minnesota) IV. Psychasthenia", Journal of Applied Psychology, Vol. 26, (Dec., 1942) pp. 611-624.
19. _____, "Minnesota Multiphasic Personality Inventory: V. Hysteria, Hypomania, and Psychopathic Deviate", Journal of Applied Psychology, Vol. 28, (March, 1944) pp. 153-174.
20. McNemar, Quinn, Psychological Statistics, New York: John Wiley and Sons Inc., 1949.
21. Neehl, P. E. and Hathaway, S. R., "The K Factor as a Suppressor Variable in the M.M.P.I. ", Journal of Applied Psychology, vol. 30, (Sept. 1946) pp. 525-564.
22. Ibid, p. 550.
23. Ibid, p. 553.
24. Murphy, Gardner, Personallity, New York and London: Harper and Brothers Co., 1947, p. 7.
25. Ogburn, William R. and Hinkoff, Meyer, F., Sociology, Boston: Houghton Mifflin Company, 1946, p. 131.
26. Page, H. E. "Detecting Psychoneurotic Tendencies in Army Personnel", Psychological Bulletin, Vol. 42, (Sept., 1945) p. 656.
27. Pallister, E. "American Psychologists Judge Fifty-Three Vocational Tests", The Journal of Applied Psychology, Vol. 20, (Sept., 1936) pp. 761-765.
28. Paterson, D. C., et. al., "Research Studies in Individual Diagnosis", University of Minnesota Bulletin, Employment Stability Research Institute, Vol. 3, 1936, No. 4.
29. Snedecor, G. W., Statistical Methods, Ames, Iowa: Iowa State College Press, 1948.
30. Super, Donald E., Appraising Vocational Fitness, New York: Harper and Brothers, 1949, p. 482.
31. Ibid., p. 488.
32. Ibid., p. 502.
33. _____, "The Bernreuter Personality Inventory: A review of the Research", Psychological Bulletin, Vol. 39, (Feb., 1942), p. 95.

34. Wesley, E., "Correlations Between the Guilford-Martin (Inventory I) Personality Factors O, Ag, Co, and the M.M.P.I. at the College Level", Unpublished Master's Thesis, University of Minnesota, 1945.
35. Wiener, D. N., "Differences Between the Individual and Group Forms of the MMPI", Journal of Consulting Psychology, Vol. 11, (March, 1947) pp. 104-106.
36. Yu, E. P., "A Personality Study of Two Groups of Psychotics" (Abstract), Psychological Bulletin, Vol. 31, (Sept., 1934), p. 586.

APPENDIX

TABLE III
 MEANS, STANDARD DEVIATIONS, AND "t's"
 FOR THE
 BERNREUTER PERSONALITY INVENTORY

Scale	Bernreuter Original Groups		Observed Group		t
	Mean	sd	Mean	sd	
B1-N	-57.3	82.2	-68.8	69.7	.97
B2-S	27.0	52.8	20.6	47.6	.81
B3-I	-25.6	49.6	-39.7	38.2	1.96*
B4-D	45.9	65.6	46.4	63.1	.06
F1-C	-51.5	83.6	-33.2	75.4	4.58**
F2-S	25.9	59.4	-17.5	64.2	2.70**

* Difference significant at the .05 level.

** Difference significant at the .01 level.

TABLE IV
MEANS AND STANDARD DEVIATIONS
FOR THE
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

	Observed Group	
	Mean	sd
L	3.08	1.96
F	4.45	2.97
K	13.86	3.95
Hs	11.56	3.17
D	17.90	4.75
Hy	18.48	3.75
Pd	20.34	4.04
Mf	23.26	4.75
Pa	7.30	2.75
Pt	25.02	4.29
Sc	25.28	4.57
Ma	19.26	3.63

n = 50

TABLE V
CORRELATIONS BETWEEN THE
RESTRUCTURED PERSONALITY INVENTORY
AND THE
MINNESOTA MULTI-PHASE PERSONALITY INVENTORY

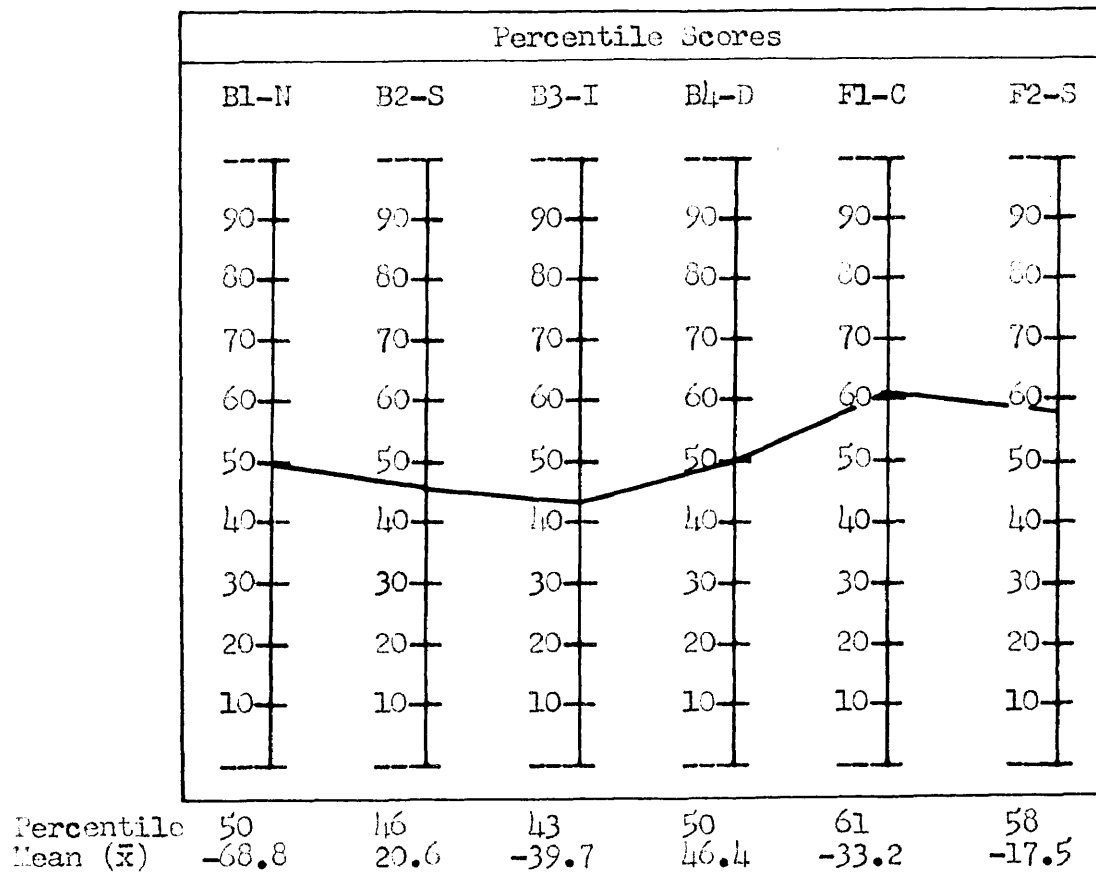
	B1-N	B2-S	B3-I	B4-D	F1-C	F2-S
K	-.53**	.10	-.46**	.19	-.37**	-.07
Ha	-.13	.09	-.06	.00	-.10	+.05
D	.51**	.07	.54**	-.36**	.49**	.31*
Hy	.03	-.00	.10	-.01	.02	.01
Pc	.07	.24	-.03	-.03	.09	.21
Mc	.23	.29*	.32*	-.13	.19	.33*
Pa	.20	-.06	.21	-.09	.17	.07
Pt	.44**	-.19	.37**	-.30*	.41**	.00
Sc	.37**	.25	.33*	-.34*	.34*	.37**
Ma	-.28*	.21	-.08	-.49**	-.37**	.00

* r is significant at the .05 level.

** r is significant at the .01 level.

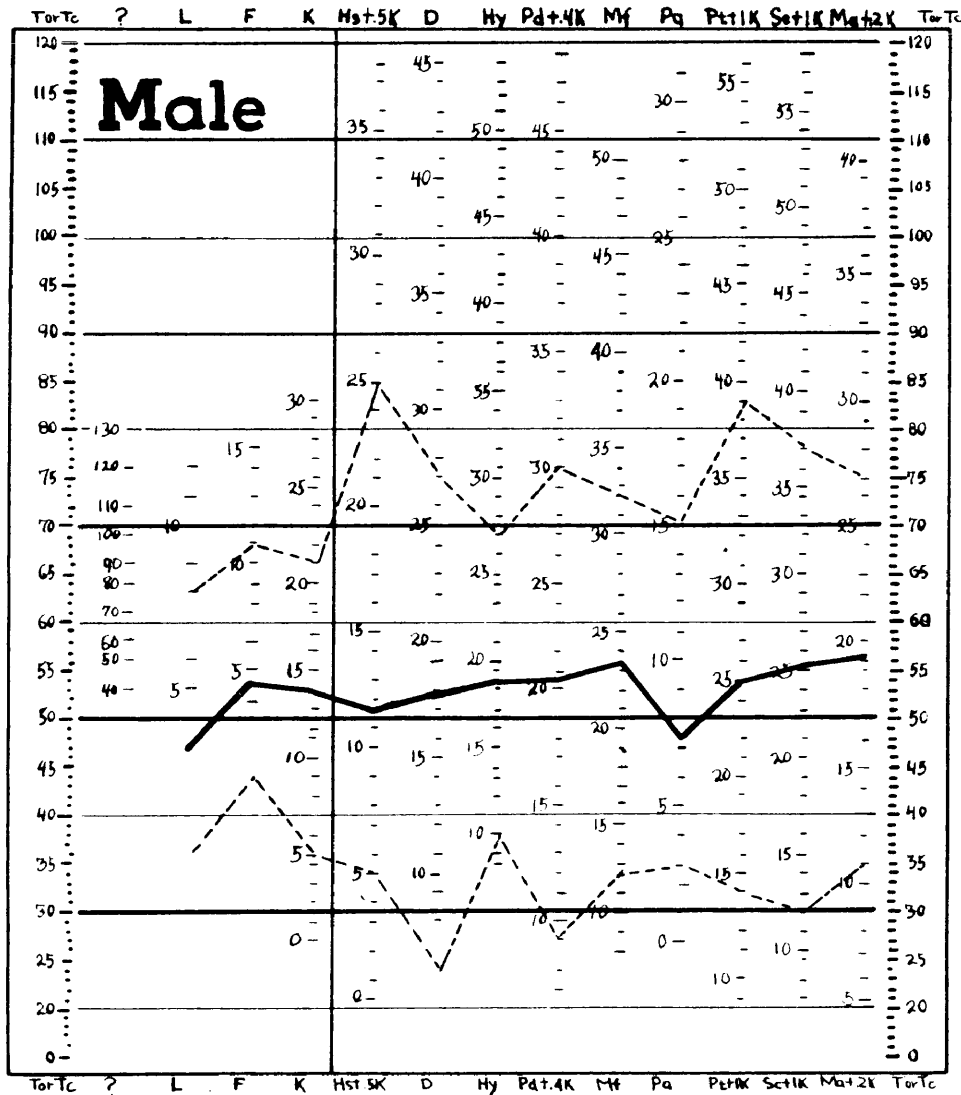
Note: K added to MMPI raw scores.

MEANS OF THE CRITERION-GROUP
FOR THE
BECK-REUTER PERSONALITY INVENTORY



n=50

MEANS AND RANGE
FOR THE
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY



Raw Score 0 31 45 139 116 179 185 205 233 73 250 253 193

n = 50