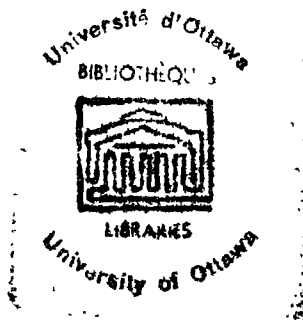


A CORRELATIONAL STUDY OF INVENTORIES
OF
INTROVERSION-EXTROVERSION

by
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Thesis presented to the Faculty of Arts
(Institute of Psychology) of the Univer-
sity of Ottawa, in partial fulfilment of
the requirements for the degree of Master
of Arts.

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ERRATA

Note: In Chapter I the word "matrix" has been erroneously used to describe a table of correlations. While this could possibly be justified in terms of the literal meaning of the word, such usage does not correspond to statistical and algebraic practice, and hence in a thesis such as this, it is inappropriate. However, there is no possibility of ambiguity as the conventional mathematical use of the term does not arise in this study. The reader, therefore, is asked to substitute the word "table" for "matrix" where it occurs in Chapter I.

Insert, p. 20: "Secondly, this test measures the interests of the subject, rather than his behavior. In this respect it differs from all of the other tests considered here except the Neymann-Kohlstedt. (See p. 20 for a discussion of this point in relation to the latter test)."

Insert, p. 51: "Conversely, it is assumed that any approximate configuration may be expanded one or more times, until an exact configuration is achieved. This process of increasing the number of dimensions would be accompanied by a decrease in the error of approximation, and successive changes in the correlation-distance function."

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INTRODUCTION

Primary Purpose of the Study

The original purpose of this study was to attempt some contribution to the question, "What tests, or group of tests, constitute a valid measure of introversion-extroversion?" Implicit in this question is another, "Is introversion-extroversion a real part of personality?" An answer to the first question will, of course, shed considerable light on the second. From the theoretical or philosophical point of view it would appear to be more logical to determine the existence of an entity and then define it before trying to find a measure of it. The methodological justification of the approach to be used in this study is given ^{LATER} below (p. 5).

Aside from the three questions implied above, i.e. the existence, the nature and the measurement of introversion-extroversion, many others could be postulated. The following are mere examples:

1. Assuming the existence of introversion-extroversion, is it essential to the description of personality? Can personality be adequately described without it?

2. Is introversion-extroversion a central aspect of personality, or merely one of many traits? To express the

same question in terms of factor analysis, is introversion-extroversion a "general factor" of personality, or a "group factor"?

3. Is introversion-extroversion an uni-dimensional trait, or a ratio between two elements?

4. Is introversion-extroversion primarily determined by inheritance or environment, or is it a result of both influences?

5. Is introversion-extroversion distributed in the normal population according to a "bell-shaped" curve or a bimodal curve?

6. What is the relation of psychopathology to introversion-extroversion? Is the optimum adjustment in the middle ranges of the scale, in ambiversion; or is it achieved by being "true to type" somewhere along the axis towards either introversion or extroversion?

This list is by no means exhaustive, and yet there is considerable disagreement, both theoretical and experimental, in the literature on all of these points. The answer to these questions, and to others, depends, of course, on the three basic issues mentioned earlier. Inasmuch as it appears to this writer that it is impossible at this stage to give conclusive answers to the more basic problems, no attempt will be made to deal with the secondary ones, except as they are involved indirectly in the issue of a valid measure of introversion-extroversion.

In dealing with this fundamental problem of a valid measure of introversion-extroversion it has been necessary to restrict this investigation to conform to the limitations of a Master's thesis. In part, the selection of a restricted area of investigation was arbitrary, but in considerable measure it was influenced by recent experimental work of Eysenck and his collaborators at Maudsley Hospital, London (27, 1947). These important studies present both a theory and a measure of introversion-extroversion based on a considerable group of tests. Thus, an evaluation of the work of the "Maudsley group" would appear to be a logical preliminary to such a study as is proposed here. However, such a "preliminary" would be a prodigious task, inasmuch as the work of this group involved more than forty separate investigations spread over several of the war years, and involving some nine hundred neurotic and normal subjects.

The only other alternative would be to center attention on an area of investigation that was neglected or willfully omitted by Eysenck and his co-workers. In attempting to find measures of introversion-extroversion they gave little or no consideration to inventories, judging that these instruments had too low a reliability for clinical purposes. While this may be a legitimate basis for rejection, the fact remains that the inventory is potentially an extremely useful research tool in spite of its limited reliability, and there always

remains the possibility that further research and development will improve its clinical usefulness.

For these reasons, then it was decided to confine the search for a valid measure of introversion-extroversion to inventories. If the reader is interested in the multitude of other possible measures, he is referred to Eysenck's work mentioned above, and to other reviews of the literature to be cited later (p.xv).

Secondary Purpose

A secondary purpose of this thesis is to present a compendium of information on inventories of introversion-extroversion, inasmuch as such a compendium does not appear to exist elsewhere in the literature. The text proper is not concerned with this matter and hence does not attempt to be comprehensive or inclusive. But the Index of Inventories and the Bibliography attempt to cite all of the English-language inventories that purport to measure introversion-extroversion, and includes some inventories that purport to measure related aspects of personality. For each inventory cited in the Index, references are given to appropriate bibliographic items, and to chapters of the text where the inventories have been dealt with. In addition, some of these inventories have been reproduced, in whole or in part, in the Appendix.

It should be noted that as a result of these two

objectives of the study, there will be a number of bibliographic items that will not be mentioned in the text. It was found that if an attempt were made to make the Bibliography comprehensive with respect to inventories of introversion-extroversion it would quantitatively exceed the limitations of a Master's thesis. Consequently it was decided to make it representative rather than comprehensive. Hence, where possible, the definitive article for each inventory is given, but in general, papers dealing with experimental findings with the inventories have been omitted, except where they are of particular importance to the main text. Exceptions, therefore, include papers dealing with the validity of the tests and intercorrelations between them. In addition, for purposes of the orientation of the reader unfamiliar with the concept of introversion-extroversion, an effort has been made to include bibliographic references to the main reviews of the literature on this topic. These are cited below in the discussion of methodological principles.

Because of the extensive number of references that have to be dealt with in a few pages, particularly in Chapter I, it has been found necessary to abandon the approved method of placing references on each page as footnotes. Instead, references are given in brackets within the text, and are indicated by the number of the appropriate bibliographic item. This number is italicized (i.e. under-

lined in the typescript) and is followed by the year of publication if known, and the specific page reference if required.

Methodological Considerations

It is ^awidely accepted principle that psychology may be classified into two broad categories - philosophical and scientific. Methodologically speaking, the former category tends to be characterized by theoretical processes - logical and speculative; while the latter tends to be based on experimental and observational methods. The content of philosophical psychology tends to be qualitative while that of scientific psychology tends to be quantitative.

Extensive contributions to the literature of introversion-extroversion has been made from both points of view. The foundation work of Jung is a case in point (61, 1923). It is scientific in that it is based on observation and clinical experience, but a great deal of the elaboration is philosophical and speculative, and no quantification is in evidence. The latter fact, is of course, in part a function of the development, or rather lack of it, of the science of psychology at the time of Jung's basic writing.

While Jung has been able to combine the two approaches in his work, sound methodology in a dissertation such as this demands the selection of one or other of the two approaches. This is further supported by the need for drastic selection

and elimination in working through the vast amount of material that exists on the topic.

A preliminary survey of the literature was carried out with both points of view in mind. The first striking conclusion that is reached after such a survey is the considerable degree of contradiction in the literature. While this is probably not uncommon in psychological literature, nevertheless it constitutes a serious obstacle to further progress. The writer judged, rightly or wrongly, that a large amount of disagreement has arisen primarily from semantic difficulties generated in the theoretical and qualitative aspects of the various reports. Frequently terms have been used in different senses by different authors, or with insufficient precision, permitting broad generalizations or syntheses which prove to be invalid under closer examination.

Theories and conclusions expressed in verbal descriptions are subject to a wide variety of interpretations, but if they are presented in operational or objective definitions with relationships quantitatively determined, the results become communicable and verifiable, and contradictions are rapidly isolated and subjected to further analysis.

For these reasons it was decided to confine this study primarily to quantitative and experimental findings, with theoretical or speculative contributions relegated to

a secondary role. This does not mean to imply that theoretical and philosophical concepts are not essential to the further development of psychology in general, and introversion-extroversion in particular. It simply means that the writer believes that at this stage in the development of the concepts of introversion-extroversion, more progress will be made by confining the study to the experimental field.

Restricting the study in this way is certainly a considerable narrowing of the general field of introversion-extroversion but it still constitutes an extensive investigation that would exceed the limitations of this report. It is further delimited by the primary purpose stated at the beginning of the Introduction. In terms of this purpose, this *PAPER BECOMES, IN EFFECT, AN* investigation into the validity of inventories of introversion-extroversion, as indicated by quantitative, experimental findings. But again there are many methods of validation reported in the literature, and a careful analysis of one of these methods seemed to be indicated rather than a general survey of all of them. Consequently, correlational techniques of validation were selected as the particular method to be examined, and thus the field was finally narrowed to that defined by the title: "A Correlational Study of Inventories of Introversion-Extroversion".

The procedure that was followed consisted simply of collecting all the correlations that could be located in the

literature between inventory scales of introversion-extroversion, and between these scales and other variables that might cast light on the validity of the introversion-extroversion variables. Once these data were assembled, it became a matter of analyzing the tables of correlations either by conventional methods or new methods evolved to meet the purposes of this study. It will be noted that the report falls naturally into two divisions. Part A. consists of a study of sixteen variables for which a partial table of correlations was assembled, and Part B. deals with another thirteen variables for which all of the correlations were obtained.

This study presumes that the reader is familiar with the essential theory of the concept and with the history of the development of introversion-extroversion. Certainly, without such a theoretical orientation, much of the significance of this material will be lost.

For those readers who may not be familiar with the background of the topic, certain references have been included in the bibliography that will facilitate this orientation. Historically the concepts, by their present name, originated with Jung, and his definitive, though voluminous and complex, work has already been cited (61, 1923). His definitions in the latter part of the book are particularly useful in becoming familiar with his point of view. For those who are disinclined to struggle with Jung's weighty and complex style, Jacobi (59, 1942) has prepared a presentation of Jung's theories,

including his concepts of introversion-extroversion, that has been endorsed by Jung, yet is a considerable simplification. Perhaps an apology is in order to the Jungians here in that the prevailing American spelling of "extroversion" has been adopted in this study, rather than the traditional Jungian spelling of "extraversion", except, of course, in the case of direct quotations which use the latter spelling.

Surveys of the developments including and since Jung's work have also been listed in the Bibliography. Perhaps the best critical review is contained in Eysenck's book (27, 1947). However, it has two disadvantages or shortcomings. First, the review of the literature is scattered throughout the book, in various chapters, interrelated with reports of the experimental findings of his own group of research workers. Secondly, as already mentioned, he omits almost entirely any treatment of inventories of introversion-extroversion.

Other useful reviews of the literature, in chronological order, include those of Freyd (22, 1924), Guilford and Braly (37, 1930), Guilford (41, 1934), Collier and Emch (15, 1938), and Gray and Wheelwright (32, 1945), who, in contrast to Eysenck, deal primarily with^a review of inventories in their papers. Of these reviews, that of Collier and Emch appears to offer the best critical discrimination.

PART A. -

A STUDY OF SIXTEEN PERSONALITY TEST VARIABLES.

CHAPTER I

AN APPROACH TO VALIDITY

Ellis (22, 1946) has prepared a comprehensive and critical review of the literature pertaining to the validity of personality questionnaires in which he finds doubtful validity in the majority of cases. In a later paper (23, 1947) he brings this earlier study up to date and concludes that the increase of test validity is still "the crying need". In the hope of making some contribution to this need, this chapter presents an approach to the validity of certain inventories or questionnaires, primarily those purporting to measure introversion-extroversion.

The Inventories

Nine standardized inventories purporting to measure introversion-extroversion have been selected from among those available (see Index of Inventories) on the basis of the necessary experimental data existing in the literature. These tests are the Bernreuter Personality Inventory (B3-I Scale) (8, 1933); the Colgate Personal Inventory C2 by Laird (64, 1925); the Colgate Personal Inventory C4, which is Whitman's abridgement of the Laird test (94, 1929); Conklin's test of introversion-extroversion interests (19, 1927); the Freyd-Heidbreder test (29, 1924 and 52, 1926);

Marston's test (68, 1925); the Neymann-Kohlstedt Diagnostic Test for Introversiion-Extroversiion (72, 1929); the North-Western University Introversiion-Extroversiion Test by Gilliland and Morgan (30, 1931); and Root's test (78, 1931).

In order to extend the frame of reference it has been found useful to include a number of other tests in this study. These include three tests that purport to measure neuroticism: Bernreuter's B1-N scale on the Bernreuter Personality Inventory (8, 1933); Thurstone's neurotic inventory (91, 1930); and Willoughby's revision of the Thurstone (95, 1932). There are also two tests purporting to measure ascendance-submission, or dominance-submission: The A-S Reaction Study by Allport and Allport (3, 1928) and Bernreuter's B4-D scale (op. cit.). The study was further complemented by including a general factor described as "emotionality", extracted by Bernreuter from seven of the aforementioned tests (10, 1934). (See Table I for a list of the seven tests). Consideration was given to including the remaining Bernreuter scale (B2-S, "self-sufficiency") but no data relating it to tests other than the Bernreuter scales were found, so it was discarded. Flanagan's F1-C ("Self-confidence") (7, date missing) was included as it helps to "complete the picture" of neuroticism, although no relations to introversiion-extroversiion (except B3-I) are available at the time of writing. Flanagan's F2-S scale was discarded for the same reason as the B2-S scale.

The complete list thus includes sixteen personality variables that are listed in Table I, along with the abbreviations that will be used to designate these variables in this chapter.

The Method of Intercorrelations

A number of investigators have used the method of correlations to explore test validity, and Ellis (22, 1946) reports on many of these studies. Authors who have used this technique with the introversion-extroversion tests listed in Table I include Bernreuter (10, 1934), Gilliland (31, 1934), Guilford and Hunt (38, 1931), Hovey (58, 1929), Omwake *et al* (74a, 1934), and Stagner (85, 1932). In general, with the exception of Bernreuter (see p. 35 for a discussion of his study), these authors conclude, because of the generally low correlations encountered between tests that purport to measure introversion-extroversion, that if any one of these tests does measure this aspect of personality, the others do not. ~~As pointed out in the Introduction (p. —),~~ Guilford and Hunt (*OP CIT*) have suggested that their results constitute a virtual death blow to the theory of a general trait of personality that might be called introversion-extroversion.

While the experimental results with correlations are certainly inconclusive, nevertheless there are many possible interpretations of the findings. A rather strong, positive declaration such as that of Guilford and Hunt

TABLE I.-

Abbreviations for the sixteen variables studied in this chapter. (For definitive references see p. 1 and p. 2; for publication details see the Index of Inventories and the Bibliography).

Abbreviation	Name of Test, Scale, or Factor.
A-S	The A-S Reaction Study (A Scale for Measuring Ascendance-Submission of Personality), by Allport and Allport.
B1-N	Neurotic tendency. Scale of the Bernreuter Personality Inventory.
B3-I	Introversiion-extroversion. - Bernreuter.
B4-D	Dominance-submission. - Bernreuter.
BE	Bernreuter's general factor of "emotionality extracted from B1-N, B3-I, WTN, C4, F-H, R, and N-K. (See bibliography <u>10</u> , 1934).
C2	The Colgate Personal Inventory C2, by Laird.
C4	Whitman's abridgment of C2.
Ck	Conklin's test of introversiion-extroversion. interests.
F1-C	Self-confidence. A scale based on Flanagan's factor-analysis of the Bernreuter.
F-H	The Freyd-Heidbreder introversiion-extroversion test.
M	Marston's test of introversiion-extroversion.
N-K	Neymann-Kohlstedt Diagnostic Test for Introversiion-Extroversion.
NW	Northwestern University Introversiion-Extroversion Test, by Gilliland and Morgan.
R.	Root's test of introversiion-extraversion.
TN	Thurstone's neurotic inventory.
WTN	Willoughby's revision of TN.

already referred to appears premature. It can only be justified from these negative experimental findings by a rather circuitous reasoning. In this study, a somewhat different approach to validity by the method of correlations will be used which, it is hoped, will lead eventually to well-founded positive conclusions regarding these tests.

Two Concepts of Validity

The usual approach to the validity of a test is to compare it experimentally with one or more criteria to determine whether the test measures what it claims to measure. The difficulty, of course, is to find a criterion that will meet with general agreement. Inasmuch as there is extensive disagreement in the literature as to the essential nature of introversion-extroversion, it would appear to be impossible at this stage to settle on a criterion of this concept that will receive general support.

Under these circumstances it seems more appropriate to approach the validity of inventories of introversion-extroversion from a different point of view. The reliabilities of the tests indicate that they measure something - presumably some aspect of personality - with greater or less precision. Rather than endeavouring to find out if they measure what they claim to measure, it would seem to be in order to try to find out what they actually do measure. When this is accomplished, the test can be re-interpreted, and re-named

if necessary, in order to make valid instruments of them. From this point of view, it matters little if none of them, or at best only one, proves to be a valid measure of introversion-extroversion. They are all potentially useful tools and a considerable body of experimental data has been collected by their use. But this accumulated information is of little or no value until the significance of the individual tests is determined. As the result of such determinations a more valid measure of introversion-extroversion may emerge, but the first gain will be the increased usefulness of instruments already available.

It would seem that the most promising method of initiating this approach would be by the method of correlations. If a matrix of all the correlations between the tests listed in Table I could be obtained, the result would be a meaningful network having certain Gestalt properties. In itself the matrix would not indicate what the individual tests measure. But in all probability the validity of certain tests in the matrix would be known with reasonable certainty, and by means of the network the significance of the other tests could be inferred. In effect, the matrix as a whole would become a tool of investigation having a potentiality "greater than the sum of its parts".

Analysis of a Partial Matrix

A partial matrix of correlations between the variables listed in Table I is presented in Table II. The numbers in

parentheses following each correlation refer to the source of the item which is indicated in Table III. In some cases two or more values were located in the literature, sometimes with significant discrepancies. Where this occurred, the value used in the matrix is simply the arithmetic mean of the several values that were found. It is possible that at a later stage of development some method of selection or weighting would be more effective, but this does not appear to be justified here.

It will be noted that values are given for only 65 of the correlations out of a possible 153, or roughly 42 per cent. This constitutes a serious limitation to this analysis. The potentialities of a totality cannot be realized when more than half of the constituent parts are unknown. However, if this analysis yields some significant results it may be inferred that a study based on the completed matrix will be of considerably greater value.

It is proposed to carry out the analysis of this matrix in two steps: (1) the approximation of a "linear continuum", and (2) the isolation of "pairs, chains and clusters". A detailed description of these steps follows.

Approximation of a "Linear Continuum"

A preliminary step in arranging a matrix of correlations to approximate a linear continuum is to "concentrate" the matrix by making as many as possible of the signs positive.

TABLE III.-

Sources of intercorrelations presented in Table II.

-
-
- (1) Bernreuter (7, p. 4) reports three values: .81, .67, .82. Mean: .76
 - (2) Stagner (85, 1932) reports a value of .26; Broom (13, 1930) reports a value of .13. Mean: .20.
 - (3) Guilford and Braly (37, 1930) cite Bender (8, 1928) as reporting a value of .38.
 - (4) Stagner (85, 1932)
 - (5) Stagner (85, 1932) reports a value of .51 and cites Allport as reporting a value of .35. Mean: .43.
 - (6) Bernreuter (7, p. 4, 5).
 - (7) Bernreuter (10, 1934).
 - (8) Bernreuter (7, p. 4) reports two values: .94 and .91. Mean: .92.
 - (9) Bernreuter (7, p. 5) reports a value of .31. Omwake et al (74a, 1934, p.70) report four values: .28, .28, .10, and .20. Mean: .23.
 - (10) Bernreuter (7, p. 5) reports a value of .47. Omwake et al (74a, 1934, p. 70) report four values: .55, .50, .41, and .34. Mean: .45
 - (11) Bernreuter (7, p. 5) reports a value of .69. Omwake et al (74a, 1934, p. 70) report four values: .75, .73, .41, and .65. Mean: .65
 - (12) Bernreuter (7, p. 4) reports two values: .76 and .69. Gilliland (31, 1934) reports a value of .47. Mean: .64
 - (13) Gilliland (31, 1934).
 - (14) Stagner (88, 1934) cites Bernreuter as reporting in correspondence to Stagner a value of .91.
 - (15) Whitman (94, 1929).
 - (16) Conklin (19, 1927).
 - (17) Hovey (58, 1929)
 - (18) Gilliland (31, 1934) reports a value of .30. Guilford and Hunt (38, 1931) report a value of .19. Mean: .25
 - (19) Guilford and Hunt (38, 1931) report a value of .62. Stagner (85, 1932) reports a value of .39. Mean: .50.
 - (20) Bernreuter (7, p. 5) reports two values: .11, .04. Mean: .08.
 - (21) Guilford and Hunt (38, 1931).
 - (22) Bernreuter (10, 1934) reports a value of .60. Root (80, 1932) reports a value of .83. Mean: .72
-
-

This was accomplished in Table II by reversing the B4-D scale, and hence reversing the sign of its correlations from those given by the authors. This is indicated by putting the letter "R" in parentheses after the abbreviation of this variable to indicate the reversal. It should also be noted that there is some disagreement among the authors as to whether the Conklin test (Ck) has been reversed. Until this point is clarified the possibility that the correlations of the Conklin test with the others are actually negative should be kept in mind.

Definition: The term linear continuum is introduced here to describe an arrangement of a matrix of correlations that results in the higher correlations being distributed along the diagonal of the matrix, and the lower values concentrating in the right-angled corner. This is illustrated schematically in Figure 1 where the arrows indicate the direction of increasing correlational values along the rows, columns, and along the diagonal emanating from the right-angled corner. The arrangement is based on a comparison of the algebraic values of the correlations, not of their absolute values. Hence the right-angled corner may contain either a concentration of low or negative correlations, depending on the particular case.

It is not meant to imply by the term "linear" that the configuration (for definition of "configuration" see

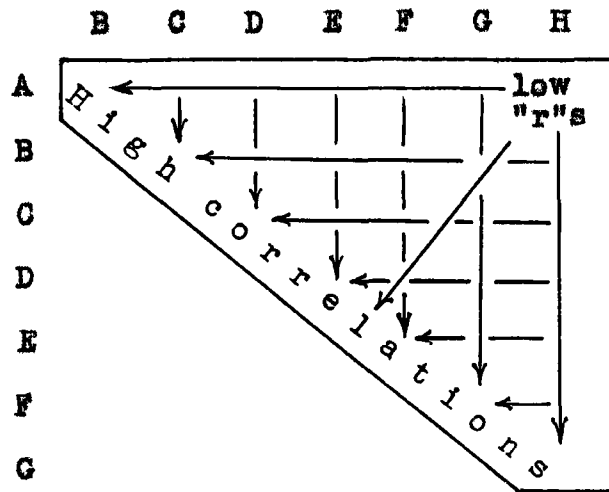


Figure 1. An illustration of a table of correlations between eight variables (A to H) arranged in a "linear continuum".

Chapter III, p. 47) of the matrix is a straight line, but rather that the variables may be configured on a line which may be straight but more often will assume rather complex curvatures. Not all matrices will have the capacity of being arranged in a linear continuum, but the majority can be arranged to approximate this condition. Where it can be done, the resultant systematization of the matrix facilitates the analysis.

The matrix presented in Table II is arranged according to the alphabetical order of the abbreviations for each variable. In Table IV the correlations have been rearranged to approximate a linear continuum. Meaningful inferences could be drawn from this table as it stands, but inasmuch as these deductions are made more explicit in the subsequent stages of the analysis, they will be omitted here.

The Isolation of "Pairs, Clusters, and Chains"

Definitions: For the purposes of this study a pair of variables shall be designated as two variables having an intercorrelation equal to or higher than an arbitrarily chosen value. A chain shall consist of two or more pairs linked by common variables. A cluster shall be defined as three or more variables, all of whose correlations are equal to or greater than this arbitrarily chosen criterion.

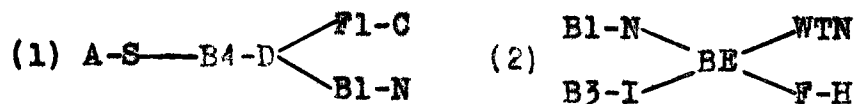
The choice of the arbitrary value to serve as the criterion for pairs, chains, and clusters is a relative

problem and the most suitable value may differ for different matrices. For this matrix the value .70 has been selected.

An examination of the data of Table IV by this criterion reveals the presence of only one cluster consisting of four traits: F1-C, TN, B1-N, and B3-I. Five of the six possible correlations between these variables are reported and these are all .90 or higher, so that the cluster is closely knit. Two of the four variables in this cluster purport to measure neuroticism, and it is possible that Flanagan might have designated his scale (F1-C) as neuroticism were it not for the necessity of avoiding duplication of the name of Bernreuter's B1-N scale. Therefore this cluster will be designated as the "neurotic cluster". The presence of B3-I in this group will be discussed in detail in a later section of this chapter (see p. 25).

B4-D and A-S are excluded from this cluster because of correlations below .70 (.65 and .43). Factor BE could be included theoretically because the two correlations that are known (both .71) meet the criterion. However, BE has been excluded because these correlations are low in relation to the others in the cluster, and because of the possibility of the unknown correlations being below the criterion.

Two chains are present in the matrix:



and two pairs:

(1) C2 - C4

(2) R - N-K

Thus, using a correlation of .70 as a minimum criterion, an analysis of the data of Table IV reveals one cluster, two chains, and two pairs. The remaining items may be described as separate variables. These results are summarized in Table V. The question of revision should not be overlooked when the matrix is completed. There would certainly seem to be a possibility of one or more pairs existing that have not been isolated here. A discussion of these groupings, and the correlations themselves, as they relate to test rationale will be undertaken in Chapter II.

Summary and Conclusions

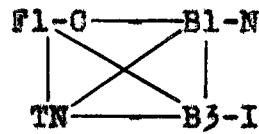
Recognizing the need for the improved validity of tests of introversion-extroversion, an attempt has been made to contribute to a greater insight into the significance of existing tests by the analysis of correlations.

A partial matrix of correlations between sixteen variables, nine of which purport to measure introversion-extroversion, is presented. The data is arranged into an approximate linear continuum, and the items are classified into clusters, chains, pairs and separate variables. The

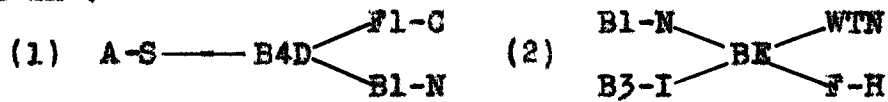
TABLE V.-

Organization of the variables of Table IV into groups using a correlation of .70 as a minimum criterion.

(a) Cluster:



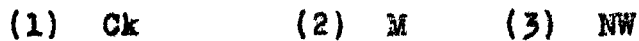
(b) Chains:



(c) Pairs:



(d) Separate Variables:



significance and potential contribution of this preliminary analysis can only be assessed in terms of the rationale of the individual tests. This will be undertaken in the succeeding chapter.

CHAPTER II

CORRELATIONS AND TEST RATIONALE

The first chapter presents an analysis of sixteen personality test variables based on available correlations between them. The groupings are tentative because of the incompleteness of the data, and because of certain discrepancies. In addition, it is arbitrary in that the classifications of Table V are based on the arbitrary criterion of a correlation of .70.

In relating this data to individual test rationale both of these factors should be kept in mind. The limitation of the arbitrary criterion will be overcome in part by supplementing the analysis with a verbal, qualitative interpretation of correlations supplied by Garrett (29a, p. 342), which follows:

r from	.00 to	.20	denotes indifferent or negligible relationship;
r from	.20 to	.40	denotes low correlation; present but slight;
r from	.40 to	.70	denotes substantial or marked relationship;
r from	.70 to	1.00	denotes high to very high relation.

It will be noted that Garrett's criterion for a "high to very high relation" coincides with the criterion for the groupings of Table V. In order to emphasize the fact

that verbal descriptions are used to represent a fairly specific quantitative range they will be placed in quotation marks when used in this chapter.

The Separate Variables

It is perhaps simplest to begin this phase of the study with the "separate variables": the Conklin test of introversion-extroversion interests (Ck), the Marston test (M), and the Northwestern University Introversion-Extroversion Test (NW).

The Conklin test: Only four correlations of this test with the other variables, out of a possible fifteen, are reported, and the highest of these is .39 (with the Freyd-Heidbreder test). Thus, there remains the possibility that some of the missing correlations may be higher, but there is also the possibility, due to a lack of clarification on the part of the authors, that some of the correlations quoted ^{HERE} should be negative. However, proceeding on the assumption that the data as given in Table IV are correct and representative, we conclude that the Conklin test has "low" or "slight" relationships with the other tests that purport to measure introversion-extroversion or neuroticism. This is understandable in terms of the basic rationale of the test. The author's aim differed significantly from the purport of all, or nearly all, the other tests on two important counts (18, 1924 and 19, 1927). In the first place

Conklin endeavoured to measure the normal aspects of introversion-extroversion whereas all the other tests considered in Table IV have some psychopathological implications. *Insert- see ERRATA

The Marston test: Insofar as the available correlations would indicate, the Marston test appears to be in much the same ^{POSITION OF ISOLATION} ~~relationship~~ as the Conklin. However, the definitive paper (68, 1925) is not available at the time of writing so that it is not possible to discuss the limited correlational data in the light of test rationale.

The Northwestern test: The external criterion for the construction of this measure of introversion-extroversion was the responses of dementia praecox patients for the introverted end of the scale, and the responses of manic-depressive patients at the extroverted end. In this respect it differs from all of the other tests considered here except the Neymann-Kohlstedt, which uses the same external criterion. Thus, a correlation between the Neymann-Kohlstedt and the Northwestern would be of considerable interest, but it has not been possible to locate a value in the literature. However, the separation of this test from all the other variables (again caution is required because only three correlations are available) is understandable in terms of this distinct criterion for the test.

The Paired Variables

The Root and the Neymann-Kohlstedt: In the absence of

the definitive paper for the Root test (78, 1931), Bernreuter's description of the test is useful. He reports (10, 1934, p. 185) that "the Root test consists of ten items, eight of which appear on the Neymann-Kohlstedt test, and three of which are similar to items on Whitman's C4 test. There are five possible responses for each item."

Thus the high correlation between the Root and the Neymann-Kohlstedt tests is attributable to cimminality of items. Some similarity of items between the Root and the C4 test would account for the "slight" correlation between these tests (.38).

With the exception of the pairing with the Root test and a correlation of .50 with the C2 test, (which is not readily explained in terms of test rationale) the highest correlation of the Neymann-Kohlstedt with the other variables is .36. In this case eleven out of a possible fifteen correlations are reported. Thus, it may be concluded with a fair degree of certainty that, with two exceptions, the correlations of the Neymann-Kohlstedt with the other variables are either "negligible", "indifferent", or "slight".

As was suggested in the discussion of the Northwestern test, which has a similar rationale, this isolation of the Neymann-Kohlstedt test may be most readily explained in terms of the criterion of psychotic responses that was used in constructing the test. In one other respect the Neymann-Kohlstedt

inventory is worthy of comment. It will be seen from the Appendix (p. 141) that while the items of the Neymann-Kohlstedt deal with behavior and are similar in this respect to the items in the majority of the other inventories, the instructions for administration, however, are unique. The subject is not instructed to rate himself on what he considers to be his usual behavior, but is requested "to consider them (the questions or items) from the viewpoint of personal like or dislike." (Italics by the test authors). This strikes a note of similarity with the Conklin test, and means, in effect, that when used as the authors indicate, the Neymann-Kohlstedt inventory becomes a test of interests. Unfortunately no correlation has been located indicating the relations between the Neymann-Kohlstedt and the Conklin tests. This would be of considerable value as a possible indicator of the influence of these unusual instructions to the subject on the validity of the Neymann-Kohlstedt test.

Laird's C2 and Whitman's C4 tests: The pairing of the C2 and the C4 tests (.81) is to be expected inasmuch as Whitman's test (C4) is a fairly straight-forward abridgement of Laird's C2 test (94, 1929). The relationship of the Laird test to certain of the other variables will be discussed later (p. 28).

The Chained Variables

- (1) The ascendance-submission chain (A-S, B4-D, F1-C,

B1-N): The linkage between the A-S and B4-D variables is understandable in that both purport to measure the same aspect of personality, and in the construction of the B4-D scale, the subjects' responses to the A-S test provided the external criterion (7, data missing).

The linkage between the B4-D and the F1-C and B1-N scales is probably due to a communality of items, inasmuch as all three variables were derived from the same pool of items (the Bernreuter inventory). However, this assumption should be verified by checking the actual number of common items between these scales.

The existence of common items does not, of course, deny the possibility of a significant relation between the traits themselves (ascendance-submission and neuroticism), which is an interesting problem in its own right. There is also a possibility of a relation between ascendance-submission tests, and some of the introversion-extroversion tests, but again correlational data are lacking. Such a relationship was suggested on theoretical grounds by Allport and Allport (2, 1921), the authors of the A-S test.

(2) The BE chain (B1-N, B3-I, BE, WTN, F-R): The presence of the BE factor as the central link of this chain is to be expected, due to the fact that Bernreuter extracted BE as a general factor from a group of seven variables, which included the other four variables of this chain (10, 1934).

More detailed consideration will be given later to this factorial study carried out by Bernreuter (p.35).

Disregarding the presence of BE for the moment, it is of interest to consider the proximity of the other variables in this chain. While the close relation between B1-N and B3-I may be attributed in part to common items, it is still somewhat of a surprise since the external criterion used in the construction of the B3-I scale was the Laird C2 test, (7, date missing). Yet the data indicate that the B3-I is more closely related to the B1-N than its own criterion. A detailed study of this problem might reveal other causal factors such as a peculiarity of Bernreuter's standardization population.

The presence of the WTN variable in this chain arises from the fact that this test is a revision of Thurstone's test, TN, (25, 1932), and the Thurstone test provided the external criterion for the B1-N scale. (7, date missing). The presence of the F-H variable in this chain, and its relation to "neuroticism" will be considered later (p.37-39).

The "Neurotic" Cluster

Some of the relationships of this group of variables, consisting of three scales of the Bernreuter test, B1-C, B1-N, and B3-I, and the Thurstone test, TN, were discussed in the previous section dealing with the "chained variables" but they will be briefly recapitulated here. TN is the "parent"

of this group, as it provided the external criterion for the construction of the B1-N scale of the Bernreuter. The presence of the B3-I variable is surprising but can probably be explained in part on the basis of common items. Its proximity to neurotic tests has been a source of consternation to the author, and his efforts to justify the continued use of this scale as a measure of introversion will be considered in more detail later. (p. 35) The presence of the F1-C scale in this group presents no mystery inasmuch as it is one of two orthogonal factors extracted by Flanagan from the four Bernreuter scales (7, date missing). It was the first factor extracted and its location in this area enables it to achieve a high saturation with two of the Bernreuter variables. It is probable that the label "Confidence" assigned to the variable should not be taken too seriously. Had the label "neuroticism" not been assigned already to one of the Bernreuter scales, it seems likely that Flanagan would have considered this the most appropriate description of his first factor.

The closely knit relationships between these four variables is not in itself, of course, a demonstration of their validity as measures of neuroticism. This can only be determined by the analysis of various experimental demonstrations of their validity, such as those cited by Ellis (22, 1946 and 23, 1947).

A study of these experimental findings is, however, beyond the frame of reference of this thesis. Nevertheless, in a subsequent discussion of introversion in relation to neuroticism (p. 31) it will be assumed that the tests of this cluster, either individually or as a group, represent a reasonably valid measure of neuroticism. If this is the case, the validity of the group rests primarily on the validity of the "parent" test, TN.

While it is not possible here to carry an examination of the validity of these four tests further, one observation regarding the whole table of correlations (Table IV) appears to be in order. It will be noted that while there is not apparent tendency for high correlations to collect in the lower right corner, there is a definite tendency for them to increase in value as one approaches the upper left corner. This cannot be attributed entirely to the arrangement of the variables to approximate a "linear continuum". This is demonstrated by the definite tendency for correlations to increase in value while proceeding along the diagonal edge of the table towards "neuroticism". While the missing figures in the table may provide important exceptions to this general tendency when they are obtained, it does not seem possible that they would do so in sufficient numbers to contradict the trend now in evidence.

This tendency we may refer to as a "convergence" of

these variables on a pole that appears to be neuroticism. In attempting an interpretation of this tendency of convergence three possibilities suggest themselves: (1) the convergence may be a function of personality itself; (2) it may be a function of the test medium, i.e. inventories; or, (3) it is quite possible that this convergence is a function of both personality and the test medium.

If it is a function of personality it lends support to those theories of personality that maintain neuroticism as a pervading centrality of the pathology of personality. If it is a function of the test medium it suggests that questionnaires and inventories have a definite proclivity for detecting neuroticism, and that even when they aim to measure some other aspect of personality, such as ascendance-submission, or introversion-extroversion, there is a strong tendency for these scales to "drift" toward neuroticism. The clarification of this problem would appear to be of considerable interest.

The Freyd-Heidbreder "Family"

Up to this point the ordering of this chapter has been largely determined by the arrangement of the variables presented in Table V. This has proved of value, but there are many other methods of organizing the material that might prove equally fruitful. In particular, an historical approach to a group of the tests purporting to measure introversion-

extroversion is of interest. The four variables to be considered in this way are F-H, C2, C4, and B3-I.

The "parent" test of this group is the Freyd-Heidbreder questionnaire. Freyd's list of traits, presumed to be characteristic of the introvert, was published in 1924 (29), and was used in almost its identical form by Heidbreder (52, 1926), who tested the items for internal consistency but made use of no external criterion of validity. (See Appendix, p.121, for the Freyd-Heidbreder list.) The Freyd list provided the source for the majority of the items in the Laird C2 test (64, 1925). However, the correlation between these two tests is not particularly high (.42). An important difference between the two lies in the method of response on the part of the subject. The Laird test is a rating scale, giving the subject several degrees of possible responses, instead of being a "yes, no, or question mark" questionnaire like the Heidbreder. (See Appendix, p.143, for items similar to those of the Laird.) However, not hav^{ING} access to Laird's definitive paper or to the inventory itself at the time of writing, it is not possible to suggest whether this aspect of the test is a primary cause of the "separation" of the Laird inventory from the Freyd-Heidbreder.

As already noted, Whitman's revision (94, 1929) of the Laird test is simply an abridgement that used the Laird

test as its criterion of validity. Similarly, Bernreuter (7, date missing) used the Laird test as his criterion of validity and also as a source for items (7, date missing).

The "family tree" of these four variables is presented schematically in Figure 2. The solid lines represent a "blood relationship" based on either a communality of items or a validity dependence, or both. The dotted lines represent a derived or secondary relationship. The correlations are obtained from Table IV. Unless a more detailed study reveals that the dependence of the Laird C2 test on the Freyd-Heidbreder has been exaggerated, the problem here, in the main is to explain the lack of a closer relationship, and a study of this point might be of value.

Neuroticism and Introversiion

The relationship between neuroticism and introversion can be considered a classical problem in this field of personality. The two extreme positions are more or less represented by the opinions of Jung and Freud on the issue, which are quoted by Eysenck (27, 1947, p. 52). Jung states that "it is a mistake to believe that introversion is more or less the same as neurosis. As concepts, the two have not the slightest connection with each other." (61, 1923) On the other hand, Freud writes: "An introvert is not yet a neurotic, but he finds himself in a labile condition; he must develop symptoms at the next dislocation of forces, if he does not

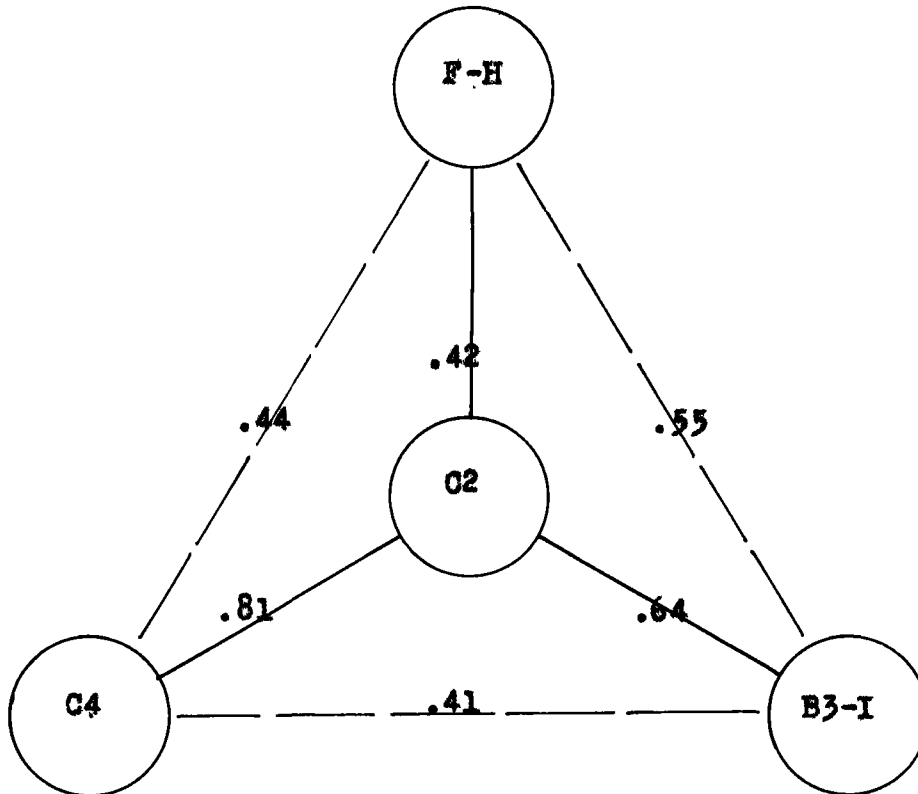


Figure 2. The Freyd-Heidbreder "Family". (Correlations derived from Table II).

find other outlets for his pent-up libido" (282, 1920).

Jung's position, and a slight exaggeration of Freud's opinion, provide two extreme views: the one in which introversion is identified with neuroticism, and the other in which introversion is distinctly different from neuroticism. If the latter position is stated as "introversion equals non-neuroticism", a continuum may be conceived as extending from "neuroticism" to "non-neuroticism". The concept of any author, or the scale of any test purporting to measure introversion, may presumably lie anywhere along this continuum.

Because of the importance of this issue it is worthwhile to arrange the nine tests purporting to measure introversion-extraversion along such a continuum, on the basis of the data of Table IV. To do this a criterion for "neuroticism" and "non-neuroticism" is required. The most suitable standard of neuroticism for this purpose would appear to be some "central tendency" of the "neurotic cluster". Then "non-neuroticism" is simply defined as a zero or quite low correlation with the criterion of "neuroticism".

According to this principle correlational values for each of the nine tests purporting to measure introversion-extraversion are obtained as indicated in Table VI. The obtained value is simply the means of those correlations that have been located relating to any of the four variables that constitute the "neurotic cluster". The tests are arranged on

TABLE VI.-

Calculation of the probable correlation with neuroticism of nine tests that purport to measure introversion-extroversion. (Data derived from Table IV).

"Neurotic Cluster"	B3-I	F-H	C2	C4	R	N-K	M	Ck	NW
F1-C	.90								
TN	.91		.53	.	.38	.34		.27	
B1-N	.95	.51		.58	.30	.16			
B3-I		.55	.64	.41	.28	.15	.37		-.09
Mean	.92	.53	.58	.40	.32	.22	.37	.27	-.09

a linear scale (one-half inch equals ten correlation units) extending from "neuroticism" (correlation of 1.00) to "non-neuroticism" (correlation of 0.00) in Figure 3. It will be noted that the order of arrangement is much the same as that obtained by the approximate linear continuum of Table IV, which is some indication of the usefulness of that operation.

In the light of the foregoing theoretical discussion it seems appropriate to classify these tests into three groups. To some extent the selection of the dividing lines between the groups is arbitrary. The considerable separation between B3-I and C2 dictates that the first dividing line should lie somewhere between these two tests. Describing the first group as one in which introversion is "identical" or nearly identical to neuroticism suggests that the correlational value should be high, so .90 was chosen as the delimiting value. The separation between the second and third group is not so clear. Recourse was had to the rationale of the individual tests and on this basis the dividing value of .30 was chosen. It will be noted that the Root test (R) is just outside the "non-neurotic" group ($r=.32$) which is appropriate enough in the light of its rationale (p. 21).

The results of this classification are presented in Table VII. Group III has been broken down into two subdivisions purely on the basis of the rationale of the individual tests. This may or may not prove to be justified when

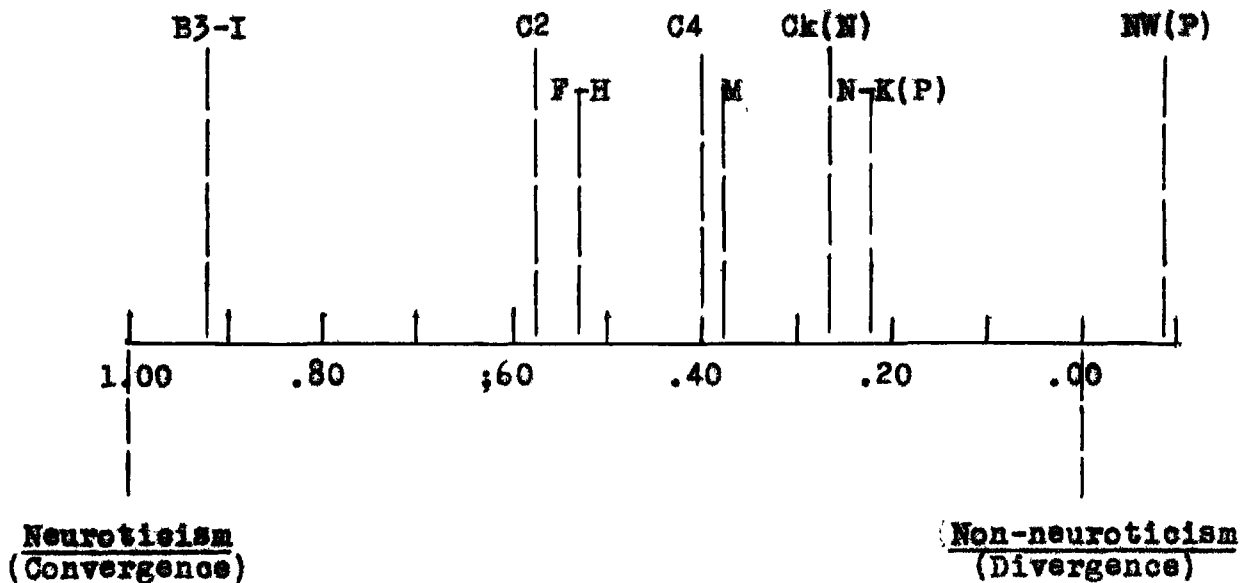


Figure 3. Tests which purport to measure introversion-extroversion distributed on a continuum ranging from "neuroticism" to "non-neuroticism". (Data derived from Table V). (N) indicates that the rationale of the test was based on an attempt to measure "normal" introversion-extroversion; whereas (P) indicates that the basic criterion of the test was the responses of psychotic subjects.

TABLE VII.-

Classification or grouping of nine tests that purport to measure introversion-extroversion, based on Table VI and Figure 3.

<u>Tests</u>	<u>Estimated correlation with "Neuroticism"</u>
GROUP I	
<u>Introversion "Identical" to Neuroticism</u>	
B3-I	above .90
GROUP II	
<u>Neuroticism and Introversion Related</u>	
G2 F-H C4 M R	.30 to .90
GROUP III	
<u>Non-neurotic Introversion</u>	
(a) "Normal" Introversion-Extroversion	-.10 to .30
Ck	
(b) "Psychotic" Introversion-Extroversion	
N-K NW	

Note: The division of Group III into parts (a) and (b) is based on the rationale of the tests, not on the correlations presented in Table XI.

all of the correlations between these tests are determined.

Bernreuter's Defence of B3-I.

Bernreuter did not intend that his B3-I scale should be practically identical to his B1-N scale. This is clearly indicated by the fact that the external criterion for the construction of this scale was the Laird test C2. It is of interest to note that Bernreuter reports considerably higher correlations with this criterion than does Gilliland. Bernreuter reports two values, .76 and .69 (7, p. 4); while Gilliland reports a value of .47 (31, 1934). Certain tentative suggestions for explaining the proximity of B3-I to B1-N, and its separation from the Laird test have already been made. The answer may be found in part in an examination of the individual items of these three variables. It is quite possible that there are more common items between the B3-I and B1-N scales of the Bernreuter than there are between the B3-I scale and the Laird test. The fact that Bernreuter finds higher correlations with the criterion than does Gilliland suggests that there might be a peculiarity of Bernreuter's population in which introversion tends to be associated with neuroticism.

Bernreuter attempts to minimize this association of the B3-I scale with neuroticism in a study of the relations of this scale to six other scales or tests, namely B1-N, C4, F-H, N-K, R, and WTN (10, 1934). He tries to justify the

validity of the B3-I scale by extracting a general factor (BE) from these seven tests. It is true that BE provides a useful link between tests of neuroticism (including the B3-I scale) and the tests purporting to measure introversion. This may be demonstrated by placing BE on the continuum. Its position would be at .71, according to the data of Table IV, which helps to fill in a considerable gap. But this in no way alters the relationship between the other variables as described in Table VII. The fact that Bernreuter used Willoughby's revision (WTN) of the Thurstone test as one typical test of neuroticism tends to cloud the issue and make more tenable his thesis that tests of neuroticism and introversion are virtually indistinguishable. But if we confine the criterion of neuroticism to the tests that are more likely to be valid and reliable indicators, as in Figure 2 one is compelled to agree with Stagner's conclusion (88, 1934) that the B3-I scale is a duplicate of the B1-N scale. As such it appears to serve little or no useful purpose.

Discussion of the Neurosis-Introversion Continuum

A final decision on the tests grouped in Table VII, in relation to their claims to being valid measures of introversion-extroversion, is beyond the scope of this study. However, certain preliminary observations can be made that may contribute to the ultimate decision. In the first place it appears that Group I, consisting of the B3-I scale, can

be dismissed on pragmatic grounds. If B3-I is a valid measure of introversion, then introversion and neuroticism are so nearly identical (assuming, of course, that our criterion of neuroticism is reasonably valid) that holding to the concept of introversion as an entity in its own right is no longer tenable. This leaves only Groups II and III for serious consideration.

Group III has the endorsement of Jung (see p. 29) and consequently it will be the chief source of interest of those who follow Jung's theoretical system. It also has a degree of experimental support in the recent work of Eysenck et al (27, 1947). On the other hand, it might be argued that the "majority vote" of the larger number of variables in Group II may be considered as an experimental support of the validity of these tests. An examination of the tests in this group weakens this argument.

Three of the five tests constitute the Freyd-Heidbreder "family" already discussed (p. 27). Hence there is little or no cumulative value in the weight of evidence of these variables. If we examine the parent test, the Freyd-Heidbreder, it is apparent that the choice of items alone could explain the correlation between introversion and neuroticism. The Freyd list (See Appendix, p. 21) purports to contain traits characteristic of the introvert. This writer has judged each item as being either unfavorable to the introvert (U), neutral

(N), or favorable to the introvert (F). These judgments are recorded in the Appendix. Twenty-four of the traits are rated as unfavorable; twenty-six as neutral; and three as favorable. Thus, if this list of traits and the judgments of the writer are both valid, we are forced to conclude that introversion is an unfavorable pattern of behavior, and that extroversion, conversely, is favorable. Extreme introversion is thus logically associated with neuroticism.

The critical question, of course, is the validity of Freyd's list. He reports that he collected them from "several psychologists of standing and from graduate students of psychology" (29, 1924), and he considered that they represented a fair cross-section of the opinions of psychologists on the characteristics of the introvert. Is this an adequate external criterion of validity?

Psychologists are prone to dismiss the "consensus of opinion" of others as stereotypes and it seems only fair to suggest that psychologists themselves might also be susceptible to invalid stereotyped thinking. Thus, in itself, the tendency of psychologists to associate in their own minds introversion with neuroticism cannot be considered as a sufficient criterion. This stereotype, if it exists, suggests the first possible explanation of the tendency for test purporting to measure introversion to fall into Group II of Table VII.

A second possible explanation, perhaps in part responsible for the existence of the stereotype, may lie in the willingness of the introvert to acknowledge his shortcomings, as opposed to the extrovert's tendency to minimize or be unaware of them. A third possible contributing factor may lie in the peculiar characteristics of the standardization populations. This has already been suggested in discussing Bernreuter's B3-I scale. Practical considerations cause the majority of standardization populations to consist of university students, and such populations may be statistically abnormal in consisting of individuals who tend to have introverted traits combined with neurotic traits. Or to put it in other words, it may be that neurotics and maladjusted individuals in university populations do tend to be introverts, while this may not be true in a "normal" population. This could also be a contributing factor to the existence of a stereotype in the minds of psychologists, as many of them have their most extensive associations with students.

The Root test, as already noted, consists of ten items, eight of which appear on the Neymann-Kohlstedt, and three of which are similar to items on the C4 test. Hence it contributes nothing to the weight of evidence of this group. There is not sufficient information at hand to consider the Marston test from this point of view. Even if it

it is assumed to be a relatively independent development, its "vote" plus the support of the other four variables which are closely interdependent does not add up to a significant cumulative evidence in favor of Group II.

Any extension of this discussion of the relative claims of these tests would depend on experimental data beyond the frame of reference of this paper. In fact, the final resolution of these problems may require further developments in the theory of personality.

Summary and Conclusions

In this chapter the correlational analysis of Chapter I has been related to the rationale of the individual tests, and in spite of significant omissions in both areas, the resultant study appears to be of value. In particular, it seems to support a basic hypothesis of the thesis namely, that a greater insight into the nature and validity of an individual test of personality can be achieved if it is considered in relation to a group of such tests, even though the majority of these are of doubtful validity.

The analysis was extended somewhat by arranging the nine tests purporting to measure introversion-extraversion on a continuum extending from "neuroticism" to "non-neuroticism". While few direct conclusions could be drawn from this continuum it provides a useful way of relating these variables to the pertinent theoretical considerations.

The extension of this method of study appears to be warranted. The first logical step would be to complete the correlational data and the information on test rationale. The next step would be to relate the resultant schemata to the numerous experimental studies of individual test validity, and finally to include an analysis of the remaining experimental studies. While this appears to be, and undoubtedly is, a prodigious task, it is quite possible that a relatively small extension of the present study would yield positive and useful conclusions which cannot be reached at this particular stage of the analysis.

PART B. -

ANOTHER THIRTEEN VARIABLES

CHAPTER III

CONFIGURATIONAL ANALYSIS

The methods of correlational analysis used in the first part (Part A) of this study were of necessity semi-qualitative, unsystematic, and classificatory. Had it been possible to obtain a complete table of correlations the question of a systematized, strictly quantitative method would have arisen. In this part of the thesis it is intended to undertake such an analysis of a complete table of correlations relating to another set of personality test variables.

The first method of systematic correlational^{ANALYSIS} that might logically suggest itself is factor analysis. While a discussion of the merits and demerits of factor analysis cannot be undertaken here, there are definite limitations to the method that make it worthwhile to seek another approach. Symptomatic of the shortcomings of factor analysis in this respect is the "indeterminacy of solution" (57a, 1941, p. 23). In the preliminary stages of investigation the factor analyst must select one out of an infinite possible number of factorial solutions. To a large measure theoretical and qualitative factors of judgment must, or should, determine

this selection, and the selection itself will have a major influence on the subsequent trend of the investigation.

What is sought here is a systematic method of making the correlational data more meaningful, but which is, at the same time, "determinant", arising out of the data themselves, and not dependent on extraneous factors. Such a method could not alone complete a study, and would have to be followed by other more qualitative methods, which might include factor analysis. Indeed, it might be expected that such a method would supply additional criteria for selecting the "preferred" factorial solution of the data.

Unfortunately the writer is not sufficiently acquainted with the statistical literature, particularly as it pertains to geometrical interpretations and methods, to relate adequately the discussions of this chapter to other studies and investigations. In this respect the presentation will be inadequate and open to criticism.

Basic Data

The thirteen variables to be studied in this chapter are the thirteen "temperament trait" scales of three inventories: An Inventory of Factors STDCR (46), The Guilford-Martin Personnel Inventory (48), and The Guilford-Martin Inventory GAMIN 47. Samples of these three inventories are presented in the Appendix, which also includes a description of the individual traits on the reverse side of a profile

chart (p.140). A more detailed discussion of the rationale of these variables is given in the succeeding chapter.

Lovell (67, 1945) administered the three Guilford-Martin inventories to 200 students (122 men and 78 women), and computed the 78 intercorrelations. The resultant table is reproduced in Table ~~VIII~~ (three-figure coefficients in the original paper have been reduced to two figures). The order of presentation of the variables in Lovell's table is the same as the order in which Guilford presents them on the profile chart, and is determined in part by the inventories themselves. As a preliminary step in analyzing these correlations, the variables were rearranged to approximate a linear continuum according to the principle described in Chapter I. The rearranged correlations are presented in Table IX. It will be observed that the majority of the traits fit fairly well into the continuum, and that there is evidence of clustering around N, C, D, and I.

This step is not essential to the configurational analysis, but carrying out the many trial-and-error approximations of the method used is considerably facilitated by working with correlations arranged in a systematic order. Actually, as the discrepancies in Table IX suggest, the final configuration is not linear. From the configuration itself a better ordering of the traits could be obtained, but the order in Table IX was the one used in working on the con-

TABLE VIII.-
 Lovell's (1) intercorrelations of 13 Guilford-Martia Temperament Traits.

	S	T	D	C	R	G	A	M	I	N	Q	AG	Co
S	.42												
T		.64											
D			.65										
C				.44									
R				.59	.66								
G				.90	.30	.38							
A					.23	-.07	.73						
M					.02	-.04	.48	.10					
I						.19	.31	.33	.59				
N						.56	.52	.04	.27	.08			
Q							.44	-.07	.09	-.23	-.06		
AG								.26	.57	.32	.46	.00	
Co									.33	.35	.36	.01	.21
										.67	.75	.35	.45
											.72	.47	.53
												.50	.62
													.63

(1) Lovell (67, 1945)

figuration, and it is close enough to illustrate the principles involved.

Before undertaking an analysis of the data presented in Table X it is advisable to briefly present certain theoretical considerations that serve as the background for the analysis itself. These will include a number of definitions, one axiom, two hypotheses, and a description of the method to be used.

Definitions and Basic Concepts

In describing and discussing the method of analysis used in the chapter a number of new terms, or special meanings of old terms, are required. A definition and discussion of these terms is presented here in alphabetical order so that needless repetitions in the text may be avoided. The basic concepts of the method under consideration will be found in the definitions and discussions of "configuration" and "configurational analysis".

Approximate configuration: a configuration whose error of approximation exceeds the tolerances that define an exact configuration (quod v.).

Configuration: the arrangement of a group of variables in a real or mathematical space so that the distances between the variables are related to the corresponding coefficients of correlation according to a mathematical function (the correlation-distance function).

This special use of the word "configuration" is compatible with the usual psychological and mathematical concepts of it. Warren (91a, 1934, p. 55) defines the geometric concept of configuration as "the arrangement of parts in an object or body, with special reference to the resulting form"; and the Gestaltic concept as "any organized whole in which each member influences every other and is in turn influenced by it, so that the totality contains more than a mere sum of what analysis would call its parts and their relations." Both of these definitions are appropriate to this discussion.

Configurational analysis: the process of arranging a group of variables into a configuration. This will usually be accomplished by analytical (i.e. computational) methods, although in the case of a planar or solid configuration it may be realized by geometric methods.

The term "configurational analysis" may be objected to on the grounds that it is self-contradictory, and strictly speaking this is true. "Configuration", as herein defined, is in opposition to "analysis" in the sense of any breaking down of the totality. "Configurational synthesis" would be more precise. However, current practice endorses the use of the word "analysis" as describing a process of eliciting greater meaning from a concept or group of data, even though such a process may not involve a breaking down into elements.

Hence, the expression "configurational analysis" will be adhered to particularly because of the close relation to "factor analysis", which is also, strictly speaking, more of a synthesis than an analysis.

Correlation-distance function: the mathematical function that defines the relationship between correlation and distance in a given configuration. Such a function may be represented graphically, for geometric purposes, as a correlation-distance scale.

Error of approximation: the variation between the distances of an approximate configuration and the correlation from which it is derived.

Exact configuration: a configuration in which the error of approximation is not greater than certain tolerances still to be determined. The final choice of these tolerances may result from theoretical, empirical, or relatively arbitrary considerations. While it would be premature to specify such tolerances at this point the results reported in this chapter, and certain extensions currently being carried out, suggest that they will not be greater than the probable errors of the correlation coefficients and may be considerably smaller.

Expansion: the process of increasing by a value of one the number of dimensions involved in a configurational solution.

Planar configuration: a configurational solution in two dimensions.

Reduction: the process of decreasing by a value of one the number of dimensions involved in a configurational solution.

Solid configuration: a configurational solution in three dimensions.

An Axiom and Two Hypotheses

Axiom: If a given group of N variables can be configured, then it may be demonstrated that this configuration can be realized to any degree of exactness in $N - 1$ dimensions or less. While a detailed demonstration of this axiom will not be undertaken here, it may be inferred directly from the generally accepted properties of multi-dimensional space.

First hypothesis: It is assumed that the number of dimensions required to achieve an exact configuration will vary with the choice of correlation-distance function. Further, it is assumed that for a particular configuration there is an optimum function that will reduce the number of required dimensions to a minimum. No assumption is made as to whether or not the same optimum function is common to all configurations.

Second hypothesis: It is assumed that any exact configuration may be reduced one or more times. That is, the number of dimensions of any exact configuration may be

decreased by one or more integer values. This reduction would be achieved through the operation of two principles: (1) the first reduction will introduce approximations, and any further reductions will increase the error of approximation; and (2) when the number of dimensions is reduced by one, in order to obtain an optimum configuration in the reduced space, a different correlation-distance function will be required than was used in the configuration before reduction. *Insert - see ERRATA

Method of Procedure

A full exploration of these hypotheses described above would be beyond the scope of this study. This thesis will be restricted to the derivation, within the broad framework of these hypotheses, of an approximate planar configuration of the Guilford-Martin personality test variables.

It would appear that the logical approach to configurational analysis would be to derive the exact configuration first, using an analytic method with polar-co-ordinates. Then this exact configuration could be reduced to the desired level determined by either the number of dimensions desired or the magnitude of error of approximation that may be tolerated. However, this method requires a knowledge of two things that are unknown to the writer: the correct correlation-distance function and a precise definition

of the tolerances that define an exact configuration.

Consequently a theoretical approach has been abandoned in favor of an empirical, trial-and-error method with ruler-and-compass. This naturally suggests an approximate planar configuration as the first objective. A planar configuration not only simplifies the problems associated with a ruler-and-compass method, but is also of practical value in relating the configuration to its clinical applications as discussed in the next chapter. No attempt will be made to expand the planar configuration in this study.

Criteria for Constructing the Configuration

Inasmuch as the method of constructing the configuration is a process of trial-and-error approximations, it is necessary to have criteria for comparing successive efforts. The primary criterion that has been used is the arithmetic mean of the error of approximation, or the average variation of the configuration from the parent correlations. There are probably other criteria that have a sounder theoretical basis than this one, but it has the virtue of practicality and was judged adequate for these purposes.

A secondary criterion was the maximum variation. In general, where it was possible to decrease the maximum variation without increasing the average variation this was done. A third factor that served as a guide in the process of developing the configuration, although not used as a

specific criterion, was the algebraic sum of the variation.

A shortcoming of both criteria is the implicit assumption that a given error has the same significance regardless of the absolute magnitude of the correlation. That this may not be the case is shown by the fact that for Lovell's population of 200 subjects the probable error of a correlation coefficient of .00 is .05, while the probable error of a correlation of .90 is .01. It may be that with further refinements of the configuration it will be necessary to introduce the probable errors into the criteria.

The Correlation-Distance Function

The correlation-distance function used in this chapter was selected primarily on an empirical basis, although the final derivation was influenced by formal algebraic considerations, as noted below. The function may be represented as follows:

$$\underline{r} = (2/\underline{k}^2) \cdot \underline{s}^2 - (4/\underline{k}) \cdot \underline{s} / 1$$

where \underline{r} represents the coefficient of correlation, \underline{s} represents the distance between the variables, and \underline{k} is a constant that may assume any arbitrary value determining the scale of the configuration. The significance of \underline{k} can be determined by solving the function for \underline{r} equal to -1.00. This yields a value of \underline{s} equal to \underline{k} , so that \underline{k} represents the distance between two variables when the correlation between them is -1.00. Thus, \underline{k} is the greatest possible distance that can

exist in configurational space. (For a discussion of this point see p. 60).

The empirical investigation suggested a second degree function. However, the correlational data does not go below a value of $-.31$, so that it was impossible to explore the function empirically below that point. Thus, it was necessary to use algebraic theory to define the full range of the function. First, logical interpretations of the basic concept of configurational analysis indicates that \underline{a} should equal zero when \underline{r} equals ± 1.00 . Then, a logical assumption was made that the "minimum" of the function should be -1.00 . With these two points determined it was possible to derive the second degree function given above. However, it should be noted that it would probably be possible to suggest other functions that would fit the empirical data equally well, so that the selected function should be considered as tentative until it has been verified empirically in the lower ranges, or justified on sounder theoretical grounds than are presented here.

The actual value of \underline{k} used here is 40.87 centimeters. This awkward number results from the fact that the configuration "grew" in the trial-and-error process, and was not "blueprinted". A value of 40.00 centimeters would certainly be preferable, and in fact, for representation on a letter-size sheet, a somewhat smaller value might be more

suitable. For the ruler-and-compass procedure the function was converted into a correlation-distance scale which is reproduced in part in Figure 4.

A Quantitative Evaluation of the Configuration

Using the criteria and the scale defined above, a configuration of the thirteen Guilford-Martin "temperament traits" was constructed and is presented in Figure 4. The variations of this configuration from the data of Table IX are indicated in Table X. It will be noted that the average error of approximation is .070 and the maximum error is .28. The algebraic sum of the variation is $\neq .66$ giving an algebraic mean of $\neq .0085$.

It is of some interest to compare the magnitude of these variations with the experimental variation of inter-correlations found with different samples of relatively "normal" populations. As Guilford states (46, p. 1), "previous experience has shown that the correlations of the five scorings of this Inventory (STDCR) vary somewhat from one population to another". He presents a table of inter-correlations of these five factors that he believes are typical. In Table XI these are compared with Lovell's findings. It will be observed that the average variation here is .19 and the maximum variation is .50. If Guilford's values are averages, then there is a possibility of an even greater range of experimental variation than is indicated here.

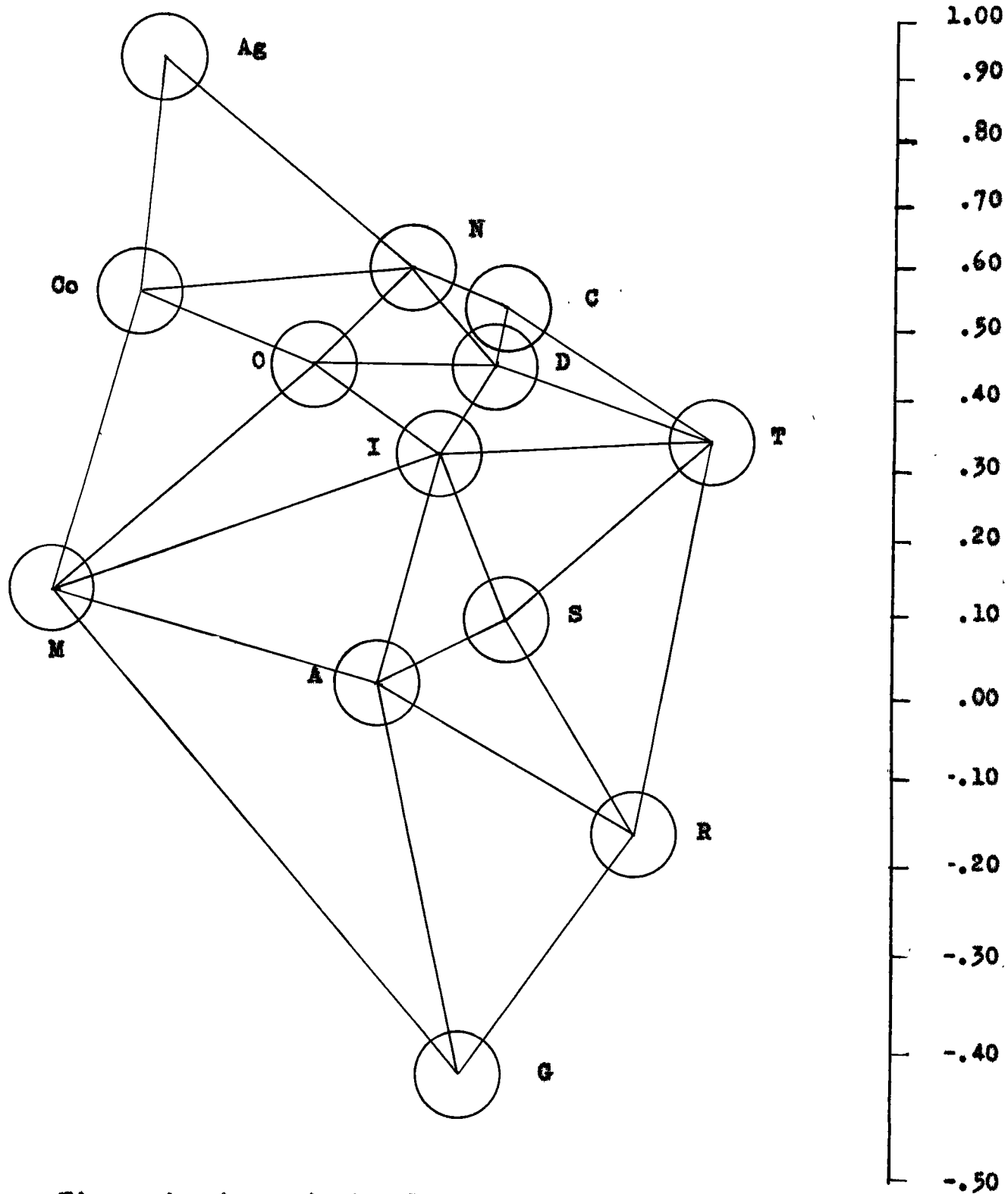


Figure 4. Approximate planar configuration of the Guilford-Martin "temperament traits" derived from the data of Table IX.

TABLE X.-

Variations of Figure 4 from Table IX.

	Ag	Co	O	N	G	D	I	T	M	S	A	R	G	Arith. Sum	Alg. Sum
Ag		-.02	-.06	-.00	-.02	-.04	-.10	-.17	+ .15	-.12	+ .02	-.19	-.11	1.00	-.66
Co			+ .07	+ .02	-.01	-.03	-.01	-.14	+ .28	+ .01	+ .08	-.06	-.04	.75	+ .17
O				+ .05	-.05	-.05	.00	-.04	+ .08	+ .02	+ .01	-.09	-.01	.40	-.08
N					+ .12	+ .07	+ .02	+ .05	-.11	+ .03	+ .02	.00	+ .06	.48	+ .26
G						-.01	+ .05	+ .01	-.16	+ .05	+ .06	+ .18	+ .07	.59	+ .25
D							+ .09	-.02	-.09	-.05	-.03	.00	-.01	.29	-.11
I								+ .22	+ .02	+ .11	+ .04	+ .05	-.03	.47	+ .41
T									-.22	+ .14	+ .15	+ .06	+ .06	.63	+ .19
M										+ .19	+ .19	+ .01	+ .12	.51	+ .51
S											+ .03	-.07	-.10	.20	-.14
A												-.01	-.08	.01	-.09
R													-.05	.05	0.05
Arithmetic Sum		.08	.13	.07	.20	.20	.27	.65	1.11	.72	.63	.72	.74	5.46	
Algebraic Sum		-.02	+ .01	+ .07	+ .04	-.06	+ .05	-.09	-.05	+ .38	+ .57	-.12	-.12		+ .66
<p>Average Variation = $5.46/78 = .070$ Maximum Variation (Co to M) = $.28$ Algebraic Mean of the Variation = $+ .66/78 = + .0085$</p>															

CONFIGURATIONAL ANALYSIS

TABLE XI.-
Experimental Variations between Correlations of
Guilford-Martin Variables.

A. STDCR Variations											
	ST	SD	SC	SR	TD	TC	TR	DC	DR	CR	Sum
Lovell(1)	.42	.64	.44	.66	.65	.59	.30	.90	.23	-.02	
Manual(2)	.15	.49	.33	.54	.15	.14	.21	.85	.36	.02	
Variation	.27	.15	.11	.12	.50	.45	.09	.05	.13	.04	1.91
Mean Variation = 1.91/10 = .19											
Maximum Variation (T to D) = .50											
B. GAMIN Variations											
L	GA	GM	GI	GN	AM	AI	AN	MI	MN	IN	Sum
Lovell(1)	.44	.07	.09	.23	.26	.57	.32	.33	.35	.67	
Martin(3)	.51	.16	.39	.27	.34	.54	.16	.43	.34	.70	
Manual(4)	.50	.09	.26	.10	.32	.60	.44	.50	.51	.75	
Variation	.07	.23	.30	.37	.08	.06	.28	.17	.17	.08	1.81
Mean Variation = 1.81/10 = .18											
Maximum Variation (G to N) = .37											

(1) Lovell (67, 1945)
 (2) Guilford (46)
 (3) Martin (69, 1945)
 (4) Guilford and Martin (47)

Similarly, a set of correlations of the five GAMIN traits was obtained from the Manual (47, p. 1) derived from a population of 782 aviation students. In addition, Martin (69, 1945) reports another set of correlations derived from a group of 100 subjects (50 men and 50 women). These two sets are compared with Lovell's correlations, also in Table XI, revealing a mean variation of .18 and a maximum variation of .37.

Thus, the average error of approximation of the planar configuration is less than half the average experimental variation reported here, and the maximum error of the configuration is well within the experimental range. This would suggest that this planar configuration is sufficiently precise to discriminate to a degree between the correlational characteristics of relatively normal groups. There is a possibility of a further reduction in the error of approximation since modifications were made up to the time of writing, and there is no evidence that the trial-and-error possibilities are exhausted, although the most recent modifications yielded a diminished return. One possibility suggested by current investigations, and supported by the positive algebraic sum of the variation, is that the error would be reduced if the correlational coefficients were corrected for attenuation. While this will be verified at the earliest opportunity it will not be possible to report

on it here.

Speculation and Theoretical Considerations

The planar configuration of the Guilford-Martin variables was derived in an attempt to make the correlational data pertaining to these variables more meaningful. Consequently the main discussion in this study will be confined to the potential clinical significance of this configuration, which is developed in the next chapter. However, this section constitutes a minor indulgence in theoretical speculation and deduction.

Perhaps the most interesting observation that can be made at this point is that the space defined by the planar configuration is non-Euclidean, and in general it may be assumed that this will be true of any correlational space. This characteristic is determined, in part at least, by the fact that while Euclidean distances may be infinite, configurational distances can not exceed a specific value, this value being k in this specific case. It is conceivable that this characteristic can be eliminated by using a correlation-distance function in which the distance equals infinity when the correlation is minus one. While it would be of interest to experiment with such functions, it would appear that, in the main, correlation-distance functions will be finite.

This finite characteristic of correlational space suggests the possibility of a relationship between correlational space and Riemann's non-Euclidean system which provides the

geometric structure for Einstein's time-space continuum. In this structure, velocity may not exceed a specific finite value, namely the velocity of light. Both space structures may be described as "finite but boundless". In Riemannian geometry this apparent contradiction is resolved by "curvature". The possibility that correlational space is also curved provides an interesting basis for speculation and experimentation.

At least on comparison between configurational space and factorial space can be drawn at this point. Concisely stated, it is that any orthogonal factorial solution having $n + 1$ dimensions (i.e. factors) can be translated into a configuration of n dimensions. Conversely, the number of orthogonal factors that can be derived from a configuration of n dimensions is equal to $n + 1$. In other words, one less dimension is required in an equivalent configurational solution of a factorial solution. Thus, two orthogonal factors may be said to define a configurational line; three orthogonal factors define a configurational plane; four orthogonal factors define a configurational solid; etc.

This suggests the possibility that configurational analysis may provide a criterion for "when to stop factoring". According to Holzinger and Harman (57a, 1941, p. 21, footnote) a good standard for limiting factorization had not been developed at the time of their writing. While the matter has

not been examined rigorously, it would appear that if a given set of variables can be configurated in n dimensions with the error of approximation not exceeding the significance of the correlational data, then the extraction of more than $n - 1$ orthogonal factors would not appear to be justified.

This may be illustrated by Lovell's correlational data presented in Table VIII. Current investigations, not reported here, suggest that a solid configuration of these variables would have an error of approximation about equal to the probable errors of Lovell's coefficients. If this proves to be the case there would appear to be little or no value for practical purposes to carry the expansion any further. According to the argument presented above, this would mean that there would be no practical value in deriving more than four orthogonal factors.

Lovell (67, 1945) extracted six "super-factors", as she described them, from this correlational data. Of these, she was able to describe only four, and regarding the other two she writes, "these two super-factors are too weak to be of any importance. Both are merely doublets, accounting for special correlations . . . between S and A, and between T and R." (op. cit., p. 347). While this lends support to the suggestion that configurational analysis may provide a useful criterion in this connection, it must be considered as tentative until it receives a rigorous theoretical justification or proves

of value in a significant number of practical applications.

Finally, it is of interest to speculate on the possibility of configurating sociometric data. In many respects a conventional sociogram is not a true Gestalt, and it may be that constructing sociograms by configurational methods similar to those described in this chapter would be of value.

Summary and Conclusions

In this chapter a table of correlations between the thirteen Guilford-Martin "temperament traits" is presented, and this table is rearranged into a rough approximation of a linear continuum as a preliminary preparation for configurational analysis. This technique of configurational analysis is developed as an alternative to, and a complement of, factor analysis. Basic concepts and definitions are given, and then, in order to provide a theoretical background for a specific analysis, an axiom and two hypotheses are presented.

The ruler-and-compass method of approximations used here is described, and the criteria for judging successive approximations are outlined. The particular correlation-distance function used in this study is defined along with a brief comment on its derivation. The approximate planar configuration resulting from this analysis is reproduced, and is evaluated quantitatively in terms of the criteria advanced earlier in the chapter.

The method of configurational analysis appears to be

of some theoretical interest, and certain of its implications receive brief comment. This includes a discussion of the finite nature of configurational space suggesting possible relations to Riemannian geometry, particularly its curvature. The dimensionality of configurational space is compared to that of factorial space, suggesting a possible criterion for "when to stop factoring". In addition, the possibility of applying configurational techniques to sociometric data is mentioned.

The presentation of this chapter suffers from the lack of adequate references to related topics in statistical theory. In spite of this and the fact that it is not possible to develop a full theoretical consideration here, it may be concluded that configurational analysis offers a potentially useful approach to correlational data. A discussion of possible clinical applications of the planar configuration of the Guilford-Martin variables will be undertaken in the next chapter.

CHAPTER IV

CLINICAL APPLICATIONS

An exploration of the clinical applications of the approximate planar configuration of the Guilford-Martin "temperament traits", which is presented in the previous chapter, would be a full-scale study in its own right. Consequently in this chapter it will not be possible to do more than suggest possible avenues of investigation.

Rationale of the Guilford-Martin Variables

In the preceding chapter the main attention was directed to the relationships between the Guilford-Martin variables. No consideration was given to the nature of the variables themselves, except for a reference to Guilford's descriptions given on the back of the profile chart (see Appendix, p. 139). In order to consider the clinical significance of the configuration it will be necessary to develop more fully the rationale of these variables and of the inventories from which they are derived.

While the rationale of each inventory is different, the criterion for the development of the test scales is the same in each case, and consists of the internal criterion of Thurstone's method of group factor analysis. After isolating

guidance setting, but in the environs of the psychiatric clinic they are largely spurned as diagnostic aids. It would appear to be a fair statement to say that the average clinician considers that the inventory has its place as a mass screening device or as a research tool when working with larger groups, but is of little or no value when studying individual personality. If this low repute of the inventory in the deeper studies of personality is justified it places a distinct limitation on the potentialities of the configuration, unless it happens that the configuration itself offsets some of the objections to the inventories.

In examining the criticisms of inventories in the clinical setting we note two attitudes which to some degree are mutually contradictory. On the one hand it is claimed that a test scale is not suitable for individual personality study unless its reliability is .90, or even .95. Certainly the vast majority, if not all, inventories do not have an actual reliability that high. On the other hand it is argued that a number representing a test score, or a group of such numbers, is too mechanical and too rigid to adequately describe personality. From this point of view, what is needed is something far more flexible and "dynamic", more qualitative and intuitive, and in consequence much less reliable, to assess or appraise personality. This school of thought finds its ideal "diagnostic" instruments in the projective techniques.

Thus, there is the quantitative-minded, statistically trained clinician who rejects the inventory because it is not reliable enough, nor does it possess sufficient validity that has been objectively demonstrated. In contrast there is the intuitive-minded clinician trained in the tradition of the individual case-study, who spurns the inventory because it is too "objective", too mechanical, and, one might almost say, too reliable; and who chooses in its stead techniques and devices which often have little or no quantification, and even less demonstratable reliability and validity.

The opposition of these two points of view strongly suggests that the fault may not lie with the inventories, but with the clinicians who use them - and even more with those who don't. To the "objective" clinician the answer seems obvious. His criteria of reliability and validity indicate that inventory test scores per se should be considered with a great deal of reservation, and should be examined as tentative indicators to be weighed and assessed in association with all of the other clinical data. It should be realized that sound conclusions can only be reached by the trained and experienced integrative judgment of the qualified clinician.

The reply to the "subjective" clinician is similar, but expressed in his terms of reference. If he would cease

to consider inventory test scores as a group of numbers, and look on them in a way similar to his approach to projective data, the picture would be radically altered. It seems safe to say that if the average projective worker were prepared to devote a similar amount of time, energy, training, and study to the interpretation of a profile of inventory scores as he does to the interpretation of, say, a Rorschach protocol, he might well find an equivalent return in clinical insight into the subject.

In assigning the responsibility for the near clinical banishment of inventories, the authors who write the manuals for the questionnaires should not be forgotten. Certainly far too many of the manuals contain facile, misleading, and dangerous interpretations. For example, in the Bernreuter Manual (7, date missing, p. 1), the interpretation for three out of the six scales states that subjects scoring over the 98th centile "would probably benefit from psychiatric or medical advice". More reserve in the preparation of the manuals, which does seem to be more true of current practice, will do much to reinstate inventories to their proper place.

A third criticism of inventories should be considered which is, in the opinion of the writer, not a criticism at all, but an indication of one of the most significant merits of inventories. It is pointed out that in the usual inventory where the subject is asked, in effect, to describe his behavior,

one is expecting the subject to have insight into his own personality, and also, of course, to be honest. Often the former condition does not hold, and sometimes the latter does not, either. In reply, the problem again seems to reduce to the question of correct interpretation. The clinician should not make the blind assumption that the subject possesses insight or is honest in his responses. But it is extremely important for him to find out how much insight the subject has, and whether or not there is "malingering" or conscious deceit. It would certainly appear that the inventory is potentially the most useful tool for such an investigation. Admittedly these conclusions cannot be derived by means of the inventory alone. The results of the inventory must be carefully interpreted in the light of other test data, the case history, psychiatric diagnosis - in fact, in the light of all the possible information that can be obtained. But this necessity of not basing the personality appraisal on the basis of one or two tests alone is now well recognized in the field of projective techniques. With this growing recognition it is to be hoped that the inventory will find its proper place in the clinical battery as an important, even an indispensable device in assessing the total personality. It is in the light of this potential value of the inventory as a clinical instrument that the usefulness of the configuration will be considered.

The Planar Configuration vs. the Profile

In using the approximate planar configuration as an aid to personality appraisal it is intended to employ a figure similar to Figure 4 (p.56), except that the circles representing the "temperament traits" would be left blank. Then, in studying the test scores of an individual subject the numerical values would be entered in the appropriate circles. As a graphical attempt to make a group of test scores more meaningful the planar configuration finds itself in competition with the profile. (A sample of the Guilford-Martin Profile Chart is contained in the Appendix, p.140).

The profile has one distinct advantage in that the scores are represented graphically rather than numerically, as in the configuration. However, the profile is inadequate in terms of depicting all the possible interrelations of a group of, say, thirteen test scores. The profile facilitates the comparison of scores on adjoining traits, and in addition, presents an over-all pattern. But the pattern that emerges may not be the significant one for a given individual or a particular clinical problem, while the important pattern may remain latent and undetected.

The configuration, on the other hand, possessing some of the properties of a true Gestalt, makes all of the potential patterns available for analysis. Thus, the configuration,

while still retaining the "objectivity" of the inventory scores, offers a dynamic structuring that can provide the basis for "pattern analyses" that should give sufficient freedom of interpretation to satisfy the majority of "projective" clinicians. Insofar as the controversy between the relative merits of the profile and the planar configuration is concerned, it would appear that they both possess unique advantages, and that the optimum results would be achieved by using them in conjunction so that their respective characteristics would complement each other.

Lovell's Super-Factors

It may well be that in the clinical interpretation and use of the Guilford-Martin variables some degree of synthesis of the test scales will be of value. The most logical method for effecting such a synthesis would appear to be by factor analysis. The writer is of the opinion that clinical considerations, either theoretical or experimental should have as much, (if not more), to do with the selection of the preferred factorial solution as the conventional statistical criteria. A justification of this claim would involve a considerable elaboration that cannot be undertaken here, but the trend of argument may be indicated by pointing out that the statistical criteria may, in a large measure, be influenced by the characteristics of the test medium rather than the nature of the underlying personality which the tests are

attempting to assess, and for that reason can produce misleading results.

In considering possible factorial solutions it is logical to begin with the solution offered by Lovell (67, 1945). As was pointed out in the previous chapter, she extracted six "super-factors", four of which she described as apparently meaningful syntheses, and two of which she dismissed as "too weak to be of any importance". She set up equations for predicting scores on the four main super-factors using the Deolittle method:

$$\begin{aligned} \text{I} &= 28.370 \text{ } \neq \text{ } 1.78 \text{ } G \neq \text{ } .682 \text{ } R \neq \text{ } .851 \text{ } S \neq \text{ } .891 \text{ } A \\ \text{II} &= 36.101 \text{ } \neq \text{ } .804 \text{ } O \neq \text{ } 1.202 \text{ } M \neq \text{ } .349 \text{ } N \neq \text{ } .299 \text{ } I \\ \text{III} &= 30.894 \text{ } \neq \text{ } 2.273 \text{ } C \neq \text{ } .745 \text{ } D \neq \text{ } .569 \text{ } T \\ \text{IV} &= 33.967 \text{ } \neq \text{ } 1.805 \text{ } Ag \neq \text{ } 1.339 \text{ } Co \end{aligned}$$

The four factors were described as follows:

- I Drive restraint (high loadings on general drive, carefreeness, sociability, and social ascendance.)
- II Realism (high loadings on objectivity, masculinity, freedom from nervousness, and freedom from inferiority feelings).
- III Emotionality (high loadings on stability of emotional reactions, freedom from depression, and extravertive orientation of the thinking process).
- IV Social adaptability (high loadings on lack of quarrelsomeness and tolerance - i.e. agreeableness).

It is of interest to note in passing that three of these super-factors (I, III, and IV) may be located in the approximate plane of the configuration with reasonably good accuracy.

In examining these four factors critically from the

clinical rather than the statistical point of view, one feels that the chief shortcoming is the failure to extract a "super-factor" of neuroticism. This argument hinges in part, of course, on one's theory of the psychopathology of personality. However, the correlational data itself points to the existence of such a factor. It was noted in the previous chapter that there is a clustering of traits around C, B, N, I, and O, and that this cluster would certainly appear to be a measure of neuroticism. The general phenomenon of "convergence" around this pole can be observed in this data as it was in the data considered in Part A of the study (p. 26-27). The influence of this convergence is most clearly demonstrated in the correlation of .90 between C and D, two variables which, before rotation, were orthogonal (i.e. uncorrelated) factors. Support for the interpretation of this cluster as a measure of neuroticism is given by Mosier's factorization of the Thurstone neurotic inventory which revealed eight factors, four of which appear to be identical or similar to four of the variables in this cluster. (For a more detailed discussion of Mosier's study see p. 68).

A secondary criticism that could be made, although it rests primarily on the rationale of the STDOR inventory is that no super-factor of introversion-extraversion emerged. However, as in the parallel study in Part A, there is no evidence of convergence around such a trait or "type", and

this could be taken by the opponents of the introversion-extroversion theory as evidence of the non-existence of this characteristic of personality.

Alternative Factorial Solutions

An alternative solution of four factors is proposed, based on the theoretical approach suggested above, which anticipates that two of these factors should represent neuroticism and introversion-extroversion. The following four factors are proposed:

I Neuroticism (high loadings with C, D, I, N, and possibly O). According to this factor the neurotic would be characterized as emotionally unstable, depressed, possessing inferiority feelings, nervous, and possibly lacking in objectivity.

II Introversion-extroversion (high loadings with T, S, and R). The introvert would be described as having an introverted orientation of his thinking and social processes, and being serious-minded. There would appear to be some correspondence between these three traits and Guilford and Braly's original logical analysis of introversion-extroversion into intellectual, social, and emotional aspects (37, 1930, p. 96). In any case, the authors of the STDCR inventory agree with this relationship between T, S, and R which is suggested by the configuration, as they describe these three variables as representing "three distinct types of introversion-extraversion" (46, p. 1).

III Psychic drive vs. drive restraint (high loadings on M, A, and G). The person with high psychic drive would be described as ascendant or dominant, possessing masculine tendencies and high general activity. The grouping together of M and A could have been anticipated from the evolution of these traits as they both "descended" from the original M which was described as either "masculinity" or "dominance" (42, 1936). Further, the association of the two traits appears to be logical. The association of G with the other two variables was not indicated specifically by the rationale of this variable, but again it is a logical association.

IV Social adaptability (high loadings on Ag, Co and possibly O). The socially adaptable individual would be described as agreeable, co-operative, and possibly objective.

The question as to whether the O factor should be placed with super-factor I or IV could possibly be determined by statistical criteria. On the other hand there is no basic objection to it contributing to both factors, particularly if they are oblique in relation to each other. A practical consideration would favor placing it in IV, so that this factor would then be defined by one inventory (The Guilford-Martin Personnel Inventory), presenting the possibility of leaving this questionnaire out of a battery. In certain cases this could be of importance because this test, intended primarily for the personnel rather than the clinical setting,

contains items that might stimulate suspicion and injure rapport.

Another factorial solution could be suggested if it is desired to bring this configuration into harmony with Eysenck's interpretations of neuroticism and introversion-extroversion (27, 1947). This introduces Eysenck's own definition of "type", related to that of Murphy and Jensen, which describes a true personality type as consisting of "observed interconnections between traits" (op. cit. p. 27, 28). He proposed operational definitions of his two types: neuroticism and introversion-extroversion (dysthemia-hysteria). Translated into factorial terminology, these types are two general, orthogonal factors synthesised from an appropriate group of traits.

In harmony with this system of theory and experimentation it would be possible to derive two "type factors" from the configuration. The location of the neurotic type factor could, in all probability, be determined with reasonable confidence by the criteria of general factor theory. The location of the introversion-extroversion type-factor would present more difficulty. Configurationally speaking, its distance from the first factor is determined by orthogonality, and it is presumably in the general direction of T, S, or R. But whether it could be located in this general area with any degree of confidence seems doubtful without

data or theoretical assumptions other than those presented here. There would appear to be little value in carrying the analysis of these two "type-factors" further without a greater development of the concepts.

This "type-factor" synthesis, and the four-factor solution proposed earlier, are merely suggestions to aid the exploration of the clinical use of the configuration. It is probable that only in the process of such explorations can the best factorial solution be determined. In considering these suggestions it should be noted that the advisability of a factorial synthesis of these "temperament traits" as an aid to clinical interpretation is in itself an assumption that will require justification in clinical practice.

Relationship to the Rorschach Test

The present development of the Rorschach test represents at least thirty years' of research. The centrality of its theory is the Erlebnistypus, or "experience-type" which may be defined as a ratio between "extratensive" and "introversive" aspects of personality. As such, the Erlebnistypus bears a close relation to the concepts of introversion and extroversion. (61a, 1946 and 81, 1942) Inventories that purport to measure introversion-extroversion have a tradition of over twenty-five years of development, beginning with the Freyd list. It would seem logical that the meeting ground of these two developments would be a profitable field of research. But as

Gustav (49a, 1946) has pointed out, attempts to correlate inventories with the Rorschach test have met with little success.

In interpreting these failures, authors tend to conclude that it is a reflection on the limitations of either inventories, or of the Rorschach test, depending on their individual bias. However, the possibility that the failures may be the result of the methods of investigation should not be overlooked.

Because the Guilford-Martin inventories held a commanding position in the sphere of introversion-extroversion, an investigation into their relation to the Rorschach test would be a logical area for the exploration of inventories and the Rorschach test. Gustav (49a, 1946) undertook such an investigation, but in doing so she made the inventories subservient to the Rorschach. She collected all the items from the three inventories, eliminated duplications, and then made a pool of these, completely eliminating the original traits that emerged from the Guilford-Martin factorizations. This pool of items was investigated for significant correlations with Rorschach "categories", then the significant items were grouped according to this criterion, and attempts were made to describe or identify these traits by means of the most discriminative items. No report is given of any attempt, however, to correlate the inventory

items with the Erlebnistyp ratio. The investigation yielded results that appear to have some significance, although in personal correspondence the author indicates that there has been no follow-up of this work.

While this attempt to correlate inventory items with Rorschach categories is understandable in the light of previous failures to correlate inventory scores, nevertheless the method obviates one of the essential characteristics of inventories the grouping and weighting of items according to some external criterion or to some internal criterion such as factor analysis. The use of the Rorschach as the criterion in such an investigation is of interest, but the resultant study is "ingrown" and lacks objective terms of reference. Because previous attempts to correlate the two media have been largely unsuccessful, it would appear to be a useful methodology to look for a new, third element to serve as a link between the two, rather than subordinating one area to the other.

If we assume that the failure to establish significant relationships to date is due, not to the inadequacy of either device, but to marked differences in their characteristics, the configuration of inventory scores may provide a link between the two. Inventory scores per se may be too rigid and too mechanical to facilitate the emergence of relationships with the Rorschach, which, is, on the other

hand, too fluid in its dynamic structuring. The configuration of inventory scores, however, is soundly based on the rigid trait scores of the inventories, but contributes within itself a potential dynamic structuring that may yield profitable relationships with the Rorschach. An experimental investigation of this possibility would appear to merit consideration.

Test Validity

Before concluding this discussion of the possible uses of the planar configuration it seems appropriate to touch briefly on the question of the validity of the test variables, since it was an approach to the validity of introversion-extroversion inventories that led to the development of the configurational techniques. The possibilities inherent in a table of correlation for yielding increased insight into the nature of the correlated variables, and hence, increased test validity, was sufficiently developed in Chapter I (p. 5 - 6), and need not be enlarged upon here. In extending this argument to configurational analysis, it is sufficient to say that if a table of correlations, complete or otherwise, constitutes a useful aid to validation procedures, then a configuration of such data should prove to be of much greater significance.

The possibilities of extending the relations to connect the configuration of the Guilford-Martin variables

to other configurations, or to overlap others, is also of considerable interest. Naturally the first thought would be establishing connections with the incomplete table of correlations presented in Chapter I, which should be of particular interest because there is probably considerable overlap. It may be that when this first table of correlations is completed, the best way to establish relations between the two groups of variables would be to configurate them all into one multi-dimensional structure. On the other hand it may be that the majority of the variables of Chapter I can be represented in an approximate planar configuration. In that case a comparison of the two planes, and the establishment of the relations between them, should yield interesting results. Two points of probable approximate contact can be suggested. Both groups show a convergence around a neurotic cluster (see p. 78 for a discussion of this neurotic cluster in the Guilford-Martin variables). The second point of close relation would probably be found between the Guilford-Martin scale of ascendance-submission (A), and the Allport A-S test. If the two planes should intersect approximately along a line joining these two points, it would still be necessary to derive the angle between them in order to determine how nearly co-planar they are.

Extensions of the method in a manner such as this to various groups of psychological variables should provide re-

sults of considerable value in determining the full significance of these and other variables. A fruitful area for such an exploration would be the relationships between the Guilford-Martin variables and the test scales of the Minnesota Multiphasic Personality Inventory (MMPI). There are a number of unpublished studies dealing with this problem (66b, 1945; 67a, 1944; 91a, 1944; and 93a, 1945); and also another unpublished paper relating the MMPI to the Heidbreder test of introversion-extroversion (66a, 1943). This latter study would help to complete the triangle of relations between three groups of variables: the MMPI, the Guilford-Martin variables, and the test considered in Part A of this thesis.

Summary and Conclusions

In this chapter the rationale and evolution of the three Guilford-Martin inventories is presented in the order in which they were published in order to provide the theoretical background for a discussion of the possible clinical uses of the planar configuration of the test variables. Inasmuch as the usefulness of this configuration could be considerably restricted by the limited use that is made of inventories in the clinical setting, attention is given to this problem and it is maintained that the inventory should constitute an indispensable part of any battery of tests used for individual personality appraisal.

In discussing the actual use of the planar configuration a comparison is made with the profile as a means of making test data more meaningful. The conclusion is reached that both possess unique advantages and that for best results they should be used in conjunction. In the clinical interpretation of the configuration, consideration is given to the usefulness of factorial solutions of the correlational data in order to derive meaningful syntheses of the thirteen "temperament traits". Lovell's four "superfactors" are examined critically, and it is felt that they do not represent the best synthesis from the clinical point of view. Two alternative factorial solutions are suggested which would appear to contribute more to the clinical interpretation.

The suggestion is made that the configuration could provide a useful research link between the Rorschach test and the Guilford-Martin variables, although this possibility remains speculative until verified experimentally. The contribution of the configuration to increased insight into the nature of the variables, and hence, to increased validity, is touched upon, and suggestions are made in relation to the extension of the configurational method to the variables considered in Part A, and to the scales of the Minnesota Multiphasic Personality Inventory.

While the discussion in this chapter has been largely

speculative, it may be concluded that the approximate planar configuration of the Guilford-Martin variables can contribute significantly to the clinical usefulness of the Guilford-Martin inventories. The writer has initiated preliminary investigations along some of the lines suggested which have shown promise, and it is hoped that it will be possible to carry these far enough to demonstrate some of the practical potentialities of the configuration.

SUMMARY AND CONCLUSIONS

Summary

This thesis constitutes a report on two parallel correlational studies of inventories purporting to measure introversion-extroversion. The ultimate problem that guided the investigation was, "What inventories, if any, constitute valid measures of introversion-extroversion". The first study, described in Part A (consisting of Chapters I and II) deals with sixteen personality inventory variables. Of these, nine were questionnaire scales purporting to measure introversion-extroversion. The remaining seven variables were included to cast light on the nature of the first nine, and consisted of three that purported to measure neuroticism, two that purported to measure ascendance-submission, a "confidence" scale, and finally, a general factor extracted from a number of the aforementioned variables. A complete table of correlations between these variables would consist of 153 "r"s. Actually, only 65 were located in the literature, or roughly 42 per cent.

The second study is a correlational investigation of the thirteen Guilford-Martin "temperament traits", which are defined by thirteen scales derived from three separate

inventories. Three of these variables are described by the authors as measuring aspects of introversion-extroversion. In the case of the Guilford-Martin variables a complete set of 78 correlations was located in the literature, all derived from the same population sample.

In the first study (Part A), due to the incomplete quantitative data, the method of analysis was largely qualitative, although it was possible to establish the quantitative relationship of the introversion-extroversion variables to "neuroticism" with a fair degree of confidence. In the second study (Part B) it was possible to evolve a new method of correlational analysis, described as "configurational analysis", which appeared to serve the purposes of the investigation better than the conventional techniques of factor analysis. With the consolidation of the technique of configurational analysis, still to be completed, it would seem logical to apply this technique to the incomplete data of Part A, with the expectation that further clarification will result. However, this step is beyond the scope of this report.

Conclusions

1. No answer can be given on the basis of this study to the question which initiated it, namely, "What inventory, or inventories, if any, constitute a valid measure of introversion-extroversion?" However, it is claimed that the in-

vestigation has clarified a number of the issues involved in this question, particularly the relationship of introversion-extroversion to neuroticism, as measured by the variables under study. There is reason to believe that this clarification may contribute to the ultimate determination of the validity of these variables.

2. This preliminary investigation indicates that the broad method of correlational study described in this thesis has merit, and if extended may contribute significantly to an understanding of these and other variables. The method consists essentially of two things. In the first place, the approach to validity is an attempt to find out what a given test does measure, regardless of what its author intended it to measure. Secondly, the approach may be unusual in its extension of the correlational study to include as many related variables as possible. Certainly, the possibilities of this extension have only been partially explored here, but the tentative conclusions and clarification of issues that has resulted certainly justify the expansion of the analysis, both in terms of locating or determining the missing correlation coefficients, and also, in extending it to include other variables.

3. A specific synthesis of the Guilford-Martin temperament traits is presented as an "approximate planar configuration" (Figure 4). This configuration offers a number of

interesting possibilities in clinical application.

4. Frequently the by-product of a research project proves to have more value and interest than the main line of investigation. This may be the case here in that the technique of "configurational analysis" that has been partially developed during this study, and which is described in Chapter III, appears to hold considerable promise both as a new method of factor analysis, and as a complement to existing factorial techniques. As a meaningful synthesis of a group of variables and their intercorrelations, configurational analysis offers two advantages over factor analysis. In the first instance the configurational solution is determinant. Secondly, it is independent of the reference system, whereas the resultant synthesis of a factorial solution is influenced by the reference axes, which may be merely artefacts.

As a complement of existing factorial techniques, configurational analysis appears to offer a number of criteria that may aid in locating the factors and in limiting the factorization process. It also provides a basis for the extraction of factors by geometrical means. The development of a theory of geometrical factor analysis was anticipated by Holzinger and Harman in the following quotation (57a, 1941, p. 42, footnote): "A theory of factor analysis based on . . . an even more general geometric foundation may prove to be

very important, but thus far such research has not been undertaken."

The full development of configurational analysis, and geometrical factor analysis based on configurational techniques, constitutes a substantial research project in its own right, and can only be touched upon in passing in this thesis. The writer is currently expanding these concepts, and it is hoped that it will be possible in a subsequent report to describe in greater detail fully developed techniques and theories of configurational and geometric factor analysis.

5. In conducting this study the investigator hoped to find evidence of a real (as opposed to an artefact) "general factor" of introversion-extroversion. No such evidence was discovered in the data that was analyzed. However, a degree of cumulative evidence of a real, general factor of "neuroticism" appeared in the study, particularly in the apparent "convergence" of variables around this factor (p. 26-27; 78). In the case of the Guilford-Martin variables this is rather unexpected, as the rationale of the tests was not concerned with neuroticism, and the internal criterion used in the construction of the scales was Thurstone's technique of "group factor" analysis which does not anticipate the existence of a general factor.

Because of the initial purpose and the resultant organization of this thesis, much of the evidence in support

of a general factor of neuroticism is implicit rather than explicit, and not specifically organized around this topic. In consequence, a full consolidation of the argument must be left to a later report.

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38. Guilford, J. P. and Hunt, J. M., "Some Further Experimental Tests of McDougall's Theory of Introversion-Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 26, No. 3, October-December, 1931, p. 324-332.

The authors administered the Marston, the Laird, the Neyman-Kohlstedt inventories; and certain physiological tests to a group of subjects. Intercorrelations are reported which are low and give little or no support to McDougall's theory.

39. Guilford, J. P., "An Examination of a Typical Test of Introversion-Extroversion by Means of the Method of Similar Reactions", in Journal of Social Psychology, Vol. 4, No. 4, November, 1933, p. 430-443.

The author prepared a 35-item questionnaire (See Appendix) after studying the writings of Jung and Freyd, and the Laird, Marston, and Neymann-Kohlstedt and the Northwestern (Gilliland) inventories. After experimental administration the items were examined for a general factor by the method of similar reactions. (See also 40).

40. Guilford, J. P. and Guilford, R. B., "An Analysis of the Factors in a Typical Test of Introversion-Extroversion", in the Journal of Abnormal and Social Psychology, Vol. 28, No. 4, January-March, 1934, p. 377-399.

Using a 35-item questionnaire (See 39, and Appendix) the authors analyzed for a general factor using the Spearman-Dodd technique, and since group factors were indicated, these were determined by Thurstone's method.

41. Guilford, J. P., "Introversion-Extroversion", in Psychological Bulletin, Vol. 31, No. 5, May, 1934, p. 331-354.

A second review of the literature. See also 37.

42. Guilford, J. P. and Guilford, R. B., "Personality Factors, S, E, and M, and Their Measurement", in Journal of Psychology, Vol. 2, No. 1, (Month missing), 1936, p. 109-127.

The definitive paper for the Nebraska Personality Inventory (43). Three factors are identified as S (shyness, seclusiveness, or social introversion), E (an emotionality factor), M (perhaps masculinity-femininity, or possibly a dominance-submission factor; and two others are tentatively described as R (a phathymia or carefree factor), and T (a thinking introversion or an intellectual leadership factor.)

43. Guilford, J. P. and Guilford, R. B., Nebraska Personality Inventory, (Introversion-Extroversion Test), University of Nebraska, 1934, (pages missing). (Distributed by Sheridan Supply Co.).

This inventory purports to measure factors S, E, and M. (See 42). To be appraised.

44. Guilford, J. P. and Guilford, R. B., "Personality Factors D, R, T, and A", in The Journal of Abnormal and Social Psychology, Vol. 34, No. 1, January, 1939, p. 21-36.

The definitive paper for the STDCR inventory (46). A 30-item questionnaire was prepared in order to clarify the two doubtful factors in the previous study (42). The resultant factorization yielded five strong factors (S, T, D, C, R) and other weaker ones.

45. Guilford, J. P. and Guilford, R. B., "Personality Factors N and GD", in The Journal of Abnormal and Social Psychology, Vol. 34, No. 2, April, 1939, p. 239-248.

This investigation was inspired by Freeman's theory (see 28, 1934, p. 562-570) that individual differences in reactivity of nervous systems furnish the physiological basis for important personality differences. This study appeared to reveal that there is not a single personality dimension of hyperactivity, but at least four. Two of them were identified as factor N (nervousness or jumpiness) and factor GD (general drive). These two variables became a part of the GAMIN inventory (47).

46. Guilford, J. P., An Inventory of Factors STDCR, Manual of Directions and Norms, Revised Edition, Beverley Hills, Sheridan Supply Co., (Date Missing), p. 2.

A sample of the inventory and an identification of the factors is included in the Appendix.

47. Guilford, J. P. and Martin, H. G., The Guilford-Martin Inventory of Factors FAMIN (Abridged Edition), Manual of Directions and Norms (First Revision), Beverley Hills, Sheridan Supply Co., (Date missing), p. 3.

For the definitive paper of this inventory in the literature see 69, 1945. The manual contains intercorrelations of the traits. An example of the inventory is supplied in the Appendix.

48. Guilford, J. P., The Guilford-Martin Personnel Inventory, Manual of Directions and Norms, Beverley Hills, Sheridan Supply Co., (Date missing), p. 2.

No definitive article for this paper has been located in the literature. The inventory is designed to measure factors Objectivity, Agreeableness, and Cooperativeness, considered to be significant in personnel selection. The manual gives intercorrelations between these three traits. A sample is contained in the Appendix.

49. Guilford, J. P., The Guilford-Martin Temperament Profile Chart, Beverley Hills, The Sheridan Supply Co., 1943, p. 2.

Contains a description of the thirteen "temperament traits" measured by the three Guilford-Martin inventories (46-48). Sample in the Appendix.

49a. Gustav, A., "Estimation of Rorschach Scoring Categories by Means of an Objective Inventory", in Journal of Psychology, Vol. 22, No. 2, October, 1946, p. 253-260.

A pool of questionnaire items from the three Guilford-Martin inventories was prepared by the author and correlated with Rorschach scoring categories. On the basis of some success in predicting Rorschach scores, the author concludes that the resultant inventory should be useful in mass screening.

50. Guthrie, E. R., "Measuring Introversion and Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 22, No. 1, April-June, 1927, p. 82-88.

The author reports negligible correlations between the Laird inventory, a measure of scholarship, campus information, intelligence, association, and ranking.

52. Heidbreder, E., "Measuring Introversion and Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 21, No. 2, July, 1926, p. 120-134.

The author administers the Freyd list, with minor changes (See Appendix) and find that the majority of the items tend to correlate significantly with each other.

53. Heidbreder, E., "Introversion and Extroversion in Men and Women", in The Journal of Abnormal and Social Psychology, Vol. 22, No. 1, April-June, 1927, p. 53-61.

The author investigates the distribution of introversion and extroversion in men and women by means of the Freyd list. No items are dropped and no weightings are given on the basis of the previous investigation (52, 1926).

54. Heidbreder, E., "Self Ratings and Preferences", in The Journal of Abnormal and Social Psychology, Vol. 25, No. 1, April-June, 1930, p. 62-74.

The author compares the subjects' self-ratings on introversion-extroversion traits with their preferences in relation to these traits. It is significant to note that "introversion" was considered undesirable according to all sets of ratings indicating preferences. The author reports a reliability of .78 (corrected by Brown's formula) for the introversion test based on Freyd's list.

55. Heidbreder, E., Minnesota Personal Traits Rating Scales: Introversion-Extroversion and Inferiority Attitudes, Chicago, C. H. Stoelting Co., (Date and pages missing).

To be appraised.

56. Hewlett, T. C. and Lester, O. P., "Measuring Introversion and Extroversion", in Personnel Journal, Vol. 6, (No. and month missing), 1928, p. 352-360.

To be appraised.

57. Hoitsma, R. K., "Reliability and Relationships of the Colgate Mental Hygiene Test", in Journal of Applied Psychology, Vol. 9, (No. and month missing), 1925, p. 293-303.

To be appraised. The Colgate test includes Laird's inventory.

57a. Holzinger, K. J. and Harmon, H. H., Factor Analysis, A Synthesis of Factorial Methods, Chicago, University of Chicago Press, 1941, p. xii, 417.

This synthesis of factor analysis methods devotes a whole chapter (Chapter III) to the "geometric formulation of the factor problem" and hence provides a useful basis for relating configurational analysis to factor analysis.

58. Hovey, H. B., "Measures of Extraversion-Introversion Tendencies and their Relation to Performance under Distraction", in Journal of Genetic Psychology, Vol. 36, No. 2, June, 1929, p. 319-329.

The author reports intercorrelations and reliabilities of Conklin's test, Laird's, Heibreder's, and the Army Alpha. Intercorrelations are generally low.

59. Jacobi, J., The Psychology of C. G. Jung, an Intro- with Illustrations, London, Kegan Paul, 1942, p. xi, 162.

This book contains a presentation of Jung's theories of introversion and extraversion that is simpler than his own works, but which has received the endorsement of Jung.

60. Jasper, H. H., "The Measurement of Depression-Elation and Its Relation to a Measure of Extroversion-Introversion", in The Journal of Abnormal and Social Psychology, Vol. 25, No. 3, October-December, 1930, p. 307-318.

The author reports a significant positive correlation between introverted interests, as measured by the Conklin test, and depression, as measured by the DE test described in this paper.

61. Jung, C. G., Psychological Types, or the Psychology of Individuation, London, Kegan Paul, 1923, p. xxii, 654.

Jung's writings on introversion and extroversion are scattered through many works but this volume constitutes a definitive publication.

61a. Klepfer, B. and Kelley, D. M., The Rorschach Technique, Yonkers-on-Hudson, World Book, 1946, p. x, 475.

The authors amplify Rorschach's theory (81) of introversion-extroversion (the Erlebnistyp ratio) that constitutes the centrality of personality structure in this theory. (See especially Chapter X).

62. Kohlstedt, K. D., (Title missing), Northwestern University Library, Unpublished M.A. thesis, (Pages missing).

To be appraised. This research laid the foundations for the Neymann-Kohlstedt inventory.

63. Laird, D. A., "A Mental Hygiene and Vocational Test", in Journal of Educational Research, Vol. 16, (No. and month missing), 1925, p. 419-422.

To be appraised.

64. Laird, D. A., "Detecting Abnormal Behavior", in The Journal of Abnormal and Social Psychology, Vol. 20, No. 2, July, 1925, p. 128-141.

This paper describes the Personal Inventory, Schedule B1 and Schedule C1, developed from Woodworth's Psychoneurotic Inventory. Schedule C1 purports to measure introversion-extroversion.

65. Laird, D. A., Personal Inventory C2, Hamilton, N. Y., Republican Press, (Date and pages missing).

The C2 inventory is a revision of the C1 (see 65). C3 (not listed here) is similar to C2, but intended for associate-ratings while the C2 is a self-rating scale. All three scales purport to measure introversion-extroversion.

66. Laslett, H. R. and Bennett, E., "A Comparison of Scores on Two Measures of Personality", in The Journal of Abnormal and Social Psychology, Vol. 28, No. 4, January-March, 1934, p. 459-561.

The authors find no significant correlation between the B1-N scale of the Bernreuter and the Kent-Rosanoff free association test.

66a. Lively, M. L., An Investigation of Some Clinical Aspects of the Heidbreder Introversion-Extroversion Variable, University of Minnesota, Unpublished M.A. Thesis, 1943, (Pages missing).

To be appraised.

66b. Loth, N. N., Correlations between the Guilford-Martin Inventory of Factors STDCR and the MMPI at the College Level, University of Minnesota, Unpublished M.A. Thesis, 1945, (Pages missing).

To be appraised.

67. Lovell, C., "A Study of the Factor Structure of Thirteen Personality Variables", in Educational and Psychological Measurement, Vol. 5, No. 4, Winter, 1945, p. 335-350.

The author reports a table of correlations between the thirteen Guilford-Martin "temperament traits" which is reproduced in the text (p. 45). The author carries out a factor analysis of this table of correlations extracting six "super-factors", four of which are described (See p. 77 of this text).

67a. Ludolph, M., The Guilford-Martin Inventory of Factors GAMIN and its Relation to the MMPI, University of Minnesota, Unpublished paper, 1944, (Pages missing).

To be appraised.

68. Marston, L. R., "The Emotions of Young Children", in University of Iowa Studies in Child Welfare, Vol. 3, No. 3, (Month missing), 1925, (pages missing).
To be appraised. This paper describes in part the Marston Personality Rating Scale which purports to measure introversion-extroversion. According to Guilford and Hunt (38, 1931, p. 330) Marston, as the title of her paper would suggest, emphasizes the "emotional" aspects of introversion-extroversion, as opposed to the "social" and "thinking" aspects.

69. Martin, H. G., "The Construction of the Guilford-Martin Inventory of Factors GAMIN", in Journal of Applied Psychology, Vol. 29, No. 4, August, 1945, p. 298-300.
The definitive paper for the GAMIN inventory, a sample of which is included in the Appendix. The author gives correlations between the traits, and coefficients of reliability (split-half).

70. Mosier, C. I., "A Factor Analysis of Certain Neurotic Symptoms", in Psychometrika, Vol. 2, No. 4, December, 1937, p. 263-286.

Thirty-nine of the forty-one most discriminative items in the Thurstone Neurotic Inventory are factor-analyzed, yielding eight factors: cycloid, depression, hypersensitivity, inferiority, social introversion, public self-consciousness, cognitive defect, and autistic tendency. This study is the source for the "inferiority" trait in the Guilford-Martin GAMIN inventory (47) and gives support to certain other of the Guilford-Martin variables.

71. Mosier, C. I., "On the Validity of Neurotic Questionnaires", in Journal of Social Psychology, Vol. 9, No. 1, February, 1938, p. 3-16.

A critical review of the literature dealing with the validity of neurotic questionnaires. Contains references to Heidebreder and Laird (p. 7).

72. Neymann, C. A. and Kohlstedt, K. D., "A New Diagnostic Test for Introversion-Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 23, No. 4, January-March, 1929, p. 482-487.

The definitive paper for the Neymann-Kohlstedt inventory. See also 74. The inventory is reproduced in the Appendix. The authors report a bi-modal distribution of scores for both normal and abnormal populations.

73. Neymann, C. A. and Kohlstedt, K. D., Neymann-Kohlstedt Diagnostic Test for Introversiion-Extroversiion, C. H. Stoelting Co., (Date and pages missing).
To be appraised. See also 72 and the Appendix.
74. Neymann, C. A., "The Relation of Extroversiion-Introversiion to Intelligence and Tuberculosis", in American Journal of Psychiatry, Vol. 9, No. 4, January, 1930, p. 687-696.
The examination of 900 normal individuals with the Neymann-Kohlstedt inventory reveals a bi-modal distribution. There is no correlation with intelligence, but the average t.b. patient has a marked introversive tendency that decreases as he becomes bed-ridden.
- 74a. Omwake, K. T., Dexter, F. S., and Lewis, L. W., "Interrelations of Certain Physiological Measurements and Aspects of Personality" in Character and Personality, Vol. 3, No. 1, September, 1934, p. 64-71.
This study provides the source for a number of correlations between inventory variables presented in the text of this study (Table III, p. 9).
75. Pintner, R., "Neurotic Tendency and Its Relation to Some Other Mental Traits", in School and Society, Vol. 36, (No. and month missing), 1932, p. 765-766.
To be appraised.
76. Pintner, R., et al., Aspects of Personality, Section II, Yonkers-on-Hudson, World Book, (Date missing), (Pages missing).
Section II of this schedule purports to measure introversiion-extroversiion. It is intended for grades four to nine. To be appraised.
77. Roberts, C. S. and Fisher, V. E., "Another Attempt at Measures of Introversiion-Extroversiion", in Psychological Clinic, Vol. 22 (No. and month missing), 1933, p. 88-92.
To be appraised.
78. Root, A. R., "A Short Test of Introversiion-Extroversiion", in Personnel Journal, Vol. 10, (No. and month missing), 1931, p. 250-253.
To be appraised. See also 79.
79. Root, A. R., New Introversiion-Extroversiion Test, New York, Psychological Corporation, 1932, (Pages missing).
To be appraised.

81. Rorschach, H., Psychodiagnostics, Berne, Verlag Hans Huber, 1942, p. 263.

The definitive presentation of Rorschach's theory of introversion-extroversion (Erlebnistyp ratio) is contained in this book. (See also Klopfer and Kelly 61a).

84. Smith, P. K., Abstractions of an Introvert, A Questionnaire, Painesville, Ohio, Private printed, 1945, p. 62.

To be appraised.

85. Stagner, R., "Intercorrelations of Some Standardized Personality Tests", in Journal of Applied Psychology, Vol. 16, No. 5, October, 1932, p. 453-464.

The author reports intercorrelations and reliabilities of the following tests: Allport A-S Reaction Study, the Laird C2 inventory, the Neymann-Kohlstedt, Thurstone Personality Schedule, George Washington University Social Intelligence Test, Hart Social Attitude and Interests Tests, and a test of general intelligence. In general correlations were low with the exception of .53 between the Thurstone and Laird, and .46 between intelligence and social intelligence, and -.51 between the Thurstone and Allport. The author notes that there are two forms of the A-S for men and women. He obtains an unimodal distribution for Neymann-Kohlstedt scores.

86. Stagner, R., "Improved Norms for Four Personality Tests", in American Journal of Psychology, Vol. 45, No. 2, April, 1933, p. 303-307.

The author presents improved norms, based on more extensive data, for the Laird C2 test, the Thurstone Neurotic Inventory, a test of Social Intelligence (Form 2), and the Pressey X-O Affectivity test (Form A). While not having sufficient data to revise the norms for the Neymann-Kohlstedt, a unimodal distribution of scores is presented.

87. Stagner, R., Scale of Personality Traits, Wisconsin, Publisher unknown, (Date and pages missing).

To be appraised.

88. Stagner, R., "Validity and Reliability of the Bernreuter Personality Inventory", in The Journal of Abnormal and Social Psychology, Vol. 28, No. 4, January-March, 1934, p. 413-418.

The author endeavours to validate the inventory by the interview and case study technique. He concludes that the validities of scales B1-N and B2-S are high, that B4-D is good, and that B3-I is a duplicate of B1-N.

89. Stagner, R. and Pessin, J., "The Diagnostic Value of Introversiion-Extroversiion Items", in American Journal of Psychology, Vol. 46, No. 2, April, 1934, p. 321-324.
By logical and experimental processes, two groups of diagnostic items were selected from the Marston, Laird, Freyd-Heidbreder, Conklin, and Neymann-Kohlstedt inventories. The first group consisted of 25 items diagnostic of introverted personal habits. The second group consisted of 27 items diagnostic of introverted personal preferences or interests. Intercorrelation between the two parts was .30. An analysis of the two parts is given.
90. Super, D. E., "The Bernreuter Personality Inventory: A Review of Research", in Psychological Bulletin, Vol. 39, No. 2, February, 1942, p. 94-125.
A critical review of the research literature on the Bernreuter inventory, with a 147-item bibliography.
91. Thurstone, L. L., and Thurstone, T. G., "A Neurotic Inventory", in Journal of Social Psychology, Vol. 1, No. 1, February, 1930, p. 3-30.
The definitive paper for the Thurstone Neurotic inventory.
- 91a. Torrens, J. K., An Investigation and Evaluation of the Guilford Inventory of Factors STDOR with Special Reference to the MMPI, University of Minnesota, Unpublished paper, 1944, (Pages missing).
To be appraised.
- 91b. Warren, H. C. (Editor), Dictionary of Psychology, Houghton Mifflin, New York, 1934, p. x, 372.
The definitions of "configuration" presented in this work are used in developing the definition and concepts of configurational analysis in this thesis. (See p. 48 of the text).
92. Weber, C. O., and Majgren, R., "The Experimental Differentia of Introversiion and Extroversiion", in Journal of Genetic Psychology, Vol. 36, No. 4, December, 1929, p. 571-580.
To investigate various measures of introversiion-extroversiion the authors derive intercorrelations between the Laird C2, the Conklin test, and measures derived from the Pressey X-0 test and the Kent-Rosanoff free association test. In general the intercorrelations are low. A negative correlation of -.230, based on 72 subjects, is reported between the Conklin and the Laird.

93. Wells, F. L., "A Note on the Numerical Scores of Introvert and Extrovert Self-Rating", in The Journal of Abnormal and Social Psychology, Vol. 21, (No. and month missing), 1926, p. 316-318.

To be appraised.

93a. Wesley, E., Correlations between the Guilford-Martin Personality Factors O, Ag, Co, and the MMPI at the College Level, University of Minnesota, Unpublished M.A. thesis, 1945, (Pages missing).

To be appraised.

94. Whitman, R. H., "A Short Scale for Measuring Introversion and Extroversion", in Journal of Applied Psychology, Vol. 13, No. 5, October, 1929, p. 499-504.

The definitive paper for the author's abridgment of the Laird C2. The items of this test, known as the Colgate C4 are reproduced in the Appendix. The author reports a correlation of $-.81$ with the original test.

95. Willoughby, R. R., "Some Properties of the Thurstone Personality Schedule and a Suggested Revision", in Journal of Social Psychology, Vol. 3, No. 4, November, 1932, p. 401-424.

The definitive paper for the author's abridgment of Thurstone's neurotic inventory. The author reports no coefficient of correlation between the revision and the original test.

96. Woodworth, L. S., Psychology, (Third Edition), New York, Holt, 1934, p. xiv, 546.

Woodworth's observations (p. 98) that "There is no reason for assuming that interest in people and interest in thought and observation are incompatible" stimulated Abernathy's experiment in "social introversion" and "thinking introversion" (1, 1938).

APPENDIX I

SAMPLES OF INVENTORIES

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THE PERSONALITY INVENTORY

By ROBERT G. BERNREUTER

PUBLISHED BY
STANFORD UNIVERSITY PRESS
STANFORD UNIVERSITY, CALIFORNIA

Date.....

NAME..... Age..... Sex.....

Address.....

Name of school School grade
or business firm..... or occupation

	B1-N	B2-S	B3-I	B4-D	F1-C	F2-S
Plus						
Minus						
Difference						
Percentile	%	%	%	%	%	%

H.S.—COLL.—ADULT

Based on

norms

MALE—FEMALE

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The questions on this blank are intended to indicate your interests and attitudes. It is not an intelligence test, nor are there any right or wrong answers.

In front of each question you will find: "Yes No ?"

If your answer is "Yes," draw a circle around the "Yes." If your answer is "No," draw a circle around the "No." If you are entirely unable to answer either "Yes" or "No" to the question, then draw a circle around the question mark.

-
1. Yes No ? Does it make you uncomfortable to be "different" or unconventional?
 2. Yes No ? Do you day-dream frequently?
 3. Yes No ? Do you usually work things out for yourself rather than get someone to show you?
 4. Yes No ? Have you ever crossed the street to avoid meeting some person?
 5. Yes No ? Can you stand criticism without feeling hurt?
 6. Yes No ? Do you ever give money to beggars?
 7. Yes No ? Do you prefer to associate with people who are younger than yourself?
 8. Yes No ? Do you often feel just miserable?
 9. Yes No ? Do you dislike finding your way about in strange places?
 10. Yes No ? Are you easily discouraged when the opinions of others differ from your own?
 11. Yes No ? Do you try to get your own way even if you have to fight for it?
 12. Yes No ? Do you blush very often?
 13. Yes No ? Do athletics interest you more than intellectual affairs?
 14. Yes No ? Do you consider yourself a rather nervous person?
 15. Yes No ? Do you usually object when a person steps in front of you in a line of people?
 16. Yes No ? Have you ever tried to argue or bluff your way past a guard or doorman?
 17. Yes No ? Are you much affected by the praise or blame of many people?
 18. Yes No ? Are you touchy on various subjects?
 19. Yes No ? Do you frequently argue over prices with tradesmen or junkmen?
 20. Yes No ? Do you feel self-conscious in the presence of superiors in the academic or business world?
 21. Yes No ? Do ideas often run through your head so that you cannot sleep?
 22. Yes No ? Are you slow in making decisions?
 23. Yes No ? Do you think you could become so absorbed in creative work that you would not notice a lack of intimate friends?
 24. Yes No ? Are you troubled with shyness?
 25. Yes No ? Are you inclined to study the motives of other people carefully?
 26. Yes No ? Do you frequently feel grouchy?
 27. Yes No ? Do your interests change rapidly?
 28. Yes No ? Are you very talkative at social gatherings?
 29. Yes No ? Do you ever heckle or question a public speaker?
 30. Yes No ? Do you very much mind taking back articles you have purchased at stores?
 31. Yes No ? Do you see more fun or humor in things when you are in a group than when alone?
 32. Yes No ? Do you prefer travelling with someone who will make all the necessary arrangements to the adventure of travelling alone?
 33. Yes No ? Would you rather work for yourself than carry out the program of a superior whom you respect?
 34. Yes No ? Can you usually express yourself better in speech than in writing?
 35. Yes No ? Would you dislike any work which might take you into isolation for a few years, such as forest ranging, etc.?
 36. Yes No ? Have you ever solicited funds for a cause in which you were interested?
 37. Yes No ? Do you usually try to avoid dictatorial or "bossy" people?
 38. Yes No ? Do you find conversation more helpful in formulating your ideas than reading?

39. Yes No ? Do you worry too long over humiliating experiences?
40. Yes No ? Have you ever organized any clubs, teams, or other groups on your own initiative?
41. Yes No ? If you see an accident do you quickly take an active part in giving aid?
42. Yes No ? Do you get stage fright?
43. Yes No ? Do you like to bear responsibilities alone?
44. Yes No ? Have books been more entertaining to you than companions?
45. Yes No ? Have you ever had spells of dizziness?
46. Yes No ? Do jeers humiliate you even when you know you are right?
47. Yes No ? Do you want someone to be with you when you receive bad news?
48. Yes No ? Does it bother you to have people watch you at work even when you do it well?
49. Yes No ? Do you often experience periods of loneliness?
50. Yes No ? Do you usually try to avoid arguments?
51. Yes No ? Are your feelings easily hurt?
52. Yes No ? Do you usually prefer to do your own planning alone rather than with others?
53. Yes No ? Do you find that telling others of your own personal good news is the greatest part of the enjoyment of it?
54. Yes No ? Do you often feel lonesome when you are with other people?
55. Yes No ? Are you thrifty and careful about making loans?
56. Yes No ? Are you careful not to say things to hurt other people's feelings?
57. Yes No ? Are you easily moved to tears?
58. Yes No ? Do you ever complain to the waiter when you are served inferior or poorly prepared food?
59. Yes No ? Do you find it difficult to speak in public?
60. Yes No ? Do you ever rewrite your letters before mailing them?
61. Yes No ? Do you usually enjoy spending an evening alone?
62. Yes No ? Do you make new friends easily?
63. Yes No ? If you are dining out do you prefer to have someone else order dinner for you?
64. Yes No ? Do you usually feel a great deal of hesitancy over borrowing an article from an acquaintance?
65. Yes No ? Are you greatly embarrassed if you have greeted a stranger whom you have mistaken for an acquaintance?
66. Yes No ? Do you find it difficult to get rid of a salesman?
67. Yes No ? Do people ever come to you for advice?
68. Yes No ? Do you usually ignore the feelings of others when accomplishing some end which is important to you?
69. Yes No ? Do you often find that you cannot make up your mind until the time for action has passed?
70. Yes No ? Do you especially like to have attention from acquaintances when you are ill?
71. Yes No ? Do you experience many pleasant or unpleasant moods?
72. Yes No ? Are you troubled with feelings of inferiority?
73. Yes No ? Does some particularly useless thought keep coming into your mind to bother you?
74. Yes No ? Do you ever upbraid a workman who fails to have your work done on time?
75. Yes No ? Are you able to play your best in a game or contest against an opponent who is greatly superior to you?
76. Yes No ? Have you frequently appeared as a lecturer or entertainer before groups of people?
77. Yes No ? Are people sometimes successful in taking advantage of you?
78. Yes No ? When you are in low spirits do you try to find someone to cheer you up?
79. Yes No ? Can you usually understand a problem better by studying it out alone than by discussing it with others?
80. Yes No ? Do you lack self-confidence?
81. Yes No ? Does admiration gratify you more than achievement?
82. Yes No ? Are you willing to take a chance alone in a situation of doubtful outcome?
83. Yes No ? Does your ambition need occasional stimulation through contact with successful people?

84. Yes No ? Do you usually avoid asking advice?
85. Yes No ? Do you consider the observance of social customs and manners an essential aspect of life?
86. Yes No ? If you are spending an evening in the company of other people do you usually let someone else decide upon the entertainment?
87. Yes No ? Do you take the responsibility for introducing people at a party?
88. Yes No ? If you came late to a meeting would you rather stand than take a front seat?
89. Yes No ? Do you like to get many views from others before making an important decision?
90. Yes No ? Do you try to treat a domineering person the same as he treats you?
91. Yes No ? Does your mind often wander so badly that you lose track of what you are doing?
92. Yes No ? Do you ever argue a point with an older person whom you respect?
93. Yes No ? Do you have difficulty in making up your mind for yourself?
94. Yes No ? Do you ever take the lead to enliven a dull party?
95. Yes No ? Would you "have it out" with a person who spread untrue rumors about you?
96. Yes No ? At a reception or tea do you feel reluctant to meet the most important person present?
97. Yes No ? Do you find that people are more stimulating to you than anything else?
98. Yes No ? Do you prefer a play to a dance?
99. Yes No ? Do you tend to be radical in your political, religious, or social beliefs?
100. Yes No ? Do you prefer to be alone at times of emotional stress?
101. Yes No ? Do you usually prefer to work with others?
102. Yes No ? Do you usually work better when you are praised?
103. Yes No ? Do you have difficulty in starting a conversation with a stranger?
104. Yes No ? Do your feelings alternate between happiness and sadness without apparent reason?
105. Yes No ? Are you systematic in caring for your personal property?
106. Yes No ? Do you worry over possible misfortunes?
107. Yes No ? Do you usually prefer to keep your feelings to yourself?
108. Yes No ? Can you stick to a tiresome task for a long time without someone prodding or encouraging you?
109. Yes No ? Do you get as many ideas at the time of reading a book as you do from a discussion of it afterward?
110. Yes No ? Do you usually face your troubles alone without seeking help?
111. Yes No ? Have you been the recognized leader (president, captain, chairman) of a group within the last five years?
112. Yes No ? Do you prefer making hurried decisions alone?
113. Yes No ? If you were hiking with a group of people, where none of you knew the way, would you probably let someone else take the full responsibility for guiding the party?
114. Yes No ? Are you troubled with the idea that people on the street are watching you?
115. Yes No ? Are you often in a state of excitement?
116. Yes No ? Are you considered to be critical of other people?
117. Yes No ? Do you usually try to take added responsibilities on yourself?
118. Yes No ? Do you keep in the background at social functions?
119. Yes No ? Do you greatly dislike being told how you should do things?
120. Yes No ? Do you feel that marriage is essential to your present or future happiness?
121. Yes No ? Do you like to be with people a great deal?
122. Yes No ? Can you be optimistic when others about you are greatly depressed?
123. Yes No ? Does discipline make you discontented?
124. Yes No ? Are you usually considered to be indifferent to the opposite sex?
125. Yes No ? Would you feel very self-conscious if you had to volunteer an idea to start a discussion among a group of people?

1. Do you introduce yourself to strangers at a social gathering? 1.
2. Do you sit calmly and watch a horse, automobile, or track race? 2.
3. Do you hesitate to borrow money or personal belongings from others? 3.
4. Are you more interested in learning facts than relating them to your ideas and previous experiences? 4.
5. Do you study and analyze your own motives and reactions? 5.
6. Are you embarrassed when you arrive too early or too late at a social affair? 6.
7. Do you become so amused at a funny movie or play that you laugh heartily? 7.
8. Do you enjoy being in a crowd just to be with people? 8.
9. Do you hesitate to ask the cooperation of others in carrying out activities such as the arrangements for a party? 9.
10. Do you like to solve "brain teasers?" 10.
11. Do you like to act as host or hostess at parties? 11.
12. Do you prefer to eat in a small rather than a large restaurant or cafeteria? 12.
13. Do you get over anger quickly? 13.
14. When individuals do things that displease you, do you refrain from saying anything? 14.
15. Do you like short, factual questions in an examination better than questions which require the organization and interpretation of a large body of material? 15.

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16. Are you tantalized by a question or problem until you can think through to an answer satisfactory to yourself? 16.
17. Do you enjoy teas and receptions? 17.
18. Do you analyze what you like or dislike about a movie or play which you have seen? 18.
19. Do you enjoy a movie that makes you cry? 19.
20. In the face of an emergency, do you give the impression of being calm? 20.
21. Do you enjoy writing a critical discussion of a book or article? 21.
22. Do you become so enthusiastic that your enthusiasm spreads to those around you? 22.
23. Do you take an active part in group or class discussions? 23.
24. Are you sympathetic to the degree that you shed tears over the grief and sadness of another? 24.
25. Do you work better when people praise you? 25.
26. Do you worry about being different from other young people? 26.
27. Do you talk with strangers when you travel? 27.
28. Do you enjoy starting in at a new school or moving to a new community? 28.
29. Do you hesitate to ask the assistance of others? 29.
30. Do you react to new ideas which you hear or read about by analyzing them to see if they fit in with your own point of view? 30.

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- 31. Are you more realistic than idealistic, that is, more occupied with things as they are rather than with things as they should be? 31.
- 32. Do you exclaim or even swear at unfortunate events or happenings? 32.
- 33. Do you really enjoy dances? 33.
- 34. Do you like to write your reactions to and criticisms of a given philosophy or point of view? 34.
- 35. Under the stress of anger, jealousy, or sympathy do you speak and act unwisely? 35.
- 36. Do you prefer a long, rather involved problem to several shorter ones? 36.
- 37. Do you express readily such emotions as sympathy, delight, sorrow, and anger? 37.
- 38. Do you prefer social functions to which only a small group of intimate friends are invited? 38.
- 39. Do you enjoy a thought-provoking lecture on a subject within your field of interest? 39.
- 40. Do you like to converse and get acquainted with your teachers outside of class? 40.
- 41. Do you like assignments which require you to draw your own conclusions from some data or body of facts? 41.
- 42. Do you fly off the handle when you are angry? 42.
- 43. Is it difficult for you to carry on a light conversation with strangers? 43.
- 44. Do you find it difficult to give up ideas and opinions which you hold? 44.
- 45. Do you have difficulty in imagining the reaction of a person of another period, race, or country to a given situation or environment? 45.

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- 46. If you encounter a person whom you think you have met previously, do you begin a conversation with that person? 46.
- 47. Do you avoid exaggeration in your statements? 47.
- 48. Do you shed tears when you read a sad story? 48.
- 49. Are you a better listener than a conversationalist? 49.
- 50. Do you enjoy spending leisure time in writing poetry, stories, plays, or essays? 50.
- 51. Do you dislike assignments requiring original research work? 51.
- 52. Do you remain outwardly calm when others in a group are moved and aroused? 52.
- 53. Do you enjoy the actual laboratory work more than the study of the textbook for the course? 53.
- 54. Do you have the feeling of being detached and alone when you are in a group of people? 54.
- 55. Do you analyze and compare the motives and reactions of others to your own reactions? 55.
- 56. Are you active on the committees of school organizations? 56.
- 57. Are you slow to accept new acquaintances as friends? 57.
- 58. Do you get excited when you argue? 58.
- 59. Are you interested in criticisms of books or articles which you have read? 59.
- 60. Is the thinking which you do limited to that which you have to do in the course of your work or activities? 60.

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61. Do you prefer to engage in activities from which you can see definite results rather than those from which no tangible or objective results are apparent? 61.
 62. Do you prefer to work outdoors rather than indoors? 62.
 63. Do you enjoy solving problems of the type found in geometry, philosophy, or logic? 63.
 64. Do you feel that the young people whom you meet are not interested in you? 64.
 65. Are you more interested in the application of principles and theories than in the critical consideration of them? 65.
 66. Do you dislike to appear on programs or to give oral reports in class? 66.
 67. Do you conceal your disappointments? 67.
 68. When you are in physical pain, do you moan or make a fuss about it? 68.
 69. Are you ill at ease with members of the opposite sex? 69.
 70. When you travel, are you more interested in seeing the scenic or historical spots than in making new acquaintances? 70.
 71. Do you avoid laughing aloud? 71.
 72. Do you carry on a social correspondence with more than five people? 72.
 73. Do you wish that you could just let go and thoroughly enjoy yourself? 73.
 74. Do you question statements and ideas expressed by your professors? 74.
 75. Would you enjoy writing a paper on the possible long time effects or outcomes of a significant research discovery? 75.
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76. Do you give more attention to the action of the story rather than to either the characterization or form and style of the literature which you read? 76.
 77. Do you attend the meetings of school or college organizations? 77.
 78. Can you keep an exciting secret for a long period of time? 78.
 79. Do you prefer to stay at home rather than attend social affairs? 79.
 80. Do you discuss the causes and possible solutions of social, political, economic, or international problems? 80.
 81. Do you dislike to spend an afternoon or evening reading? 81.
 82. Are you cordial to strangers? 82.
 83. Would you enjoy writing a paper explaining a theory and presenting the arguments for and against it? 83.
 84. Do you tune the radio away from such programs as "Information Please" and "Professor Quiz?" 84.
 85. Do you get so excited that you gesticulate when you talk? 85.
 86. Do you chat with clerks when they are waiting on you? 86.
 87. Do you think about the values and meanings of a college education? 87.
 88. Do you like to take the lead at social gatherings? 88.
 89. Do you dislike to have others deliberate and hesitate before acting? 89.
 90. Do your conversations with friends deal with such subjects as mutual acquaintances and social activities? 90.

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91. Do you dislike test questions in which the information being tested is in a form different from that in which it was learned? 91.
92. Do you disagree with statements and ideas expressed by your classmates? 92.
93. Do you enjoy house parties? 93.
94. Do you enjoy thinking of new examples to illustrate general rules and principles? 94.
95. Do you enjoy reading essays on serious or philosophical subjects? 95.
96. Are you unable to explain the reasons for your opinions and reactions? 96.
97. Do you desire to be with others and to know their interests and experiences? 97.
98. Do you prefer to carry out an activity or job rather than to do the planning for it? 98.
99. Do you get stage fright when you have to appear before a group? 99.
100. Do you like to discuss the values of life such as what makes an act good or evil? 100.
101. Do you dislike to be assigned to write a short story, play, essay, or song? 101.
102. Do you like to serve as the chairman of a committee? 102.
103. Does an emotional scene in the movies leave you dry-eyed? 103.
104. Do you like to serve as a member of a committee in carrying out some activity or project? 104.
105. Do you avoid becoming engaged in conversation with your barber or beauty parlor operator? 105.
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106. Do you make use of an opportunity to express appreciation to a lecturer, soloist, or other performers at a club, school, church, or community program? 106.
107. Do others tell you of their most intimate personal or family problems? 107.
108. Do you identify yourself with the hero or heroine at a movie? 108.
109. Do you laugh aloud when you read the "funny papers" or "joke" magazines? 109.
110. When you work do you prefer to be alone rather than to have others around you? 110.
111. Do you question the accuracy of statements made in your textbooks or reference books? 111.
112. Do you work better when you are not being observed by others? 112.
113. Are you conscious of inner turmoil even when outwardly calm? 113.
114. Do you express your opinions freely? 114.
115. Are you interested in conversations about people regardless of whether or not you are acquainted with them? 115.
116. Do you enjoy listening to debates and discussions on social, economic, or political problems? 116.
117. Do you like work requiring considerable physical activity? 117.
118. Are you bored by other young people? 118.
119. Do you talk more rapidly when you are excited? 119.
120. Do you read and take an interest in articles or books that deal with new theories and points of view within your field of interest? 120.

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121. When you have become angry at a person, do you wait until you no longer are angry to speak with the person about the incident? 121.
 122. Do you avoid large gatherings of people? 122.
 123. Do you prefer to work with someone else on a piece of work than to handle it by yourself? 123.
 124. In a group of people, do new acquaintances or strangers pay little attention to you? 124.
 125. After a class period, do you think about the ideas presented there? 125.
 126. Are you uninterested in discussions of the ideal Society or Utopia? 126.
 127. Do you prefer to visit with one person rather than with a group of people? 127.
 128. Do you like to work cross-word puzzles? 128.
 129. Do you have one or more dates each week? 129.
 130. Do you prefer to have a principle or theory explained to you rather than studying it out for yourself? 130.
 131. Do you enjoy chatting and playing with children? 131.
 132. Do you enjoy the plays of Henrik Ibsen? 132.
 133. Do you leave the radio tuned to a symphony concert rather than tuning to a jazz program? 133.
 134. Is your free time filled up each week by social demands? 134.
 135. Would you enjoy studying the causes of an important national or international event and writing a paper on these causes? 135.
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136. Do you prefer such movies as *Marie Antoinette*, *Life of Emile Zola*, and *Good Earth* to movies of the musical comedy type? 136.
 137. Are you bored by discussions of what life will be like one hundred years from now? 137.
 138. Do you enjoy watching football, basketball, or baseball games? 138.
 139. Do you enjoy making collections of stamps, coins, miniature animals, glass-ware, etc.? 139.
 140. Do you like to read serious, philosophical poetry? 140.
 141. When you go to a strange city, do you visit museums? 141.
 142. Do you like to do such housework as cooking, ironing, or sewing? 142.
 143. Do you prefer swing music to classical music? 143.
 144. Do you show individuality and originality in your school work? 144.
 145. Do you enjoy eating meals alone? 145.
 146. Do you enjoy looking at paintings, sculpture, and architecture? 146.
 147. Do you enjoy listening to poetry read? 147.
 148. Do you like to do work which requires little study or thought after it is once learned? 148.
 149. Do you like to observe machines in operation? 149.
 150. Are you aroused by a speaker's description of unfortunate conditions in a locality or country? 150.

FREYD'S TRAITS OF AN INTROVERT

Note: The numbering not in brackets, which corresponds to the order of the items, indicates the sequence in which Freyd presented the items. The numbers in brackets which follow these give Heidebreder's ordering of the items according to their discriminative value as determined value as determined by the criterion of internal consistency. Heidebreder made minor changes in the wording of some of the items. (52, 1926).

The letters in brackets indicate this writer's judgments of the items as "unfavorable" to the introvert (U); "neutral (N)"; and "favorable (F)". The totals indicate 24 as unfavorable, 26 as neutral, and 4 as favorable.

- (U) 1(12). Blushes frequently; is self-conscious.
- (U) 2(17). Avoids all occasions for talking before crowds; finds it difficult to express himself in public.
- (U) 3(9). Prefers to work alone rather than with people; prefers to work at tasks that do not bring him into contact with people.
- (N) 4(25). Dislikes and avoids any process of selling or persuading anyone to adopt a certain point of view (except in the religious field).
- (F) 5(53). Takes up work which requires painstaking and delicate manipulation.
- (U) 6(42). Hesitates in making decisions on ordinary questions that arise in the course of the day.
- (N) 7(20). Introspects; turns his attention inward.
- (U) 8(40). Depreciates his own abilities, but assumes an outward air of conceit.
- (N) 9(8). Is critical of others.
- (N) 10(28). Is extremely careful about the friends he makes; must know a person pretty thoroughly before he calls him a friend.
- (N) 11(1). Limits his acquaintances to a select few. (This may be beyond his control).
- (N) 12(10). Has ups and downs in mood without apparent cause.
- (N) 13(44). Has ups and downs in mood with apparent cause.
- (U) 14(38). Works by fits and starts.
- (U) 15(4). Worries over possible misfortunes.

Source: M. Freyd, "Introverts and Extroverts" in The Psychological Review, Vol. 31, No. 1, January, 1924, p. 78-79.

- (U) 16(2). Feels hurt readily; apparently sensitive about remarks and actions which have reference to himself.
- (N) 17(19). Is outspoken; says what he considers the truth regardless of how others may take it.
- (N) 18(7). Keeps in the background on social occasions; avoids leadership at social affairs and entertainments.
- (U) 19(41). Is absent-minded.
- (U) 20(36). Is reticent and retiring; does not talk spontaneously.
- (U) 21(34). Shrinks when facing a crisis.
- (N) 22(30). Prefers to work things out on his own hook; hesitates to accept or give aid.
- (F) 23(11). Is meticulous; is extremely conservative about his dress and painstaking about his personal property.
- (N) 24(21). Prefers participation in competitive intellectual amusements to athletic games.
- (U) 25(39). Is a poor loser; considerably upset and indisposed after the loss of a competitive game.
- (U) 26(49). Makes mistakes in judging the character and ability of others.
- (N) 27(35). If he unburdens at all, he does so only to close personal friends and relatives.
- (U) 28(5). Indulges in self-pity when things go wrong.
- (N) 29(23). Day-dreams.
- (U) 30(16). Limits his acquaintances to members of his own sex.
- (N) 31(52). Is persistent in his beliefs and attitudes.
- (U) 32(29). Shrinks from actions which demand initiative and 'nerve'.
- (U) 33(6). Gets rattled easily; loses his head in excitement or moments of stress.
- (N) 34(14). Expresses himself better in writing than in speech.
- (N) 35(47). Is governed by reason rather than impulse or emotion. Is a good rationalizer
- (N) 36(32). Derives enjoyment from writing about himself.
- (N) 37(50). Is thrifty and careful about making loans.
- (F) 38(54). Is conscientious.
- (U) 39(15). Resists discipline and orders.
- (N) 40(48). Admires perfection of form in literature.
- (N) 41(26). Is sentimental.
- (N) 42(45). Rewrites his social letters before mailing them.
- (U) 43(13). Pays serious attention to rumours.
- (N) 44(43). Believes in 'mind' cures; accepts an idealistic philosophy.
- (U) 45(31). Talks to himself.
- (N) 46(33). Keeps a diary.
- (N) 47(22). Is strongly motivated by praise.
- (U) 48(24). Is selfish.

- (N) 49(46). Is slow in movement.
- (U) 50(27). Prefers to read of a thing rather than experience it.
- (U) 51(3). Is suspicious of the motives of others.
- (U) 52(51). Is effeminate (if a man).
- (N) 53(18). Is a radical; wants to change the world instead of adjusting himself to it.
- (F) 54(37). Is creative of new and sometimes eccentric ideas and things.

NORTHWESTERN UNIVERSITY INTROVERSION-EXTROVERSION TEST

SAMPLE QUESTIONS

Directions: Below is a list of questions about yourself. Draw a circle around the answer "yes" or "no" which best describes you. Some of the statements are similar to other statements. Please answer every statement. Answer them as rapidly as you can. Do not stop to study any statement.

I am very much interested when other people are talked about.
I loan things to people I can trust.
I stick to my work for some time even when I am tired.
I like a great deal of praise.
I like to be in many social activities of all kinds.

I always plan my work carefully before I begin.
I would rather let someone else be the leader.
I consider people's feelings when I criticise them.
I do things most of the time without thinking why I do them.
I make friends with every one.

I build air-castles almost constantly.
There are some people with whom I would rather not get acquainted.
I would like to lead at a social affair if I could.
I sometimes take charge of things at a social affair.
It takes a great deal to hurt my feelings.

Source: R. Gilliland and J. J. B. Morgan, "An Objective Measure of Introversion-Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 26, No. 3, October-December, 1931, p. 299.

GUILFORD'S 36-ITEM INVENTORY

INSTRUCTIONS

Below you will find 36 questions which are to be answered either "yes" or "no". Read each question in turn. Think what your behavior has usually been and underline either "yes" or "no", whichever answer describes your behavior better. If you cannot decide, then guess. Be sure to answer every question. There is no implication of right or wrong in any of these items.

1. Do you express yourself better in speech than in writing?
2. Are you inclined to limit your acquaintances to a select few?
3. Do you generally prefer to take the lead in group activities?
4. Do you prefer to read about a thing rather than experience it?
5. Do you like work which requires considerable attention to details?
6. Are you generally very particular about your personal property, i.e. do you take very good care of your things?
7. Are you inclined to be considerate of other people's feelings?
8. Are you inclined to act on the spur of the moment without thinking things over?
9. Have you ever kept a personal diary of your own accord?
10. Do you work much better when you are praised?
11. Do you like to change from one type of work to another frequently?
12. Are you inclined to study the motives of others?
13. Do you day-dream frequently?
14. Do you prefer to work with others rather than alone?
15. Are you inclined to worry over possible misfortunes?
16. Are you frequently somewhat absent-minded?
17. Do you like to persuade others to your point of view?

Source: Guilford, J. P. and Guilford, R. B., "An Analysis of the Factors in a Typical Test of Introversiion-Extroversiion", in The Journal of Abnormal and Social Psychology, Vol. 28, No. 4, January-March, 1934, p. 381-382.

18. Are you inclined to keep in the background on social occasions?
19. Are you more interested in athletics than in intellectual things?
20. Do you usually dislike to change opinions you have already formed?
21. Do you like to speak in public?
22. Do you prefer to work things out for yourself rather than accept suggestions from others?
23. Do you have frequent ups and downs in mood, either with or without apparent cause?
24. Are you inclined to be slow and deliberate in movement?
25. Are your feelings rather easily hurt?
26. Do you enjoy getting acquainted with most people?
27. Are you inclined to keep quiet when out in company?
28. Do you adapt yourself easily to new conditions, i.e. to new environments, situations, places, etc.
29. Do you like to confide in others?
30. Do you express such emotions as delight, sorrow, anger, etc., readily?
31. Are you inclined to think about yourself much of the time.
32. Do you like to have people watch you when you are working?
33. Do you frequently rewrite social letters before mailing them?
34. Do you like to sell things?
35. Do you get rattled easily in exciting situations?
36. Are you a male?

AN INVENTORY OF FACTORS S T D C R

Name..... Sex..... Date.....

Scores: S..... T..... D..... C..... R.....

INSTRUCTIONS: Below you will find some questions which are to be answered by encircling either "Yes," "?," or "No." Read each question in turn, think what your behavior has usually been, and draw a circle around the answer that describes your behavior best. Encircle the "?" only when you are unable to decide between the "Yes" and the "No." BE SURE TO ANSWER EVERY QUESTION. There is no implication of right or wrong in any of these questions.

1. Do you express yourself more easily in speech than in writing?.....Yes ? No 1
2. Are you inclined to limit your acquaintances to a select few?.....Yes ? No 2
3. Do you generally prefer to take the lead in group activities?.....Yes ? No 3
4. Are you ordinarily a carefree individual?.....Yes ? No 4
5. Do you like work that requires considerable attention to details?.....Yes ? No 5
6. Are you inclined to be moody?.....Yes ? No 6
7. Do you usually have difficulty in starting conversations with strangers?.....Yes ? No 7
8. Are you inclined to act on the spur of the moment without thinking things over?.....Yes ? No 8
9. Do you work much better when you are praised?.....Yes ? No 9
10. Do you like to change from one type of work to another frequently?.....Yes ? No 10
11. Are you self-conscious in the presence of your superiors?Yes ? No 11
12. Do you daydream frequently?.....Yes ? No 12
13. Do you subscribe to the philosophy of "Eat, drink, and be merry, for tomorrow we die?"Yes ? No 13
14. Are you inclined to worry over possible misfortunes?Yes ? No 14
15. Are you frequently somewhat absent-minded?.....Yes ? No 15
16. Are you relatively unconcerned about what others think of your actions?.....Yes ? No 16
17. Are you inclined to keep in the background on social occasions?.....Yes ? No 17
18. Are you more interested in athletics than in intellectual things?.....Yes ? No 18
19. Are you impatient when waiting for a member of your family or for friends?.....Yes ? No 19
20. Do you like to speak in public?.....Yes ? No 20
21. Are you inclined to live in the present, leaving the past and the future out of your thoughts?Yes ? No 21
22. Do you have frequent ups and downs in mood, either with or without apparent cause?..Yes ? No 22
23. Are you inclined to be slow and deliberate in movement?Yes ? No 23
24. Are your feelings rather easily hurt?.....Yes ? No 24
25. Do you enjoy getting acquainted with most people?Yes ? No 25
26. Are you inclined to keep quiet when out in a social group?.....Yes ? No 26
27. Do you adapt yourself easily to new conditions, that is, new places, situations, surroundings, etc?.....Yes ? No 27
28. Do you express such emotions as delight, sorrow, anger, and the like, readily?.....Yes ? No 28
29. Are you inclined to think about yourself much of the time?.....Yes ? No 29
30. Are you inclined to analyze the motives of others?.....Yes ? No 30
31. Do you usually keep in close touch with things going on around you?.....Yes ? No 31
32. Do you often have the "blues"?.....Yes ? No 32
33. Do you "get rattled" easily at critical moments?.....Yes ? No 33

34. Is it usually difficult for you to make decisions?.....	Yes	?	No	34
35. Do you ever feel that the world is distant and unreal to you?.....	Yes	?	No	35
36. Is it difficult to "lose yourself" even at a lively party?	Yes	?	No	36
37. Do you shrink from speaking in public?.....	Yes	?	No	37
38. Do you have difficulty in making new friends?.....	Yes	?	No	38
39. Would you rate yourself as an impulsive person?.....	Yes	?	No	39
40. Were you ever the "life of the party"?.....	Yes	?	No	40
41. Are you frequently in low spirit?.....	Yes	?	No	41
42. Does it bother you to have people watch you at your work?.....	Yes	?	No	42
43. Do you frequently find yourself in a meditative state?	Yes	?	No	43
44. Are your daydreams frequently about things that can never come true?.....	Yes	?	No	44
45. Are you inclined to be shy in the presence of the opposite sex?.....	Yes	?	No	45
46. Are you inclined to be overconscientious?.....	Yes	?	No	46
47. Do you often crave excitement?.....	Yes	?	No	47
48. Do your interests change very quickly?.....	Yes	?	No	48
49. Are you inclined to ponder over your past?.....	Yes	?	No	49
50. Do you ever feel "just miserable" for no good reason at all?.....	Yes	?	No	50
51. Are you often troubled about feelings of guilt?.....	Yes	?	No	51
52. Do you often experience periods of loneliness?.....	Yes	?	No	52
53. Are you much depressed when others criticize you?	Yes	?	No	53
54. Are you worried about being shy?.....	Yes	?	No	54
55. Would you rather spend an evening reading at home than to attend a large party?....	Yes	?	No	55
56. Do you worry over humiliating experiences longer than the average person?.....	Yes	?	No	56
57. Would you like a position in which you changed from one kind of task to another frequently during the day?.....	Yes	?	No	57
58. Do you often find that you have made up your mind too late?.....	Yes	?	No	58
59. Would you rate yourself as a tense or "high-strung" individual?.....	Yes	?	No	59
60. Does your mind often wander while you are trying to concentrate?.....	Yes	?	No	60
61. Do you nearly always have a "ready answer" for remarks directed to you?.....	Yes	?	No	61
62. Are you inclined to "jump at conclusions"?.....	Yes	?	No	62
63. Do you usually prefer to let some one else take the lead on social occasions?.....	Yes	?	No	63
64. Do you ever daydream?.....	Yes	?	No	64
65. Do you ever change from happiness to sadness, or vice versa, without good reason?....	Yes	?	No	65
66. Do you usually derive pleasure from being "in the limelight" on social occasions?.....	Yes	?	No	66
67. Is it difficult to hurt your feelings, even when the joke is on you?.....	Yes	?	No	67
68. Do you often try to find the underlying motives for the actions of other people?.....	Yes	?	No	68
69. Are you inclined to stop and think things over before acting?.....	Yes	?	No	69
70. Do you generally feel uncomfortable when you are the center of attention on a social occasion?.....	Yes	?	No	70
71. Do you consider yourself less emotional than the average person, that is, less easily upset?	Yes	?	No	71
72. After a critical moment is over, do you usually think of something you should have done but failed to do?.....	Yes	?	No	72
73. Would you rate yourself as a lively individual?.....	Yes	?	No	73
74. Are you philosophically inclined?.....	Yes	?	No	74
75. Do you often have a feeling of unworthiness?.....	Yes	?	No	75
76. Can you usually keep cheerful in spite of troubles?.....	Yes	?	No	76
77. Do you like to play pranks upon others?.....	Yes	?	No	77
78. Do you often feel that people are observing you on the street?.....	Yes	?	No	78
79. Do you feel lonesome even when with other people?	Yes	?	No	79
80. Are you troubled with feelings of inferiority?.....	Yes	?	No	80
81. Would you rather be a scientist than a politician?.....	Yes	?	No	81
82. Are you inclined to take life too seriously?.....	Yes	?	No	82

83. In social conversations, are you usually a listener rather than a talker?.....	Yes	?	No	83
84. Do you frequently feel that people around you are talking about you?.....	Yes	?	No	84
85. Do you like to have time to be alone with your thoughts?	Yes	?	No	85
86. Do you find it difficult to go to sleep at night because experiences of the day keep "running through your head"?	Yes	?	No	86
87. Are you inclined to take your work casually, that is, as a matter of course?.....	Yes	?	No	87
88. Are you inclined to avoid meeting certain people on the street (bill collectors and the like not included)?.....	Yes	?	No	88
89. Do you find it easy, as a rule, to make new acquaintances?	Yes	?	No	89
90. Are you inclined to be quick and sure in your actions?	Yes	?	No	90
91. Are you troubled about being self-conscious?.....	Yes	?	No	91
92. Do you often feel restless while listening to a lecture?	Yes	?	No	92
93. Do you believe that people often misunderstand what you say?.....	Yes	?	No	93
94. Do you limit your friendships mostly to members of your own sex?.....	Yes	?	No	94
95. Does your mind wander badly so you lose track of what you are doing?.....	Yes	?	No	95
96. Are you often in a state of excitement?.....	Yes	?	No	96
97. Do you dislike to talk about yourself, even to close friends?	Yes	?	No	97
98. Do you prefer to be conservative in the matter of dress and personal appearance?.....	Yes	?	No	98
99. Do you like to discuss the more serious questions of life with your friends?.....	Yes	?	No	99
100. Are you inclined to keep your opinions to yourself during group discussions (not class discussions)?.....	Yes	?	No	100
101. Do you enjoy thinking out complicated problems?.....	Yes	?	No	101
102. Are you inclined to be introspective, that is, to analyze yourself?.....	Yes	?	No	102
103. Are there times when you seek to be alone and you cannot bear the company of anyone?	Yes	?	No	103
104. Are you much concerned over the morals of others?	Yes	?	No	104
105. Do you frequently take time out just to meditate about things in general?.....	Yes	?	No	105
106. Are you usually unconcerned about the future?.....	Yes	?	No	106
107. Do you usually become so absorbed in watching an athletic contest that you com- pletely forget yourself?.....	Yes	?	No	107
108. Can you relax yourself easily when sitting down?.....	Yes	?	No	108
109. Are you usually a "good mixer"?.....	Yes	?	No	109
110. Do you usually prefer a "slapstick" comedy to a serious drama at the movies?.....	Yes	?	No	110
111. Do you frequently find it difficult to go to sleep at night, even though you are tired?.....	Yes	?	No	111
112. Would you rate yourself as a happy-go-lucky individual?	Yes	?	No	112
113. Do you ever take your work as if it were a matter of life or death?.....	Yes	?	No	113
114. Do you often "have the time of your life" at social affairs?.....	Yes	?	No	114
115. Do you think there is a great deal more happiness in the world than misery?.....	Yes	?	No	115
116. Are you frequently "lost in thought"?.....	Yes	?	No	116
117. Have you often lost sleep over your worries?.....	Yes	?	No	117
118. Do you like to mix socially with people?.....	Yes	?	No	118
119. Do you believe that the morals of modern youth are generally superior to those of former generations?.....	Yes	?	No	119
120. Are you inclined to think over your failures long after they are past?.....	Yes	?	No	120
121. Are there times when your mind seems to work very slowly and other times when it works very rapidly?.....	Yes	?	No	121
122. Are you inclined to avoid all people whenever possible?	Yes	?	No	122
123. Do you enjoy participating in a showing of "Rah Rah" enthusiasm?.....	Yes	?	No	123
124. Do you usually feel disappointments so keenly that you cannot get them out of your mind?	Yes	?	No	124
125. Do you derive more real satisfaction from social activities than from anything else?.....	Yes	?	No	125
126. When you stop to consider your future, does it usually seem very optimistic?.....	Yes	?	No	126
127. Are you sometimes so "blue" that life seems hardly worth living?.....	Yes	?	No	127

128. Do you usually take the initiative in making new friends?.....	Yes	?	No	128
129. Do you spend a great deal of time in thinking over past mistakes?.....	Yes	?	No	129
130. Would you be very unhappy if you were prevented from making numerous social contacts?	Yes	?	No	130
131. Do you often feel that there are very few things in life worth living for?.....	Yes	?	No	131
132. Do you often run over in your mind the events of the day before going to sleep at night?	Yes	?	No	132
133. Do you often feel that social affairs are a waste of time?.....	Yes	?	No	133
134. Do you frequently feel grouchy?.....	Yes	?	No	134
135. Are you annoyed when a boisterous person attracts attention to himself in public?.....	Yes	?	No	135
136. Are you frequently bored with people?.....	Yes	?	No	136
137. When failing to have your own way, do you often resort to resentful thinking?.....	Yes	?	No	137
138. Do you usually keep in fairly uniform spirits?.....	Yes	?	No	138
139. Do you usually prefer to take your recreations with companions rather than alone?.....	Yes	?	No	139
140. Are you usually in good spirits?.....	Yes	?	No	140
141. Have you ever been bothered by having a useless thought come into your mind repeatedly?	Yes	?	No	141
142. Are you usually well-poised in your social contacts?	Yes	?	No	142
143. Does it upset you much to lose in a competitive game?	Yes	?	No	143
144. Do you spend much time in thinking over good times you have had in the past?.....	Yes	?	No	144
145. Are you often hesitant about meeting important people?	Yes	?	No	145
146. Do you feel tired most of the time?.....	Yes	?	No	146
147. Do you ever have a queer feeling that you are not your old self?.....	Yes	?	No	147
148. Is it easy for you to act naturally at a party?.....	Yes	?	No	148
149. Do you get tired of people rather quickly?.....	Yes	?	No	149
150. Do you like to have many social engagements?.....	Yes	?	No	150
151. Do you ever have to fight against bashfulness?.....	Yes	?	No	151
152. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?	Yes	?	No	152
153. Do people find fault with you more than you deserve?	Yes	?	No	153
154. Do you often feel conspicuous in a group of people?	Yes	?	No	154
155. Are you sometimes bubbling over with energy and sometimes very sluggish?.....	Yes	?	No	155
156. Do you often speculate about why people behave as they do?.....	Yes	?	No	156
157. Do you find it almost impossible to take another person fully into your confidence?.....	Yes	?	No	157
158. Have you found books more interesting than people?	Yes	?	No	158
159. Have you often felt listless and tired for no good reason?.....	Yes	?	No	159
160. Do you prefer action to planning for action?.....	Yes	?	No	160
161. Do you often philosophize about the purpose of human existence?.....	Yes	?	No	161
162. Do you become angry very quickly and also recover very quickly?.....	Yes	?	No	162
163. Do you often think or dream of what you will be doing five years from now?.....	Yes	?	No	163
164. When you are bored do you feel like stirring up some excitement?.....	Yes	?	No	164
165. Do you usually feel well and strong?.....	Yes	?	No	165
166. Do you enjoy entertaining people?.....	Yes	?	No	166
167. Is your own mood very easily influenced by people around you, that is, by happy people or sad people?.....	Yes	?	No	167
168. Does it embarrass you a great deal to say or do the wrong thing in a social group?.....	Yes	?	No	168
169. Do you like to indulge in a reverie (daydreaming)?	Yes	?	No	169
170. Do you believe that "every cloud has a silver lining"?	Yes	?	No	170
171. Do you often feel ill at ease with other people?.....	Yes	?	No	171
172. Can you usually let yourself go and have a hilariously good time at a gay party?.....	Yes	?	No	172
173. Do you dislike to stop and analyze your own thoughts and feelings?.....	Yes	?	No	173
174. Are you inclined to avoid all complicated problems of any sort?.....	Yes	?	No	174
175. Do you think such questionnaires as this one are "silly"?	Yes	?	No	175

THE GUILFORD-MARTIN
INVENTORY OF FACTORS G A M I N
(Abridged Edition)

Mr.
Mrs.
Name Miss _____ Date _____
(Cross out two)

Nearest age (encircle): Raw Scores: G _ _ _ A _ _ _ M _ _ _ I _ _ _ N _ _ _
15 20 25 30 35 40 45 50 55 60

C-Scores: _ _ _ _ _

DIRECTIONS: Below you will find some questions which are to be answered by encircling either "Yes" "?, or "No." Read each question in turn, think what your opinion or your behavior has usually been, and draw a circle around the answer that best describes your behavior or opinion. Encircle the "?" only when you are unable to decide between the "Yes" and "No." BE SURE TO ANSWER EVERY QUESTION. There is no right answer to any of these questions except the answer that tells how you think or feel about it.

- | | | | | |
|---|-----|---|----|----|
| 1. Do you believe that you know your own characteristics about as well as most people know theirs?..... | Yes | ? | No | 1 |
| 2. Does your personality stand out as being quite different from that of other people?.... | Yes | ? | No | 2 |
| 3. When climbing stairs do you often take the steps two at a time?..... | Yes | ? | No | 3 |
| 4. Do you often feel the need for a rest during the day?..... | Yes | ? | No | 4 |
| 5. When you think you recognize someone you see in a public place, do you inquire of him whether you have met him before?..... | Yes | ? | No | 5 |
| 6. Do you have one or more abilities in which you believe you are superior to most other people? | Yes | ? | No | 6 |
| 7. Do you express such emotions as delight, sorrow, anger, and the like, readily?..... | Yes | ? | No | 7 |
| 8. Do you feel that people almost always treat you right?..... | Yes | ? | No | 8 |
| 9. Do you become very annoyed when you find a window stuck when you want to open it? | Yes | ? | No | 9 |
| 10. Do you find it difficult to get rid of a salesman to whom you do not care to listen or give your time?..... | Yes | ? | No | 10 |
| 11. Have you ever kept a personal diary of your own accord?..... | Yes | ? | No | 11 |
| 12. When going somewhere in an automobile, does it bother you considerably to get caught in slow-moving traffic?..... | Yes | ? | No | 12 |
| 13. Are you afraid of deep water?..... | Yes | ? | No | 13 |
| 14. Are you inclined to be quick in your actions?..... | Yes | ? | No | 14 |
| 15. Do you frequently feel thwarted because you cannot do as you want to?..... | Yes | ? | No | 15 |
| 16. Do you usually hesitate to take a seat in the front of a lecture room or church if to do so makes you appear conspicuous?..... | Yes | ? | No | 16 |
| 17. Do you cry rather easily?..... | Yes | ? | No | 17 |
| 18. Do you believe you have been bossed too much for your own good?..... | Yes | ? | No | 18 |
| 19. Are there ever times when you feel so jumpy you could throw things at people if you did not control yourself?..... | Yes | ? | No | 19 |
| 20. Do you always know what to do next?..... | Yes | ? | No | 20 |
| 21. At work or at play, do other people find it hard to keep up with the pace you set?..... | Yes | ? | No | 21 |
| 22. Do you often wish you were stronger so you could "smash" some one who is stronger than you? | Yes | ? | No | 22 |
| 23. Do you (or would you) ever haggle over a price with a tradesman or dealer?..... | Yes | ? | No | 23 |
| 24. Do you often find that you can think of smart things to say only after it is too late?.. | Yes | ? | No | 24 |
| 25. Do you find it easy to start a conversation with a stranger?..... | Yes | ? | No | 25 |
| 26. Do you often become irritated over little annoyances?..... | Yes | ? | No | 26 |
| 27. If an acquaintance of yours has been spreading untrue and uncomplimentary stories about you, do you usually "have it out" with the person?..... | Yes | ? | No | 27 |

28. Do you feel deeply sorry for a mistreated horse?.....	Yes	?	No	28
29. Do you always feel that you can accomplish the things you want to do?.....	Yes	?	No	29
30. Are you happiest when you get involved in some project that calls for rapid action?...	Yes	?	No	30
31. Do you sometimes crave something intensely without knowing what it is you want?...	Yes	?	No	31
32. Do you feel bored much of the time?.....	Yes	?	No	32
33. When a parent, teacher, or boss scolds you, do you ever feel like weeping?.....	Yes	?	No	33
34. Are you rather good at bluffing when you find yourself in difficulty?.....	Yes	?	No	34
35. Are you inclined to be slow and deliberate in movement?.....	Yes	?	No	35
36. Would you rate yourself as a tense individual?.....	Yes	?	No	36
37. When you are suddenly upset emotionally, does it take much time to recover your composure?	Yes	?	No	37
38. When a clerk in a store waits on others who should come after you, do you usually call his attention to the fact?.....	Yes	?	No	38
39. Does it annoy you to hear someone make fun of your clothes?.....	Yes	?	No	39
40. Have you often felt that you are a rather awkward person?.....	Yes	?	No	40
41. Do you wake up feeling tired in the morning?.....	Yes	?	No	41
42. Do you usually eat more rapidly than the average person, even though there is plenty of time?.....	Yes	?	No	42
43. Do you dislike to have people watching you while you are working?.....	Yes	?	No	43
44. In a group activity do you often find yourself compelled to play an unimportant part?.	Yes	?	No	44
45. When troubled or upset because things go wrong, are you inclined to suffer from indigestion, acid stomach, or other distress?.....	Yes	?	No	45
46. Do you like love scenes in a movie or play?.....	Yes	?	No	46
47. Do you feel that you are lacking in self-control?.....	Yes	?	No	47
48. Have you ever, on your own initiative, organized a club or group of any kind?.....	Yes	?	No	48
49. Are you ever afraid that you cannot live up to the standards your parents set for you?	Yes	?	No	49
50. Do you feel strongly against kissing a friend of your own sex and age?.....	Yes	?	No	50
51. Have you ever been afraid of contracting tuberculosis or some other serious disease?..	Yes	?	No	51
52. Does it sometimes seem to you that in life's competitions you are usually left behind?	Yes	?	No	52
53. Have you ever been hesitant about making application for a job in person?.....	Yes	?	No	53
54. Do you prefer the study of mathematics and science to that of literature and music?..	Yes	?	No	54
55. Do you get angry very easily?.....	Yes	?	No	55
56. Do you feel confident that you can cope with almost any situation that you will meet in the future?.....	Yes	?	No	56
57. Does it bother you considerably to have your teacher or your boss call upon you unexpectedly in a group?.....	Yes	?	No	57
58. Can you go into a dark cellar or basement alone without even the slightest trembly feeling?	Yes	?	No	58
59. When you are walking with others, do they often have difficulty in keeping up with you?	Yes	?	No	59
60. Does it make you uncomfortable to be "different"?.....	Yes	?	No	60
61. Is your health generally better than that of most people?.....	Yes	?	No	61
62. Do you often become tense or excited either at a movie or when listening to the radio?	Yes	?	No	62
63. Would you rather work for a good boss than for yourself?.....	Yes	?	No	63
64. Would you rather be a florist than a miner?.....	Yes	?	No	64
65. Do you sometimes wish you were in another office (or school or factory) where your companions were more congenial?.....	Yes	?	No	65
66. Do you feel tired out most of the time?.....	Yes	?	No	66
67. Do you (or would you) like to take on new and important responsibilities such as organizing a new business enterprise?.....	Yes	?	No	67
68. Are you very good at making money as compared with others of your own age and sex?	Yes	?	No	68
69. Are you afraid of snakes?.....	Yes	?	No	69
70. Are you particularly uneasy when waiting for a slow person to finish either saying or doing what he started?.....	Yes	?	No	70
71. Are you oversensitive to criticism of yourself?.....	Yes	?	No	71
72. Do you feel sorry for a fish that is caught on a hook?.....	Yes	?	No	72
73. Are you the kind of person who is "on the go" all the time he is awake?.....	Yes	?	No	73
74. Are you easily startled by unexpected stimuli?.....	Yes	?	No	74
75. Do you find it difficult to say "No" to a salesman who tries to sell you something you do not really want?.....	Yes	?	No	75

76. Do you frequently feel self-conscious in the presence of important people?.....	Yes	?	No	76
77. Would you rather be an artist than a political organizer?.....	Yes	?	No	77
78. Do you usually work faster than the average person of your sex and age?.....	Yes	?	No	78
79. Were you happier when you were younger than you are now?.....	Yes	?	No	79
80. Do your interests tend to change quickly?.....	Yes	?	No	80
81. When you are attracted to a person of the opposite sex whom you have not met, do you usually make an active attempt to get acquainted even though the circumstances may make this quite difficult?.....	Yes	?	No	81
82. Does the sight of large bugs and spiders ever give you a "creepy" feeling?.....	Yes	?	No	82
83. Do you suffer keenly from feelings of inferiority?.....	Yes	?	No	83
84. Can you relax easily when sitting or lying down?.....	Yes	?	No	84
85. Do you find it difficult to solicit funds even in a cause in which you are interested?....	Yes	?	No	85
86. Do you become nervous and tense when competing in a contest, such as tennis, golf, or debating?	Yes	?	No	86
87. Do younger people have an easier and more enjoyable life than you do?.....	Yes	?	No	87
88. When you become emotional do you sometimes come to the point of tears?.....	Yes	?	No	88
89. Do you usually start to work on a new project with a great deal of enthusiasm?.....	Yes	?	No	89
90. Does it seem to you that your never do things in a way that wins the attention and approval of others?	Yes	?	No	90
91. Do you usually speak out in meeting to oppose someone who you feel sure is wrong?..	Yes	?	No	91
92. Do you often find it difficult to sleep at night?.....	Yes	?	No	92
93. Do you ever fear that you are getting lost?.....	Yes	?	No	93
94. Are you inclined to keep quiet when out in a social group?.....	Yes	?	No	94
95. Would you rather be a building contractor than a nurse?.....	Yes	?	No	95
96. Do you sometimes want to move to a new town or community because you do not find congenial people where you are?.....	Yes	?	No	96
97. Do loud noises tend to upset you?.....	Yes	?	No	97
98. Are you disgusted at the sound of foul language?.....	Yes	?	No	98
99. Can you turn out a large amount of work in a short time?.....	Yes	?	No	99
100. When promotions in rank, salary, or position are being made, does it seem that you are given less attention than others?.....	Yes	?	No	100
101. Do you usually shrink from meeting a crisis or emergency?.....	Yes	?	No	101
102. Do odors of perspiration disgust you?.....	Yes	?	No	102
103. Do you find it difficult to go on with your work if you do not receive enough encouragement?	Yes	?	No	103
104. While not otherwise occupied, are your hands almost always busy in such acts as drumming on the table, twisting a chain or rubber band, etc.?.....	Yes	?	No	104
105. Do you often find yourself hurrying to get places even when there is plenty of time?..	Yes	?	No	105
106. Do you let others "run over you" more than you should for your own good?.....	Yes	?	No	106
107. Would you rather be a private secretary than an explorer of new geographic territory?	Yes	?	No	107
108. Do you ever wish you could have been born at a different time or place or in a different family than you were?.....	Yes	?	No	108
109. Can you usually sit still without fidgeting?.....	Yes	?	No	109
110. Would you rate yourself as a talkative individual?.....	Yes	?	No	110
111. Have there been many people with whom you have come in contact who did not care to associate with you?.....	Yes	?	No	111
112. Are you disgusted at the sight of ragged or soiled fingernails?.....	Yes	?	No	112
113. Do you usually feel restless when listening to a lecture?.....	Yes	?	No	113
114. In being thrown by chance with a stranger, do you usually take the initiative in introducing yourself?	Yes	?	No	114
115. Do you ever wish that you were taller or shorter than you are?.....	Yes	?	No	115
116. Are you frequently in a state of inner excitement or turmoil?.....	Yes	?	No	116
117. Can you (or could you) walk past a graveyard alone at night without feeling uneasy?	Yes	?	No	117
118. If you hold an opinion that is radically different from that expressed by a lecturer, do you usually tell him about it either during or after the lecture?.....	Yes	?	No	118
119. Are you frequently absent-minded?.....	Yes	?	No	119
120. Do you feel deeply sorry for a bird with a broken wing?.....	Yes	?	No	120
121. Do screeching sounds (like a fingernail scratching on the blackboard) send terrific "chills" up and down your back?.....	Yes	?	No	121
122. Can you always think of a good excuse when the situation demands it?.....	Yes	?	No	122
123. Are you usually confident of your abilities?.....	Yes	?	No	123
124. Would you rate yourself as an impulsive individual?.....	Yes	?	No	124
125. Do you feel compelled to change your bodily posture frequently while sitting?.....	Yes	?	No	125
126. Do you feel that the average person has made a better adjustment to life than you have?	Yes	?	No	126
127. Do you have nervous habits such as chewing your pencil or biting your fingernails?..	Yes	?	No	127

128. Do you ever take the initiative to enliven a dull party?.....	Yes	?	No	128
129. When you were a child were you usually made the "goat" by your playmates (such as being forced to be on the unpopular side while playing games)?.....	Yes	?	No	129
130. Do you like to speak in public?.....	Yes	?	No	130
131. Do you feel physically inferior to your associates?.....	Yes	?	No	131
132. Would you rather be a dress designer than a forest ranger?.....	Yes	?	No	132
133. Are you able to come back to a state of calm readily after an exciting situation is past?	Yes	?	No	133
134. Do you like to bear responsibilities alone?.....	Yes	?	No	134
135. Do you (or would you) like to go hunting with a rifle for wild game?.....	Yes	?	No	135
136. When present, with others, at the scene of an accident, do you usually take an active part in helping out if needed?.....	Yes	?	No	136
137. When you become angry, do you get over it rather quickly when the cause for anger is past?	Yes	?	No	137
138. Do you tend to prefer quiet rather than exciting amusements?.....	Yes	?	No	138
139. Do you often wish your appearance were different than it is?.....	Yes	?	No	139
140. When you find that a piece of merchandise you have bought is defective, do you find it easy to demand an exchange or refund?.....	Yes	?	No	140
141. Can you stick to a tiresome task for a long time without being prodded or encouraged?.....	Yes	?	No	141
142. Does it make you jittery to handle a loaded gun?.....	Yes	?	No	142
143. Are you frequently afraid that other people will not like you?.....	Yes	?	No	143
144. Have you ever been regarded as a daredevil?.....	Yes	?	No	144
145. Do you consider yourself a nervous person?.....	Yes	?	No	145
146. When in a restaurant you are served stale or inferior food, do you usually make a vigorous protest about it?.....	Yes	?	No	146
147. Does your mind often wander so badly that you lose track of what you are doing?....	Yes	?	No	147
148. Does it annoy you to see a person biting his fingernails?.....	Yes	?	No	148
149. Are you easily discouraged when things become difficult?.....	Yes	?	No	149
150. Does a difficult decision or emotional crisis ever leave you so exhausted that you cannot go on with your regular activities?.....	Yes	?	No	150
151. Are you inclined to rush from one activity to another without pausing for rest?.....	Yes	?	No	151
152. Do you always stand up for your rights when they are endangered?.....	Yes	?	No	152
153. Do your friends seem to have a better time than you do?.....	Yes	?	No	153
154. Does the sight of pus disgust you?.....	Yes	?	No	154
155. Do you sometimes wish that you were more attractive than you are?.....	Yes	?	No	155
156. Do you ever experience a feeling of vague uneasiness without knowing the reasons?..	Yes	?	No	156
157. Do you have any nervous habits like twitching your face, neck, or shoulders?.....	Yes	?	No	157
158. Are you disgusted at the sight of an unshaven man?.....	Yes	?	No	158
159. Are you able to play your best in a game or contest against an opponent who is much superior to you?.....	Yes	?	No	159
160. Do long-continued noises "get on your nerves"?.....	Yes	?	No	160
161. Do you generally prefer to take the lead in group activities?.....	Yes	?	No	161
162. Do you often wish that you were physically stronger than you are?.....	Yes	?	No	162
163. Are you fearful of burglars?.....	Yes	?	No	163
164. Do you think you use up more energy than the average person in getting things done?.....	Yes	?	No	164
165. Do you like to sell things (that is, to act as a salesman)?.....	Yes	?	No	165
166. Do you have one or more hobbies or skills at which you are outstanding?.....	Yes	?	No	166
167. Are you often so much "on the go" that sooner or later you wear yourself out?.....	Yes	?	No	167
168. Does it annoy you to see a person clean his fingernails in public?.....	Yes	?	No	168
169. Are there times when you feel as if your nerves were raw or "on edge"?.....	Yes	?	No	169
170. Do people usually give you credit for having good judgment?.....	Yes	?	No	170
171. Do you often feel bubbling over with excess energy?.....	Yes	?	No	171
172. Are you easily disturbed by distracting stimuli when doing mental work?.....	Yes	?	No	172
173. Do you often feel reluctant to meet the most important person at a party or reception?.....	Yes	?	No	173
174. Do other people regard you as a lively individual?.....	Yes	?	No	174
175. Do you have a strong dread of fire?.....	Yes	?	No	175
176. Do you often feel that few obstacles can stand in the way of your reaching your final goals?	Yes	?	No	176
177. As a child, did you often naturally fall into positions of leadership?.....	Yes	?	No	177
178. Do you ever have the feeling that there is nothing to live for?.....	Yes	?	No	178
179. Do you often find that you cannot make up your mind until the time for action is past?	Yes	?	No	179
180. Do you prefer going to a dance rather than to a prize-fight?.....	Yes	?	No	180
181. Do you seek to avoid all troublesome situations?.....	Yes	?	No	181
182. Do you often show yourself up to your own disadvantage?.....	Yes	?	No	182
183. Do you become upset rather easily?.....	Yes	?	No	183
184. Are you willing to take a chance alone in a situation where the outcome is doubtful?..	Yes	?	No	184
185. Do you have any hesitation about calling down a person who does not play fair?.....	Yes	?	No	185
186. Do you resent being "kidded" about your peculiarities?.....	Yes	?	No	186

BE SURE YOU HAVE ANSWERED EVERY QUESTION

THE GUILFORD-MARTIN PERSONNEL INVENTORY

Name..... Date.....

Sex..... Nearest age (encircle): 15 20 25 30 35 40 45 50 55 60

Raw Scores: O..... Ag..... Co.....

C-Scores:

DIRECTIONS: Below you will find some questions which are to be answered by encircling either "Yes," "?," or "No." Read each question in turn, think what your opinion or your behavior has usually been, and draw a circle around the answer that best describes your behavior or opinion. Encircle the "?" only when you are unable to decide between the "Yes" and "No." **BE SURE TO ANSWER EVERY QUESTION.** There is no right answer to any of these questions except the answer that tells how you think or feel about it.

-
1. Do you believe that each person is better fitted to succeed in one kind of job than he is in most other jobs?.....Yes ? No 1
 2. Do you believe it is more important for a person to like his work than it is for him to make a lot of money at it?.....Yes ? No 2
 3. Is a person likely to rise to the top in his kind of work if he is not suited to it?.....Yes ? No 3
 4. Do you believe that almost any kind of person can succeed in almost any kind of job if he tries hard enough?.....Yes ? No 4
 5. Are most people you know well suited to the jobs they hold?.....Yes ? No 5
 6. Do you prefer a supervisor who tells you clearly what to do rather than one who expects you to decide what to do next?.....Yes ? No 6
 7. Does it seem to you that human beings hardly ever learn to avoid making the same mistakes twice?.....Yes ? No 7
 8. Do you feel that there are too many useless laws which hamper an individual's personal freedom?.....Yes ? No 8
 9. Do you lack patience with the "shrinking violet" type of man?.....Yes ? No 9
 10. Are you inclined to be thinking about yourself much of the time?.....Yes ? No 10
 11. Do you think that most people who help others secretly dislike going to the trouble to do so?.....Yes ? No 11
 12. Do you feel disgusted when someone escapes paying the full penalty of the law through some technicality?.....Yes ? No 12
 13. Do you frequently seek the advice of other people?.....Yes ? No 13
 14. When you are criticized does it disturb you badly?.....Yes ? No 14
 15. Do you despise a "yes" man?.....Yes ? No 15
 16. Do you find that very few workmen nowadays do a job as it should be done?.....Yes ? No 16
 17. Does it bother you a lot to see someone else bungling a job that you know perfectly well how to manage?.....Yes ? No 17
 18. Have you found that, in general, people higher up tend to dodge the dirty work, leaving it for others to do?.....Yes ? No 18
 19. Are you annoyed when people tell you how you should do a thing?.....Yes ? No 19
 20. Do you get upset rather easily?.....Yes ? No 20
 21. Are you ever bothered by the idea that someone is reading your thoughts?.....Yes ? No 21
 22. Do you have days in which it seems that everything goes wrong?.....Yes ? No 22
 23. Generally speaking, do you think the head of a firm should have risen through the ranks, that is, having worked his way up in the business?.....Yes ? No 23
 24. Are you inclined to worry too long over humiliating experiences?.....Yes ? No 24

25. Do you think that the kind of person who would "turn the other cheek" deserves to get slapped?.....Yes ? No 25
26. Have you ever had fears about other people that you later found to be without foundation?.....Yes ? No 26
27. Do you think that large business corporations should be prohibited?.....Yes ? No 27
28. Do other people often try to take the credit for things you yourself have accomplished?..Yes ? No 28
29. At a movie or a play do you often feel that one of the main characters is a bit like you?..Yes ? No 29
30. When a person has gone out of his way to be nice to you, do you try to see what his real reasons are?.....Yes ? No 30
31. Do you usually feel that in group undertakings your own plans are best?.....Yes ? No 31
32. Do you think that in most places the traffic regulations are seriously in need of improvement?.....Yes ? No 32
33. Is money necessary for complete happiness?.....Yes ? No 33
34. Do you think that all secret societies should be done away with?.....Yes ? No 34
35. Do many men deserve higher pay than their bosses?.....Yes ? No 35
36. Have you ever been severely punished for something you didn't do?.....Yes ? No 36
37. Does your conversation tend to center around your own interests and hobbies rather than those of other people?.....Yes ? No 37
38. Do you sometimes feel sorry for a person who is convicted of a crime even though you realize he is guilty?.....Yes ? No 38
39. Are you often getting into scrapes which you did not seek to stir up?.....Yes ? No 39
40. Have certain people talked about you and yet you were unable to prove it?.....Yes ? No 40
41. Do you sometimes think that most people are stupid?.....Yes ? No 41
42. Do you frequently unburden your troubles to others?.....Yes ? No 42
43. Do you know of any people at present who are intentionally trying to avoid you?....Yes ? No 43
44. Do some people become so rude that you feel the urge to "sit on them" or to "tell them off"?.....Yes ? No 44
45. Do you think that most people live far beyond their income?.....Yes ? No 45
46. Do you believe in the parole system for prisoners?.....Yes ? No 46
47. Do people sometimes offend you without knowing it because you hide your feelings from them?.....Yes ? No 47
48. Have you ever felt that someone was hypnotizing you and forcing you to do things you did not want to do?.....Yes ? No 48
49. Are you inclined to let other people have their own way even when it disturbs your peace and comfort?.....Yes ? No 49
50. Do other people deliberately say or do things to annoy you?.....Yes ? No 50
51. When you enter a new group (business or social) do you like to be tipped off as to who are the important people to line up with?.....Yes ? No 51
52. Do you enjoy taking part in a good fight?.....Yes ? No 52
53. Do you believe that only people with money can be sure of getting a square deal in courts of law?.....Yes ? No 53
54. Do you believe that most people will tell a lie now and then in order to get ahead?....Yes ? No 54
55. Are there some things about yourself concerning which you are rather touchy?.....Yes ? No 55
56. Do other people often watch you on the sly?.....Yes ? No 56
57. On the whole, are your own ideas of how things should be done superior to the plans suggested by others?.....Yes ? No 57
58. Do you think that an unusually bright person is likely to be physically weak?.....Yes ? No 58
59. Do you often feel very badly about other people's troubles?.....Yes ? No 59
60. Were you ever ignored or given a "raw deal" through spite?.....Yes ? No 60
61. Do most groups of people behave like a bunch of sheep, that is, blindly follow a leader?..Yes ? No 61
62. Do you suspect that most people who do you a good turn are really expecting something in return for it?.....Yes ? No 62
63. Do you often feel that a lecturer is talking about you personally?.....Yes ? No 63
64. If a person is not playing fair, do you like to see someone beat him at his own game?..Yes ? No 64
65. Do you believe that most people shirk their duties whenever they can without appearing to do so?.....Yes ? No 65
66. Do you hate to lose an argument even when the issue is of little importance?.....Yes ? No 66
67. Does it seem to you that other people generally "have all the luck"?.....Yes ? No 67
68. Does it distress you considerably to see another person in pain?.....Yes ? No 68

69. Do you feel that many young people get ahead today because they have "pull"?... Yes ? No 69
70. Are most people thoughtless of the rights of others?..... Yes ? No 70
71. Are you continually comparing yourself with other people?..... Yes ? No 71
72. Do a lot of people you have known tend to form "cliques" or closed groups?..... Yes ? No 72
73. Generally speaking, do you believe that the boy who has not learned to defend himself deserves to "take a beating"?..... Yes ? No 73
74. Do you find that generally if you want a thing done right you must do it yourself?.. Yes ? No 74
75. Can a person get ahead by his own efforts if he does not look out for himself at every turn?..... Yes ? No 75
76. Do you consider yourself a rather nervous person?..... Yes ? No 76
77. Do you think your generation has as many opportunities for success as your parents' generation had?..... Yes ? No 77
78. Do other people pay more attention to your comings and goings than they should?... Yes ? No 78
79. When things become dull do you feel the urge to stir up some excitement?..... Yes ? No 79
80. Do you think the educational system in this country is seriously wrong in many respects?..... Yes ? No 80
81. Do you usually receive criticism of yourself without resenting it?..... Yes ? No 81
82. Have you ever found out that a person who was supposed to be an expert did not know as much as you did about something?..... Yes ? No 82
83. Is there anyone you know personally whom you would like to see behind prison bars?.. Yes ? No 83
84. Are there important changes you would make immediately in your manner of living if you could have a substantial increase in income?..... Yes ? No 84
85. Do you think that most people are overpaid for what they really contribute to society?.. Yes ? No 85
86. In most situations is it all right to conceal the truth when by doing so you give aid to a friend?..... Yes ? No 86
87. Have you very much resented having friends or members of your family give you orders?..... Yes ? No 87
88. Are you as quick as other people to pay compliments when they are deserved?..... Yes ? No 88
89. Do people frequently talk about you behind your back?..... Yes ? No 89
90. Is it almost unbearable for you to see a close friend or relative suffering intense pain?.. Yes ? No 90
91. Is it true that people will generally have contempt for a person who does not assert himself once in a while?..... Yes ? No 91
92. Have you known many "two-faced" individuals personally?..... Yes ? No 92
93. Can most people be trusted completely?..... Yes ? No 93
94. Do you derive considerable satisfaction from making other people do as you want them to?..... Yes ? No 94
95. Do you believe that all public office holders sooner or later look out for their own interests first?..... Yes ? No 95
96. Should the government take over more and more the management of private business?..... Yes ? No 96
97. Are your feelings rather easily hurt?..... Yes ? No 97
98. Generally speaking, do you believe that people use a veneer of politeness to cover up what is usually "cutthroat" competition?..... Yes ? No 98
99. Do you usually get more than your share of the blame when things go wrong?..... Yes ? No 99
100. Are there many kinds of work that you would not consider doing because they are beneath you?..... Yes ? No 100
101. Do you think that a lot of people exaggerate their hard luck in order to gain sympathy from others?..... Yes ? No 101
102. Do people ever accuse you of being selfish, and with some reason?..... Yes ? No 102
103. Have you often felt that certain persons are secretly trying to get the better of you?.. Yes ? No 103
104. Would you prefer a hard job that is very interesting to an easy one that is uninteresting?..... Yes ? No 104
105. Have you frequently wished for enough money or power to impress people who regard you as an inferior?..... Yes ? No 105
106. Have you frequently become involved in conflicts in defense of your friends or members of your family?..... Yes ? No 106
107. Is it difficult for you not to bear a grudge against someone who has injured you?... Yes ? No 107
108. If you could have your way about it would you change a lot of things about human nature?..... Yes ? No 108

109.	Are many of your supposed friends really insincere?.....	Yes	?	No	109
110.	Do many people think you are "hard-boiled"?.....	Yes	?	No	110
111.	Does everything that happens seem to have a relationship to your own life or experience?.....	Yes	?	No	111
112.	Do some people become so bossy or domineering that you want to do the opposite of everything they tell you to do?.....	Yes	?	No	112
113.	Do other people often deliberately make things hard for you?.....	Yes	?	No	113
114.	Are there times when it seems that everyone is against you?.....	Yes	?	No	114
115.	When criminals make a daring escape from prison do you sometimes secretly hope that they will avoid capture?.....	Yes	?	No	115
116.	Do you sometimes feel contempt for the opinions of others?.....	Yes	?	No	116
117.	Does it bother you to have other people tell you what you should do?.....	Yes	?	No	117
118.	Do you often feel that you are left out of things, perhaps unintentionally, in group activities?.....	Yes	?	No	118
119.	Is it difficult for anyone to impose upon you for the reason that you are usually wise to their intentions?.....	Yes	?	No	119
120.	Does the United States Government owe every one of its citizens a decent living?..	Yes	?	No	120
121.	Is the person who carelessly leaves valuable property lying around as much to blame as the person who appropriates it for his own use?.....	Yes	?	No	121
122.	Have some people criticized you unjustly to others?.....	Yes	?	No	122
123.	Will most people in business bear close watching when you are dealing with them?..	Yes	?	No	123
124.	Are you deserving of things far better than is your present lot?.....	Yes	?	No	124
125.	Do you think no one would keep to the "straight and narrow path" were it not for the fear of being caught?.....	Yes	?	No	125
126.	When you lose something do you often begin to suspect someone of either having taken it or having misplaced it?.....	Yes	?	No	126
127.	Do you think that most people who allow themselves to come under the rule of a dictator are to blame for their plight?.....	Yes	?	No	127
128.	Is there any subject on which you would like to hold a public indignation meeting for the purpose of organizing a mass protest?.....	Yes	?	No	128
129.	Were you ever seriously double-crossed?.....	Yes	?	No	129
130.	Do you believe the parole system works more to the advantage of the prisoner than to the advantage of society?.....	Yes	?	No	130
131.	Do you tend to let people run over you more than you should for your own good?..	Yes	?	No	131
132.	Have you frequently felt like telling "nosey" people to mind their own business?..	Yes	?	No	132
133.	Have you often found it necessary to stand up for what you believe to be right?....	Yes	?	No	133
134.	Do you usually seek to become an officer in any organization to which you belong?..	Yes	?	No	134
135.	Were you ever so deeply in debt that you did not know where the money was coming from to pay what you owed?.....	Yes	?	No	135
136.	In group undertakings do you usually manage to have your own plans put into effect?..	Yes	?	No	136
137.	Do other people often blame you for things unfairly?.....	Yes	?	No	137
138.	In most cases is it important to get what you want even if you have to come into conflict with other people in order to get it?.....	Yes	?	No	138
139.	Have other people been too ready to accept credit which rightfully belongs to you?..	Yes	?	No	139
140.	Do you sometimes feel sorry for all the people in the world?.....	Yes	?	No	140
141.	Have you had more than your share of hard luck?.....	Yes	?	No	141
142.	Do other people often try to put things over on you when you are not watching?..	Yes	?	No	142
143.	Is there any person whom you would particularly like to "put in his (or her) place"?..	Yes	?	No	143
144.	Do you believe that most people require someone to tell them what to do?.....	Yes	?	No	144
145.	Is there any piece of music that usually makes you weep when you hear it?.....	Yes	?	No	145
146.	Are people in general out to get more than they give?.....	Yes	?	No	146
147.	Do you often find it necessary to return merchandise to a store because it turns out to be not as represented?.....	Yes	?	No	147
148.	Do people near you sometimes whisper or look knowingly at one another when they think you are not noticing them?.....	Yes	?	No	148
149.	If someone rudely crowds ahead of you in line, do you tell him where he belongs?..	Yes	?	No	149
150.	Have you marked an answer ("Yes," "?," or "No") for every one of the above questions?.....	Yes	?	No	150

THE GUILFORD-MARTIN TEMPERAMENT PROFILE CHART

How to Use the Chart

For each trait indicated by the letter at the top of the column, find the class interval below in which the raw score for that particular trait falls and encircle in colored pencil or in ink the pair of scores representing that class interval. When all the traits are designated on the profile in this way, a line should be drawn connecting the circles for each neighboring pair of circles.

The C-scores (scaled scores) are indicated at the extrema left and right of the chart in an 11-point scale, 0 representing the lowest 1% of the 500 cases used in deriving these norms, 1 the next 3%, 2 the next 7%, 3 the next 12%, 4 the next 17%, 5 (middle C-score) 20% of the cases, 6 the next 17%, 7 the next 12%, 8 the next 7%, 9 the next 3%, and 10 the highest 1% of the cases. Because the distribution of scores for trait M is bimodal, C-score 4 on the chart for trait M represents 20% of the cases. C-score 5, 14%, and C-score 6, 20%.

Interpretation of the Scores on the 13 Temperament Traits

From Guilford's Inventory of Factors S T D C R

- S** — Social Introversion-Extraversion —A high C-score indicates sociability, a tendency to seek social contacts and to enjoy the company of others. A low C-score indicates shyness, a tendency to withdraw from social situations and to be seclusive. A high C-score is more desirable for mental health than is a low C-score. A very low C-score on S indicates a need for guidance directed toward increased social participation.
- T** — Thinking Introversion-Extraversion —A high C-score indicates a lack of introspectiveness and an extroverted orientation of the thinking processes. A low C-score indicates an inclination to meditative thinking, philosophizing, analyzing one's self and others and an introspective disposition. The middle range of C-score is more desirable for mental health than either extreme on trait T. Each extreme, however, may have its value for certain types of occupation.
- D** — Depression.—A high C-score indicates freedom from depression, a cheerful, optimistic disposition. A low C-score indicates a chronically depressed mood including feelings of unworthiness and guilt. The higher the C-score on trait D, the better is likely to be the emotional adjustment of the individual.
- C** — Cycloid Disposition —A high C-score indicates stable emotional reactions and moods, and freedom from cycloid tendencies. A low C-score means the presence of cycloid tendencies as shown in strong emotional reactions, fluctuations in mood, and a disposition toward flightiness and instability. The higher the C-score on trait C, the better will be the emotional adjustment of the individual, except that scores that are too high may indicate a colorless, inert individual.
- R** — Rhythymia —A high C-score indicates a happy-go-lucky or carefree disposition, liveliness, and impulsiveness. A low C-score indicates an inhibited disposition and an overcontrol of the impulses. Both extremes of C-scores may represent psychological maladjustments and a C-score in the middle range is desirable for mental health.

From the Guilford-Martin Inventory of Factors G A M I N

- G** — General Activity —A high C-score indicates a tendency to engage in vigorous overt action. A low C-score indicates a tendency to inertness and a disinclination for motor activity. An extremely high C-score on trait G may represent a manic tendency while an extremely low C-score may be an indication of a hypothyroid condition or other causes of inactivity. Thus for good mental health a C-score on G in the middle range is usually most desirable.
- A** — Ascendance Submission —A high C-score indicates social leadership and a low C-score social passiveness. The C-score of a person on trait A must be interpreted in the light of his other characteristics of temperament as shown on the profile chart, and no general rule can be set forth as to what C-scores on trait A are most desirable for mental health. However, there is emphasis in our culture on the general desirability of a high C-score on trait A. Females tend to have distinctly lower C-scores on A than do males.
- M** — Masculinity-Femininity —A high C-score on this trait indicates masculinity of emotional and temperamental make-up and a low C-score indicates femininity. The C-scores of the majority of males are above 5 and the majority of females have C-scores below 5. Males whose C-scores are very low are sometimes found either to lack their full quota of male hormones or to have an oversupply of female hormones.
- I** — Inferiority Feelings —A high C-score indicates self-confidence and a lack of inferiority feelings. A low C-score indicates a lack of confidence, under-evaluation of one's self, and feelings of inadequacy and inferiority. The higher the C-score on trait I, the better for mental health, with the exception of extremely high cases in which clinical investigation may reveal a superiority compensation for hidden inferiority feelings. Many psychoneurotics have very low C-scores on trait I.
- N** — Nervousness —A high C-score indicates a tendency to be calm, unruffled, and relaxed, a low C-score indicates jumpiness, jitteriness, and a tendency to be easily distracted, irritated, and annoyed. The higher the C-score on trait N, the better for mental health unless there are clinical indications that an overly sluggish and torpid condition is the basis for an extremely high C-score. Extremely low C-scores in some cases may involve a lack of calcium in the blood. In many cases, a mental conflict may be the basis for the emotional tension expressed in jitteriness and irritability.

From the Guilford-Martin Personnel Inventory I

- O** — Objectivity —A high C-score on this trait indicates a tendency to view one's self and surroundings objectively and dispassionately. A low C-score indicates a tendency to take everything personally and subjectively and to be hypersensitive. The higher the C-score on trait O, the better for mental health. Pathological cases may develop paranoid ideas of reference and delusions of persecution.
- Co** — Cooperativeness —A high C-score indicates a willingness to accept things and people as they are and a generally tolerant attitude. A low C-score indicates an overcriticalness of people and things and an intolerant attitude. The higher the C-score on trait Co, the better for mental health unless the C-score on G or clinical signs indicate a torpid and sluggish condition to be the basis of the lack of criticalness. Overcriticalness is often a compensation for hidden feelings of inadequacy. Pathological cases may exhibit a paranoid projection of their conflicts and impulses.
- Ag** — Agreeableness —A high C-score indicates an agreeable lack of quarrelsomeness and a lack of domineering qualities. A low C-score indicates a belligerent domineering attitude and an overreadiness to fight over trifles. Very low scores on trait Ag indicate an extreme craving for superiority as an end in itself developed as a compensation for some chronic frustration and in pathological cases may lead to paranoid delusions of grandeur. It is possible that a sadistic component may occur in some of the pathological cases. Further investigation should be made of the psychological structure of extremely low C-scores on traits O, Co, and Ag as the paranoid area of temperament which they cover is predisposing toward troublemaking behavior in industry, marriage, and other social situations.

Date _____
Sex _____
Nearest Age _____

THE NEYMANN-KOHLSTEDT DIAGNOSTIC TEST
FOR INTROVERSION-EXTROVERSION.

Name.....Occupation.....Age.....

This test is composed of fifty statements, each being followed by the words "Yes" and "No". There is no implication of right or wrong in any of the statements, and you are asked to consider them from the viewpoint of personal like or dislike. Read the first statement and if you like the idea it expresses draw a line under "Yes". If you dislike it, draw a line under "No". Proceed in the same way with the rest of the statements.

	<u>Yes</u>	<u>No</u>
1. Be by yourself a great deal.	—	—
2. Think of life in terms of pleasure.	—	—
3. Always be calm and collected	—	—
4. Have a great deal of confidence in others	—	—
5. Think or dream of what you will do five years from now.	—	—
6. Stay at home during a social affair.	—	—
7. Work with many people around you.	—	—
8. Do the same kind of work all the time	—	—
9. Enjoy social gatherings just to be with people	—	—
10. Think a great deal before deciding anything.	—	—
11. Accept suggestions rather than working them out for yourself.	—	—
12. Quiet rather than exciting amusements.	—	—
13. Dislike having people watch you	—	—
14. Quit a tiresome task.	—	—
15. Save money rather than spend it.	—	—
16. Seldom (infrequently) analyze your thoughts and motives.	—	—
17. Indulge in reverie (day-dream) or thought.	—	—
18. Have people watch you do things that you do very well.	—	—
19. Let yourself go when angry.	—	—
20. Work better when people praise you.	—	—

Source: C. A. Neymann, and K. D. Kohlstedt, "A New Diagnostic Test for Introversion-Extroversion", in The Journal of Abnormal and Social Psychology, Vol. 23, No. 4, January-March, 1929, p. 482-487.

	<u>Yes</u>	No
21. Have excitement.	<u>—</u>	—
22. Often meditate and think about yourself.	—	—
23. Be a leader at a social affair.	—	—
24. Speak in public.	—	—
25. Do the things that you dream about (day-dream)	—	—
26. Rewrite social letters	—	—
27. Get things done very quickly rather than being slow and sure in movement.	—	—
28. Think a great deal.	—	—
29. Be able to express your keenest feelings (joy, sorrow, anger, etc.).	—	—
30. Pay little attention to details.	—	—
31. Be exceedingly careful in meeting people	—	—
32. Associate freely with people holding views opposed to your own.	—	—
33. Puzzles.	—	—
34. Act on suggestions quickly rather than stopping to think.	—	—
35. Read about rather than do a thing.	—	—
36. Enjoy the story more than the way it is written	—	—
37. Keep a personal diary.	—	—
38. Keep quiet when out in company.	—	—
39. Act on the spur of the moment.	—	—
40. Dislike thinking about yourself.	—	—
41. Always plan out work before you begin it.	—	—
42. Change from one type of work to another frequently.	—	—
43. Avoid trouble rather than face it.	—	—
44. Believe that rumors are important.	—	—
45. Confide in others.	—	—
46. Distrust people you have just met until you get better acquainted.	—	—
47. Study others rather than yourself.	—	—
48. Spend your vacation at some quiet place rather than at a lively resort.	—	—
49. Change your opinions easily even when formed	—	—
50. Take an active part in all conversations going on around you.	—	—

No. right No. wrong

Score = Right minus Wrong =

Note: Underlined answers indicate the characteristic extrovert responses and are considered "right", and introvert responses are "wrong".

WHITMAN'S REVISION OF THE LAIRD INVENTORY

COLGATE PERSONAL INVENTORY C-4

Directions: Describe yourself by answering the questions which are numbered at the left. Do this by making a check or mark through one of the half inch lines. After reading the phrase after each question think back over your life for the past few months and determine where the check mark should be made to describe yourself accurately. Describe your average behavior and thoughts. THERE IS NO TIME LIMIT TO THIS TEST.

1. How easily have your feelings been hurt by remarks or actions referring to you?

<u>Easily and often aroused</u>	<u>Feelings easily hurt</u>	<u>Usually not- iced others intentions</u>	<u>Affected in rare instan- ces</u>	<u>Gave them no attention</u>
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2. How have you felt when praised?

<u>Thought it over serious- ly</u>	<u>Pondered some praise</u>	<u>Took praise lightly</u>	<u>Quickly forgot</u>	<u>Seldom noticed it</u>
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3. Have you studied the motives of others?

<u>Seldom con- sidered them</u>	<u>Have observ- ed motives a few times</u>	<u>Occasion- ally try to unmask motives</u>	<u>Sometimes study motives</u>	<u>Inclined to study motives carefully</u>
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Source: R. H. Whitman, "A Short Scale for Measuring Introversion and Extroversion", in Journal of Applied Psychology, Vol. 13, No. 5, October, 1929, p. 500-501.

4. How have your likes for athletics and intellectual things compared?

<u>Liked best</u> all intell- ectual	<u>Preferred</u> intellectual	<u>Little</u> preference	<u>Preferred</u> athletics	<u>Happiest in</u> all physical contests
--	----------------------------------	-----------------------------	-------------------------------	--

5. Have you experienced fine sentiments and emotions?

<u>Easily</u> moved to tears	<u>Sympathized</u> readily	<u>Not espec-</u> ially sensitive	<u>Often</u> unmoved	<u>Unsympath-</u> etic.
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6. Have you worked with others?

<u>Much pre-</u> ferred to work alone	<u>Inclined to</u> be independ- ent	<u>Worked with</u> others in some cases	<u>Liked</u> working with others	<u>Sought</u> work with others
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7. How have you been about making friends?

<u>Cautious</u>	<u>Must know</u> them a long time	<u>Slightly</u> reserved	<u>Get acquaint-</u> easily	<u>Made</u> friends with everyone
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8. Have your moods changed with cause?

<u>Always</u> responded quickly	<u>Fairly</u> quick response	<u>Must be strong reason</u>	<u>Seldom</u> change
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9. Have your moods changed without apparent cause?

<u>Often</u> changed	<u>Changed in</u> some instances	<u>Kept in fairly uniform</u> spirits	<u>Moods almost</u> always the same
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10. Have you expressed yourself better in speech or in writing?

<u>Best in</u> writing	<u>Preferred</u> writing	<u>No pref-</u> erence	<u>Preferred</u> speaking	<u>Talk</u> considerably better
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APPENDIX 2

AN ABSTRACT OF

A Correlational Study of inventories of Introversiion-Extroversiion

This report describes two parallel studies that endeavoured to give greater insight into certain inventories purporting to measure introversion-extroversion. The method consisted of an analysis of correlational coefficients relating these tests to each other and to other inventories and variables. The first study dealt with nine introversion-extroversion tests, plus another seven variables that were included to cast light on the introversion-extroversion scales. Less than half of the correlations between these variables were located in the literature, so that results were inconclusive. However, some clarification of issues resulted, particularly the relationship of the introversion-extroversion variables to "neuroticism". A further extension of this study is indicated.

The second analysis dealt with the thirteen Guilford-Martin variables, where all the intercorrelations were obtained, which permitted a more complete analysis. It was possible to synthesize these variables and their correlations into an "approximate planar configuration". The technique that emerged in this process, described as "configurational analysis", offers an alternative to, and a complement of, conventional techniques of factor analysis.

Note: This index contains a list of standardized and non-standardized questionnaires and inventories that purport to measure introversion-extroversion. In addition, other inventories that are mentioned in the text of this thesis are included. The inventories are indexed alphabetically by name (when known) and by authors. Under the entry for the senior author of a test will be found references to the related bibliographic items, and to the text and the Appendix when applicable.

The following bibliographic items refer to papers that contain reviews or studies of several of these inventories: 15, 22, 23, 31, 37, 39, 40, 41, 71, 85, and 89. They will not be cited in every entry of the index where they are appropriate, so that an exhaustive exploration of the literature for any one inventory, particularly if standardized, should include reference to these papers.

Abernathy, E. M.
Biblio.: 1, 96

Abstractions of an Introvert, A Questionnaire, by Smith, P. K.

Allport, G. W., and Allport, F. H.
Biblio.: 2-5, 13. See also Bernreuter, R. G.
Text: Ch. I and II.

A-S Reaction Study, The (A Scale for Measuring Ascendance-Submission of Personality), by Allport, G. W. and Allport, F.H.

Aspects of Personality, Section II, by Pintner, R.

Bernreuter, R. G.
Appendix: p. 110-113.
Biblio.: 6-11, 31, 66, 88, 90.
Text: Ch. I and II.

Colgate Personal Inventory, The - Schedules C-1 and C-3
by Laird, D. A.

Colgate Personal Inventory, The - Schedules C-4 and C-5
by Whitman, R. H.

Crane, G. W.
Biblio.: 20

Drake, L. K.
Biblio.: 21

- Evans, G.
Appendix: p. 114-120
Biblio.: 24-26
- Freyd, M.
Appendix: p. 121-123.
Biblio.: 5, 10, 29. See also Heidbreder, E.
Text: Ch. I and II.
- Gilliland, A. R.
Appendix: p. 124
Biblio.: 30.
Text: Ch. I and II.
- Gray, H.
Biblio.: 32, 33.
- Guilford, J. P. and Guilford, R. B.
Appendix: p. 125-140.
Biblio.: 27, 28, 38-49, 49a, 66b, 67a, 69, 91a, 93a.
Text: Ch. III and IV.
- Guilford-Martin Inventory of Factors GAMIN, The, by Guilford, J.P. and Martin, H. G.
- Guilford-Martin Personnel Inventory, The, by Guilford, J. P. and Martin, H. G.
- Heidbreder, E.
Appendix: p. 121-123.
Biblio.: 52-55. See also Freyd, M.
Text: Ch. I and II.
- Inventory of Factors STDCR, An, by Guilford, J. P.
- Kohlstedt, K. D. Co-author with C. A. Neymann (quod. v.).
- Laird, D. A.
Appendix: p. 143-145.
Biblio.: 12, 13, 19, 38, 50, 57, 58, 63-65, 71, 86, 92, 94.
- Marston, L. R.
Biblio.: 31, 38, 68.
Text: Ch. I and II.
- Marston Personality Rating Scale, by Marston, L. R.

- Martin, H. G. Co-author with J. P. Guilford (quod. v.)
- McConnell, T. R. Co-author with C. Evans (quod. v.)
- Minnesota Personal Traits Rating Scales: Introversion-Extroversion and Inferiority Attitudes, by Heidbreder, E.
- Minnesota T-S-E Inventory, by Evans, C. and McConnell, T.R.
- Morgan, J. J. B. Co-author with A. R. Gilliland (quod. v.)
- Nebraska Personality Inventory (Introversion-Extroversion Test), by Guilford, J. P. and Guilford, R. B.
- New Introversion-Extroversion Test, by Root, A. R.
- Neymann, C. A.
Appendix: p. 141-142.
Biblio.: 10, 62, 72-74.
Text: Ch. I and II.
- Neymann-Kohlstedt Diagnostic Test for Introversion-Extroversion, by Neymann, C. A. and Kohlstedt, K. D.
- Northwestern University Introversion-Extroversion Test, by Gilliland, A. R. and Morgan, J. J. B.
- Pessin, J.
Biblio.: 89.
- Pintner, R., et al.
Biblio.: 76.
- Root, A. R.
Biblio.: 10, 78, 79.
Text: Ch. I and II.
- Scale of Personality Traits, by Stagner, R.
- Smith, P. K.
Biblio: 84
- Stagner, R.
Biblio.: 87, 89.
- Thurstone, L. L. and Thurstone, T. G.
Biblio.; 70, 71, 86, 91, 95. See also Bernreuter, R. G.
Text: Ch. I, II, and IV.

Wheelwright, J. B. Co-author with H. Gray (quod. v.)

Whitman, R. H.

Appendix: p. 143-145.

Biblio: 10, 94. See also Laird, D. A.

Text: Ch. I and II.

Willoughby, R. R.

Biblio.: 10, 95.

Text: Ch. I and II.