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**Reports from the Research Laboratories
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Detecting Latent Clinical Taxa, VIII:
A Preliminary Study in the Detection of the
Schizoid Taxon Using MMPI Items as Indicators[1]

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Abstract

Three basically different taxometric methods were used with indicators constructed from MMPI items and keys by fundamentally distinct strategies. Application of each method resulted in the detection of a taxon, as evidenced by passage of the respective consistency tests of each. The taxon detected in each instance was evidently the same one because of the close taxon base-rate estimates of .37, .40 and .41 and the high agreement rate of .70 in the assignment of individuals as members of the taxon or not. Items and keys selected because of previously established content or construct validity adequately discriminated between the taxon and non-taxon class. The taxon members mean profile was 2–7–8 code type (usually diagnosed as schizophrenia or schizoid personality) with a few minor rule violations and was found to be strikingly similar to that of a pre-schizophrenic sample. The base-rate estimates are in excellent agreement with a prior personal (P. E. Meehl) clinical estimate based on outpatient psychotherapy experience and an unpublished study correlating a Mental Status Checklist of "schizotypal signs" with gross MMPI indicators. With such content and construct validity evidence the taxon was tentatively identified as having essentially a schizoid nature. In view of various empirical trials of the methods, these results were surprisingly obtained even though only a very small sample size (for taxometric purposes) was available (N = 211). The implications for a large-scale study are concluded to be extremely encouraging.

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[1]

I. Introduction

The substantive problem which initially provided interest in the development and testing of taxometric theories was that concerning the hypothesized schizotype taxon (see Meehl, 1962). Even though according to theory the etiological nature of the taxon is a genetic one, the variables used in this study (MMPI items and keys) were regarded as highly fallible phenotypic indicators. The fact that these phenotypic variables are far removed causally from the hypothesized dichotomous genetic variable (which is of ultimate interest) and the fact that they are influenced by and correlated with numerous nuisance variables were both fully realized when the study was undertaken; the study was done in the face of these possibly fatal flaws in the design. So far, three distinct taxometric theories have been developed; they are the consistency hurdles theory (Golden et al., 1974c), the maximum covariance theory (Golden and Meehl, 1974a) and the normal theory (1974b). Each theory has been tested by empirical trials using biological sex as the known taxonomy and MMPI items, selected to discriminate by various degrees between the sexes and keys constructed of such items, as indicators. At this time, the first two theories have been studied by artificial data trials wherein a Monte Carlo method as described in Golden et al. (1974c) is used (Golden and Meehl, 1974b).

Artificial and real data trials have shown that for most taxonomic detection studies such as with the MMPI, a sample size of about 1000 is required. This large size is required mainly because of the large number of parameters which must be estimated. Many important questions were not answerable by this study due to a lack of sufficient sample size. Some of these are discussed in the last

[2]
section of this report where a large-scale study is considered.

As the methods usually require sample sizes on the order of one thousand, we are in the process of constructing a huge data bank from the University of Minnesota Hospital recorded psychiatric diagnoses, related data, and MMPI item protocols. Rather than wait for the completion of this time-consuming and expensive task we decided to go ahead with a preliminary trial on a completed sub-sample even though it was of very small size (N = 211). It was considered that if the hypothesized taxon happened to be very well defined in terms of selected candidate indicators, then such a small sample size might prove sufficient (as shown by various male-female empirical trials of the taxometric methods). Failure to detect a taxon could have been attributed solely to sampling error.

II. Detection of the Taxon

The sample used for the detection of the taxon consisted of 211 males with diagnoses of neurotic, personality disorder, and transient situational disorder. All other diagnoses (including all psychoses) were excluded to prevent the possibility of detecting the psychotic "taxon". The only other samples used in any of the analyses were 96 males diagnosed as schizophrenic and the Minnesota normal male sample. These last two samples were used for selection of the original candidate set of items that might discriminate between schizotypes and non-schizotypes.

[3]
The consistency hurdles method requires the use of items that discriminate between the to-be-detected taxon and the non-taxon class. In this method each

item is subjected to consecutively applied tests which require that they have properties which are consistent with the other items in terms of the estimated underlying latent situation. When an item is not adequately consistent with the others for a given test, then it is deleted from the analysis at that point. The Monte Carlo study of the method has indicated that the method is both powerful and unlikely to produce spurious results.

As in factor analysis the output is very much dependent on the input in taxometric analysis. Required in the present study were items that were thought to discriminate adequately between schizotypes and non-schizotypes but not between other possible taxa and their complementary classes. (In this regard, the selection of the sample plays a role too. For example, psychotic diagnoses were not permitted in the detection sample as we did not want to detect the psychotic and neurotic taxa or related ones if, in fact, they do exist.) Thus, it was attempted to select items that were 'quasi-schizospecific'. That is, of the 550 box-form MMPI items there were only 53 which were found to discriminate between diagnosed schizophrenics and the Minnesota normals by a difference in the item plus-rates of .20 or more. (Such a difference has been found to be necessary in taxometric study.) By definition, this is one necessary condition for an item to be quasi-schizospecific. Another is that the item is not correlated with dimensions of psychosis, severity of illness, and the like. Hence we required that an item <u>not</u> discriminate highly between subtypes of schizophrenia or between subtypes of other psychoses. The χ^2 test was used with α set at .20 since the power of χ^2 is quite small with a small sample size. This procedure reduced the number of [4] candidate items to 33 (listed in Table 1).

When the consistency hurdles method was applied to the 33 items, there were 16 items (Table 2) which behaved very consistently except for excessive sampling error; that is, it appeared they would have been retained by the method if it were not for sampling error in various calculations. Examination of Table 2 shows that the items contain a moderate-to-strong degree of face validity. When excessive sampling error was not allowed then the method retained 7 items and produced the parameter estimates given in Table 3. The taxon base-rate was estimated to be .37. The evidence at this point that a taxon does indeed exist consists solely of the Monte Carlo study of the consistency hurdles method. Although this evidence is persuasive in itself we need not be concerned with the details here since an abundance of other "taxon existence" evidence will be given below.

The parameter estimates of the seven items and the base-rate estimates were used in Bayes' Rule to determine the probability of taxon membership for each of 211 patients. These probabilities tended to be either close to zero or close to 1.0 (Figure 1) which is also indicative of a non-spurious result according to Monte Carlo study.

With individuals classified as "in" or "out" of the taxon, these two groups were treated as criterion groups. It was found that 113 of 550 items discriminated by a difference in the plus-rates of .20 or more. A substantial number of these items did so simply because of sampling error, of course. Thirty items discriminated by .30 or more and were not one of the 33 first used with the consistency hurdles method. Thus, none of these items met one or both of the requirements for an item to be quasi-schizospecific but they did highly discriminate

[5]   Table 1. Items that discriminate between diagnosed schizophrenics and normals by an item plus-
rate difference of .20 or more and did not discriminate between psychotic subtypes.

	Direction	Booklet Number	Item
1	(F)	153	During the past few years I have been well most of the time.
2	(T)	22	At times I have fits of laughing and crying that I cannot control.
3	(F)	496	I have never seen things doubled (that is, an object never looks like two objects to me without my being able to make it look like one object).
4	(F)	214	I have never had any breaking out on my skin that has worried me.
5	(F)	329	I almost never dream.
6	(T)	239	I have been disappointed in love.
7	(F)	501	I usually work things out for myself rather than get someone to show me how.
8	(F)	461	I find it hard to set aside a task that I have undertaken, even for a short time.
9	(F)	20	My sex life is satisfactory.
10	(T)	471	In school my marks in deportment were quite regularly bad.
11	(T)	141	My conduct is largely controlled by the customs of those about me.
12	(F)	26	I feel that it is certainly best to keep my mouth shut when I'm in trouble.
13	(F)	477	If I were in trouble with several friends who were equally to blame, I would rather take the whole blame than to give them away.
14	(T)	52	I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.
15	(F)	254	I like to be with a crowd who play jokes on one another.
16	(F)	207	I enjoy many different kinds of play and recreation.
17	(T)	378	I do not like to see women smoke.
18	(T)	317	I am more sensitive than most other people.
19	(T)	222	It is not hard for me to ask help from my friends even though I cannot return the favor.
20	(T)	305	Even when I am with people I feel lonely much of the time.
21	(F)	379	I very seldom have spells of the blues.
22	(F)	76	Most of the time I feel blue.
23	(T)	414	I am apt to take disappointments so keenly that I can't put them out of my mind.
24	(T)	61	I have not lived the right kind of life.
25	(T)	340	Sometimes I become so excited that I find it hard to get to sleep.
26	(F)	380	When someone says silly or ignorant things about something I know about, I try to set him right.
27	(T)	284	I am sure I am being talked about.
28	(F)	348	I tend to be on my guard with people who are somewhat more friendly than I had expected.
29	(T)	400	If given the chance I could do some things that would be of great benefit to the world.
30	(T)	352	I have been afraid of things or people that I knew could not hurt me.
31	(F)	394	I frequently ask people for advice.
32	(F)	406	I have often met people who were supposed to be experts who were no better that I.
33	(F)	71	I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.

[6] Table 2. Items which were retained by consistency hurdle analysis not considering sampling error. Only seven of these items (see Table 3) were not finally rejected by the consistency hurdles method but most if not all rejections were due to sampling error.

	Direction	Booklet Number	Item
1	(F)	153	During the past few years I have been well most of the time.
2	(T)	239	I have been disappointed in love.
3	(F)	501	I usually work things out for myself rather than get someone to show me how.
4	(F)	20	My sex life is satisfactory.
5	(T)	52	I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.
6	(F)	254	I like to be with a crowd who play jokes on one another.
7	(F)	207	I enjoy many different kinds of play and recreation.
8	(T)	317	I am more sensitive than most other people.
9	(T)	305	Even when I am with people I feel lonely much of the time.
10	(F)	76	Most of the time I feel blue.
11	(T)	414	I am apt to take disappointments so keenly that I can't put them out of my mind.
12	(T)	61	I have not lived the right kind of life.
13	(T)	340	Sometimes I become so excited that I find it hard to get to sleep.
14	(T)	284	I am sure I am being talked about.
15	(F)	348	I tend to be on my guard with people who are somewhat more friendly than I had expected.
16	(T)	352	I have been afraid of things or people that I knew could not hurt me.

[7] Table 3. The final set of items retained by the consistency hurdles method and the associated latent parameter estimates.

	Direction	Booklet Number	Item
1	(T)	239	I have been disappointed in love.
2	(F)	501	I usually work things out for myself rather than get someone to show me how.
3	(F)	20	My sex life is satisfactory.
4	(F)	207	I enjoy many different kinds of play and recreation.
5	(T)	317	I am more sensitive than most other people.
6	(T)	61	I have not lived the right kind of life.
7	(T)	284	I am sure I am being talked about.

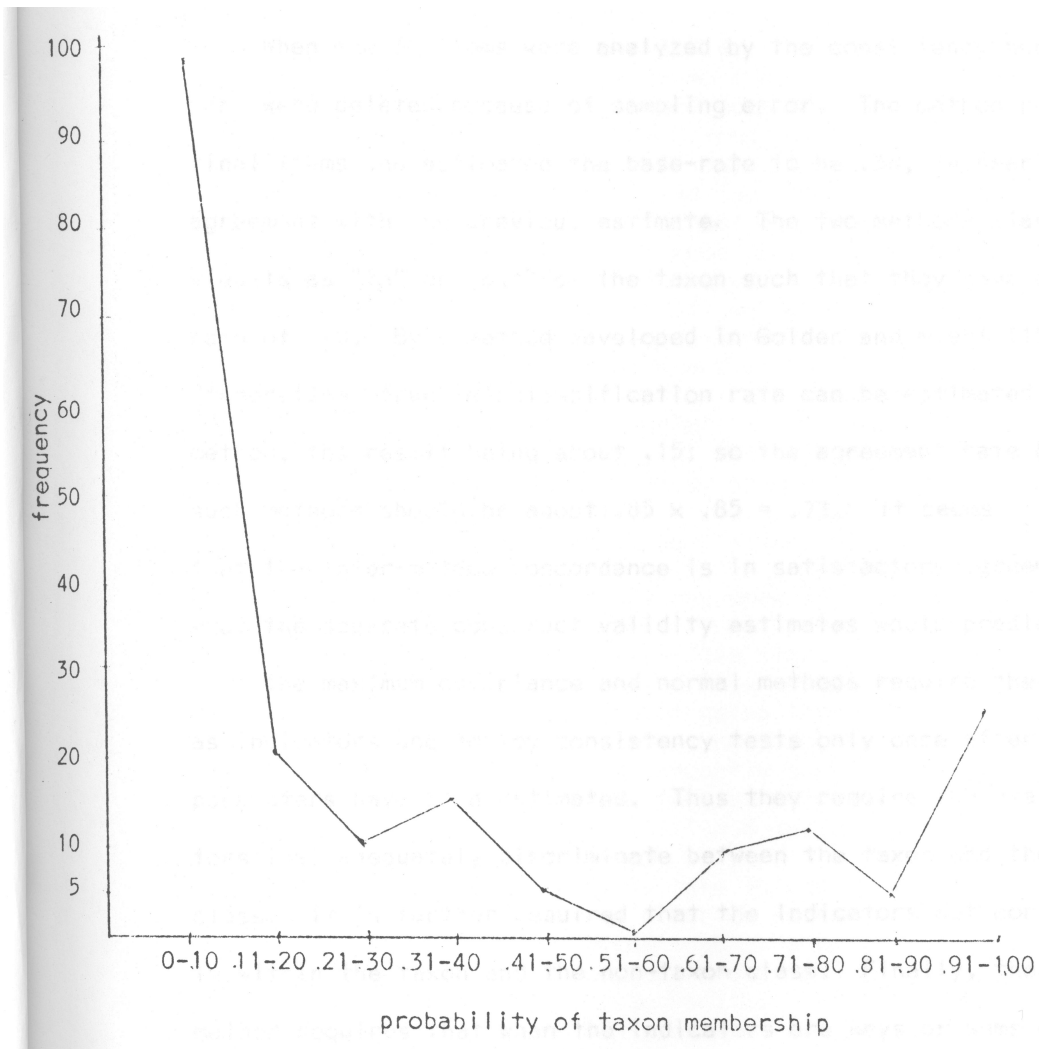|	taxon mean	non-taxon class mean	difference
1	.65	.31	.34
2	.42	.22	.20
3	.52	.19	.33
4	.37	.21	.16
5	.65	.34	.31
6	.75	.39	.36
7	.61	.32	.29

[8]

Figure 1. Posterior probability of taxon membership using the results of the consistency hurdles method.

[9]   between the taxon and non-taxon class. These 30 items are given in Table 4. Again we seem to have a moderate-to-strong degree of face validity.

When the 30 Items were analyzed by the consistency hurdles method, many were deleted because of sampling error. The method retained eight final items and estimated the base-rate to be .38, in nearly perfect agreement with the previous estimate. The two methods classify individuals as "in" or "out" of the taxon such that they have an agreement rate of .70. By a method developed in Golden and Meehl (1974a) the "theoretical true" misclassification rate can be estimated for each method, the result being about .15; so the agreement rate between two such methods should be about .85 × .85 = .73. It seems that the inter-method concordance is in satisfactory agreement with what the separate construct validity estimates would predict.

The maximum covariance and normal methods require the use of keys as indicators and employ consistency tests only once after all latent parameters have been estimated. Thus they require the use of indicators that adequately discriminate between the taxon and the non-taxon class. It is further required that the indicators not correlate highly within the taxon and the non-taxon class. Finally, the normal method requires that when the indicators are keys or sums of items that average inter-item correlations not be high within the taxon and the non-taxon class. The maximum covariance method requires three or more indicators whereas the normal method can be used with any number of indicators.

Three keys for use with the maximum covariance theory were constructed from 113 items that discriminated between the taxon, as first detected by the

[10] Table 4. Items which discriminate by a difference in the item plus-rates of .30 or more between taxon and non-taxon class and which are not one of the original 33 quasi-schizospecific items used with the consistency hurdles method.

	Direction	Booklet Number	Item
1*	(F)	163	I do not tire quickly.
2	(F)	242	I believe I am no more nervous than most others.
3	(T)	299	I think that I feel more intensely than most people do.
4*	(T)	168	There is something wrong with my mind.
5	(F)	192	I have had no difficulty in keeping my balance when walking.
6	(F)	3	I wake up fresh and rested most mornings.
7	(T)	43	My sleep is fitful and disturbed.
8*	(T)	307	I refuse to play some games because I am not good at them.
9	(T)	321	I am easily embarrassed.
10	(F)	170	What others think of me does not bother me.
11	(T)	138	Criticism or scolding hurts me terribly.
12	(F)	407	I am usually calm and not easily upset.
13*	(F)	8	My daily life is full of things that keep me interested.
14	(T)	236	I brood a great deal.
15	(F)	79	My feelings are not easily hurt.
16	(T)	337	I feel anxiety about something or someone almost all the time.
17*	(T)	543	Several times a week I feel as if something dreadful is about to happen.
18	(T)	338	I have certainly had more than my share of things to worry about.
19	(F)	107	I am happy most of the time.
20	(T)	166	I am afraid when I look down from a high place.
21*	(F)	353	I have no dread of going into a room by myself where other people have already gathered and are talking.
22*	(T)	389	My plans have frequently seemed so full of difficulties that I have had to give them up.
23	(T)	411	It makes me feel like a failure when I hear of the success of someone I know well.
24	(T)	361	I am inclined to take things hard.
25	(T)	301	Life is a strain for me much of the time.
26	(T)	418	At times I think I am no good at all.
27	(T)	549	I shrink from facing a crisis or difficulty.
28	(F)	223	I very much like hunting.
29	(T)	544	I feel tired a good deal of the time.
30*	(T)	15	Once in a while I think of things too bad to talk about.

* Items retained by consistency hurdles method

[11] consistency hurdles method, and non-taxon class by a difference in the item plus-rates of .20 or more. Factor analysis (varimax rotation) of the 113 items for the compound sample produced three factors. The twenty highest loading items from each factor were selected to form the three keys. When the three keys were used as indicators in the maximum covariance method, the results of one key did not pass the consistency test; the other two keys did so, but just barely, producing taxon base-rate estimates of .40 and .42 which agree well with the consistency hurdles results. On the latter two keys the difference in the latent means was estimated to be about one within-sigma unit apart, which means the misclassification rate is about .20, a bit higher than was obtained by the consistency hurdles method and barely low enough for the maximum covariance method to work adequately.

The maximum covariance theory includes consistency tests which are designed to detect a spuriously detected taxon and inaccurate parameter estimation. Thus, to the extent that they work correctly, and the evidence is that they nearly always do (see Golden and Meehl, 1974b), we have further support for the existence of a taxon.

Factor analysis of the standard MMPI keys for the compound sample produce a varimax factor that accounted for 40.8% of the common variance and correlated very highly with the psychasthenia (Pt) (.69), schizophrenia (Sc) (.53), depression (D) (.61), and social introversion (Si) (.79) scales with all other loadings between ±.3 except for defensiveness (K) (−.43). The items of these four scales were combined to make a long key to be used as a single indicator for application of the normal method. Intervals were constructed so that a sufficient

[12] frequency appeared in each of the central ones (see Figure 2). The fact that the distribution is skewed allows for the possibility that the frequency curve can be explained in terms of two latent normal components. The taxon base-rate was estimated to be .41. The chi-square goodness-of-fit statistic was only 2.3, which is well below the expected value. The difference between the latent means was estimated to be about two within taxon sigma units.

While the seven items provided for taxon identification in that they were quasi-schizospecific it is interesting that a seven item key correlated .95 with the Bayes' probability of taxon membership and .82 with the sum of four standard MMPI scales. Since the latter value is near the limit imposed by the imperfect reliabilities of the two keys (especially the seven item one), it would appear that, in practice, the four-key-sum indicator will work quite well if not as well as any other method using the MMPI. This possibility would allow for replication in many samples where only the scale scores are recorded; this is fortunate as it is common practice not to record item responses.

All of the four detection methods described above classified individuals "in" or "out" of the taxon with agreement rates (for pairs of methods) very near what they should be as estimated from the theoretical construct validity misclassification rates. Thus, it was concluded that a taxon does exist since the three methods, though based on quite different assumptions, using three sets of indicators, and developed in completely different ways agree nearly to the maximum possible extent in classifying individuals. The common base-rate estimates are remarkably close to each other and to a personal clinical estimate of .40 to .45 (P. E. Meehl). This base-rate estimate was a pre-recorded
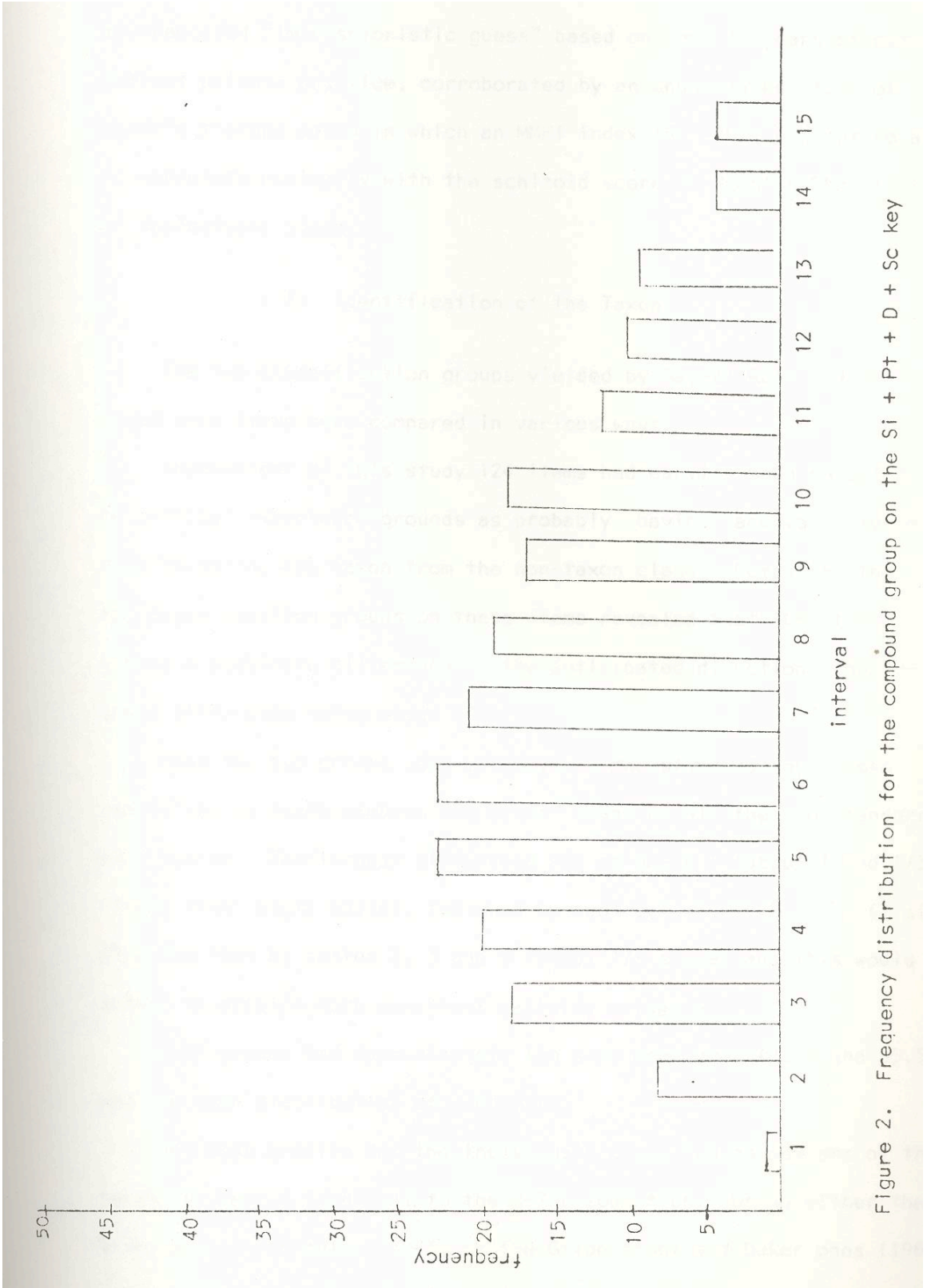
[13]

Figure 2. Frequency distribution for the compound group on the Si + Pt + D + Sc key

[14] "impressionistic guess" based on some 30 years of outpatient private practice, corroborated by an unpublished study of Meehl's therapy cases in which an MMPI index (Sc – Es) was cut so as to correlate maximally with the schizoid score on Meehl's Checklist of Schizotypal Signs.

III. Identification of the Taxon

The two classification groups yielded by Bayes' Rule and the seven core items were compared in various ways.

Independent of this study 124 items had earlier been selected on clinical experience grounds as probably having face validity for discriminating the taxon from the non-taxon class. Comparing the two classification groups on these items revealed that 108 items showed a plus-rate difference in the anticipated direction, the average difference being about .2.

When the two groups were compared on the standard keys those classified as taxon members had higher means on all the ten standard MMPI scales. The largest difference was on scale 7 (about 1 and 1/3 within taxon sigma units), followed by scales 1, 5, 6, 8 and 0 (1 sigma), and then by scales 2, 3 and 9 (about 1/2 sigma) and this would appear to provide more construct validity evidence.

Both groups had approximately the same mean ages (36.0 and 35.5) and the same distribution of diagnoses.

The mean profile for the individuals classified as members of the taxon was nearly identical to the 2–7–8 code type. Using either the Marks and Seeman rules (1963) or the Gilberstadt and Duker ones (1965) shows that the profile nearly misses on only four of the total 10 requirements (see Table 5). This result was obtained even though a small per cent of the individual profiles were of the 2–7–8 type.

[15]

Table 5. 2–7–8 profile type Marks-Seeman Rules and our results.

	Rule	
1.	2, 7, 8 > 70T	passed
2.	2 – 11 > 15T	almost passed
3.	2 – 8 < 15T	passed
4.	7 – 4 > 10T	almost passed
5.	7 – 6 > 10T	passed
6.	7 > 8	passed
7.	7 & 8 > 1 & 3	passed
8.	9 < 70T	passed
9.	0 > 70T	almost passed
10.	L & K <70, F < 80T	passed

Table 5′. 278(401356) profile type Gilberstadt and Duker
Rules and our results.

	Rule	
1	D, Pt, Sc > 70T	passed
2	D – Sc < 15T	passed
3	|Pt – Sc| < 20T	passed
4	If Pt peak, included only if all other scales below 90T and Pt not more than 5T greater than D	passed
5	Si > Ma	almost passed
6	Ma < 70T	passed
7	D – Hs > 10T	passed
8	Pa < 80T	passed

[16]   These findings are consistent with those of Goldberg (1972) who showed that the mean profile of a homogeneous group better represented the underlying pathology common to the individuals then did the individual profiles because of inherent unreliability of the latter. Suffice it to say here that the 2–7–8 code type is the one which was regarded to be closest to that of the schizotype by the present investigators.

A study by Briggs et al. (1966) showed that for 2,875 patients sampled from the same population as the present samples that less than five per cent of the total sample had 2–7–8 profiles according to the Marks and Seeman rules even when one rule violation was allowed. Clearly, then, the code type cannot be used very well for diagnosis of schizotypy if the base-rate of the latter is about .40,

The mean profile for those individuals classified as not members of the taxon was considerably lower, and not at all similar to any standard code type.

The main construct validity of the taxon results from the fact that the mean profile is very similar to that of a group of pre-schizophrenics as reported by Peterson (1963) (see Figure 3). Individuals diagnosed as schizophrenic are almost certain to be schizotypes as false-positive errors for this diagnosis are minimal.

Finally, probability-of-taxon-membership correlated .56 with the psychasthenia scale, .53 with the schizophrenia scale, .41 with the social introversion scale and .42 with the depression scale. These correlations are each in the moderate range as would be expected from theory. The same variable also correlated .81 with the large factor which was used to develop the single indicator for the normal method.
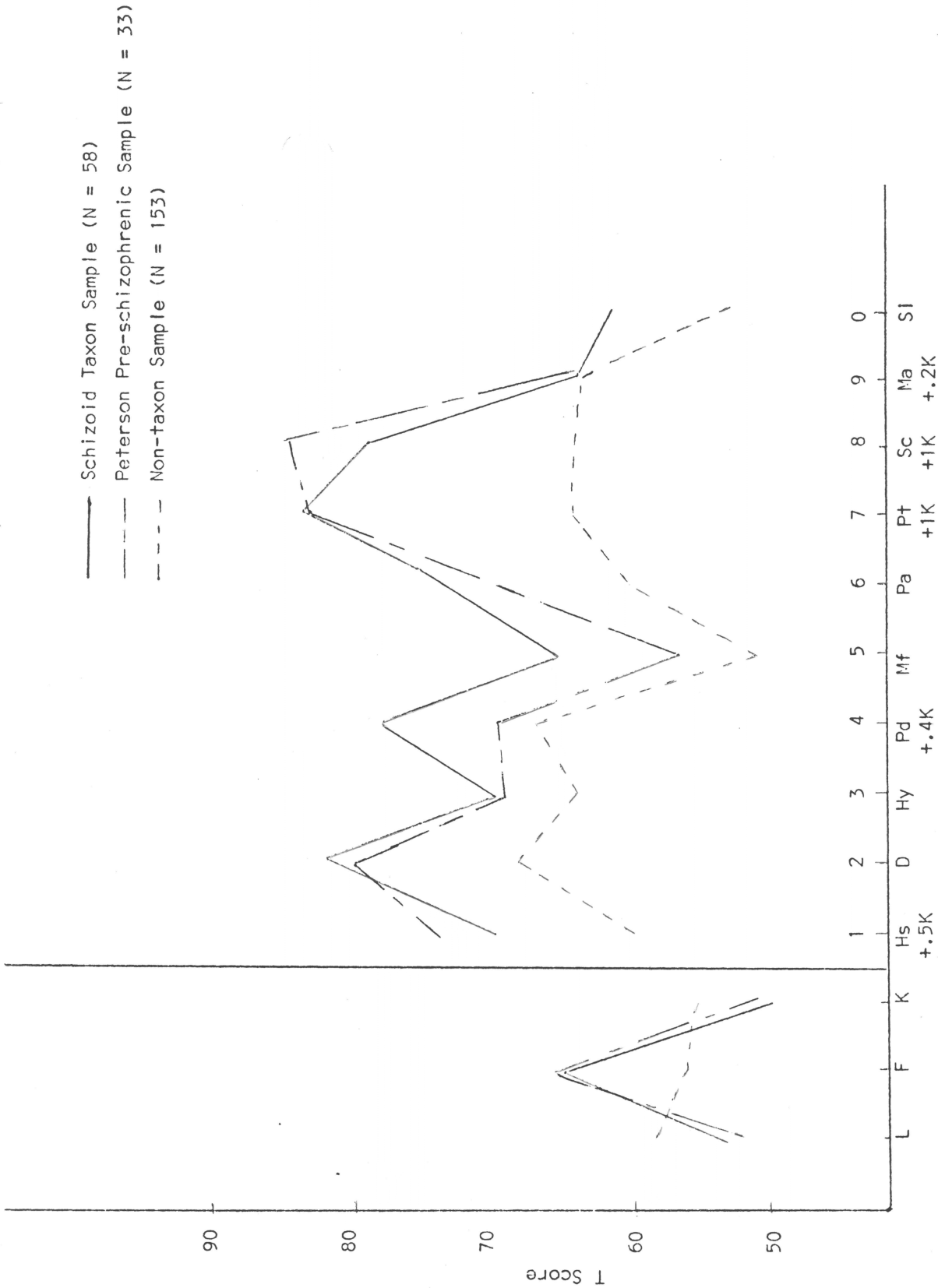
Figure 3. Mean MMPI profiles for taxometrically identified schizoids, non-schizoids and for empirically identified pre-schizophrenics.

[18]   Another construct validation test consisted of classifying diagnosed schizophrenics, the desired outcome being that a high percentage would be classified as taxon members. It turned out, however, that this test required the item consistency hurdle method parameter estimates with less sampling error than the present sample allowed. Depending on how one adjusted for the error, this rate varied between .35 and .85. Hence, the results of the test are inconclusive.

While many further validation procedures should be used for the identification of the taxon, and will be discussed in the next section, these appear to be all that were possible with the present data. These results are nearly as corroborative as the available data permitted.

All of the evidence as to the schizoid nature of the taxon can also be viewed as evidence for the existence of a taxon, regardless of its true nature.

IV. Hypotheses for a Large-Scale Study

As mentioned above, we are in the process of assembling a very large data bank which will permit further study of the existence and nature of the hypothesized taxon. With such a data bank we will have two detection samples of size 1000 or more which can be used for attempted replication and double cross-validation. Because of the increased sample size and the greater amount of information available on some of the patients, the completion of the data bank will enable us to answer questions such as the following:

(a) Is it possible to use such large samples in item selection, taxon detection, and the like such that complicating sampling error can be virtually ignored?

[19]   (b) Can a sample be found that allows for possible replication of the pre-schizophrenic finding? If so, are these individuals classified as taxon members at an adequately high rate both before and after the onset of schizophrenia?

(c) Is an adequately high proportion of those diagnosed as schizophrenic or schizoid personality and the like classified as taxon members?

(d) Is it possible to retain about 20 items with the consistency hurdles method? This number provides for an optimal key length according to unpublished Monte Carlo and empirical trials.

(e) Do a relatively high proportion of the taxon members become schizophrenic compared to non-members? Is the rate for the non-members sufficiently low?

(f) Is it possible to develop new keys that are discriminative and adequately homogeneous for three of the four cardinal schizotypal traits: cognitive slippage, anhedonia and social aversiveness? (The fourth, ambivalence, clearly does not have enough item representation.)

(g) Do the findings replicate in general for females?

(h) Is it possible to detect one or more taxa within the first order taxon?

(i) Do the latent parameter estimates provide support for a single dominant gene theory of inheritance? To answer this question requires usage of another available twin sample. The details of the design of such a study will be given in a later report.

[20]   (j) Do the latent parameter estimates provide for validity generalization in other samples such as one consisting of patients in psychotherapy where

the schizotype checklist (Meehl, 1973) has been completed? Do the two psychometric diagnoses agree for a high enough proportion of the patients?

(k) Can item selection methods be used to develop keys to improve the fit of the maximum covariance theory?

(l) Are the items and keys used to detect the taxon the best ones to use to use for classification of individuals? That is, are indicators which are quasi-schizospecific also the most discriminative? Which method of classification is optimal?

(m) What is the test-retest reliability in the diagnosis of taxon membership or non-membership: (1) for various lengths of time, (2) for various situation variables such as inpatient vs. outpatient, length of hospitalization and the like, (3) for various subgroups such as male vs. female, (4) for various age groups, and (5) for different kinds of clinical diagnosis?

(n) How is the validity (as determined from the latent parameters) of the taxometric diagnosis influenced by various imperfect reliabilities with respect to time lapse, situation and the like as in (m) above?

(o) Can the results of various methods be somehow combined to produce significantly greater validity?

(p) Should the usual rules concerning the validity scales be used when diagnosing taxon membership?

(q) What kind of items should be included in a new version of the MMPI, that are both highly quasi-schizospecific and discriminative?

[21] (r) Do any of the standard scales moderate the validity of the taxometric diagnosis? Do demographic variables or certain clinical diagnoses do likewise?

(s) Does an optimal taxometric diagnosis procedure make use of any configural information? The preliminary trial indicated it will not.

(t) How do the taxon and the non-taxon class compare on clinical diagnosis and all demographic variables?

(u) Is the taxon base-rate roughly independent of the year of MMPI administration? (The data bank will include all patients of University Hospitals for which we have records since about 1940.)

(v) Is there any relationship between taxometric diagnosis and presence of physical illness or kinds of physical illness?

(w) Is there a better profile code type than 2–7–8 for taxon membership diagnosis? Is it necessary to use several new keys for this purpose?

(x) Is the MMPI item evidence for the existence of a schizotype taxon every bit as strong as that for the biological sexes? The preliminary trial when compared to several male-female empirical trials of methods (Golden and Meehl, 1973a; Golden et al., 1974a), indicates that this is the case.

(y) Do all the findings of the preliminary trial replicate sufficiently?

(z) Assuming nearly all positive findings above, is there any conceivable way that consistency was obtained through circularity so that some results are spurious?

[22] A large-scale study could provide further corroboration of the existence and nature of the hypothesized taxon or it could, in many ways, provide for final discorroboration. The proposed tests are being developed in the spirit of "the

context of justification" of the theory since only by passage of dangerous tests can the verisimilitude of the theory be increased. Our purpose is to increase the verisimilitude of the theory or to refute it. The results of the present preliminary trial indicate the chances of such an outcome only being decided by the large-scale study are sufficiently good.

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