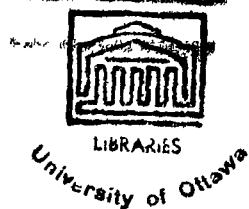
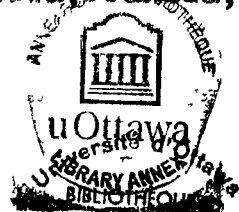


AN ANALYSIS OF PATTERN ON THE OPTATA-TEST IN  
PARANOID SCHIZOPHRENIA

by E. D. Hawken

Thesis submitted to the Faculty of Arts  
of the University of Ottawa through the  
School of Psychology and Education, in  
partial fulfillment of the requirements  
for the degree of Master of Arts.

Ottawa, Canada, 1956



UMI Number: EC55748

### INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

**UMI<sup>®</sup>**

---

UMI Microform EC55748  
Copyright 2011 by ProQuest LLC  
All rights reserved. This microform edition is protected against  
unauthorized copying under Title 17, United States Code.

---

ProQuest LLC  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106-1346

## ACKNOWLEDGMENTS

The writer wishes to express his indebtedness to the Assistant Director of the School of Psychology and Education, Doctor Maurice Chagnon, who served as advisor in the preparation of this thesis.

## TABLE OF CONTENTS

| Chapter  | Page |
|--|------|
| INTRODUCTION . . . . .                             | v    |
| I.- STATEMENT OF PROBLEM . . . . .                 | 1    |
| 1. Purpose and need                                | 4    |
| 2. Hypotheses                                      | 4    |
| II.- METHOD . . . . .                              | 6    |
| 1. Description of groups                           | 6    |
| 2. Experimental design                             | 8    |
| III.- RESULTS AND DISCUSSION . . . . .             | 12   |
| IV.- SUMMARY AND CONCLUSIONS . . . . .             | 23   |
| BIBLIOGRAPHY . . . . .                             | 25   |
| Appendix   |      |
| 1. WEIGHTED SCORES OF EXPERIMENTAL GROUP . . . . . | 27   |
| 2. WEIGHTED SCORES OF CONTROL GROUP . . . . .      | 28   |
| 3. ABSTRACT . . . . .                              | 29   |

## LIST OF TABLES

| Table   | Page |
|---|------|
| I.- Mean age and education in years and mean verbal and performance IQ's of the experimental and control groups . . . . .         | 7    |
| II.- Means and standard deviations obtained in 10 subtests by the experimental and control groups . . . . .                       | 9    |
| III.- Profile effect of the experimental group around (1) mean of 10 subtests (2) two subtests that hold up in this study . . .   | 13   |
| IV.- Distribution of percentage of experimentals obtaining Wechsler diagnostic signs on each subtest . . . . .                    | 14   |
| V.- Distribution in percentages of cases picked up by reapplication of patterns to both experimental and control groups . . . . . | 15   |
| VI.- Discrepancies between verbal and performance IQ's of experimental and control groups. .                                      | 16   |
| VII.- Mean rank order ratings of 10 subtests in experimental and control groups, showing a comparison with Rabin's . . . . .      | 19   |
| VIII.- Significance of difference between mean indices of the experimental and control groups . . . . .                           | 20   |
| IX.- Comparison of size of index between the experimental and control groups by pairs .   | 21   |

## INTRODUCTION

There is a definite clinical need for an instrument which can be of use in the diagnosis not only of psychiatric groups but also of individuals. This study attempts to meet the need for greater predictive accuracy in the diagnosis of paranoid schizophrenia, using the Echelle d'Intelligence Ottawa-Wechsler, a French language adaptation of the Wechsler-Bellevue Adult Scale.

Chapter I contains a statement of the purpose and need of such a diagnostic tool; a discussion of the importance of pattern analysis particularly with the Wechsler-Bellevue; a review of patterns in paranoid schizophrenia on the Wechsler-Bellevue, and finally a general hypothesis with subsidiary hypotheses.

The experimental and control groups and the experimental design are described in Chapter II. The results and their implications are discussed in Chapter III. The final chapter summarizes the experiment and draws conclusions.

## CHAPTER I

### STATEMENT OF THE PROBLEM

A review of the literature produces no clear picture of the value of psychological tests in diagnosis. Nevertheless it is generally conceded that several factors, either singly or in combination, make up the total personality and that these factors or functions can be measured by an intelligence test. The resulting pattern indicates not only the degree but also the manner in which the various functions contribute to the whole personality.

Of all the tests in current use Rabin<sup>1</sup> and Klein<sup>2</sup> agree that the Wechsler-Bellevue Scale approaches the ideal tool insofar as it measures through its eleven subtests not one but a number of the functions of intelligence. Patterns have emerged from the many studies using this test and have been identified with the various clinical groups. These patterns however have varied from one investigator to another. This, Rabin feels, is due to the lack of controls of variables such as age, race, education, cultural background and intellectual level<sup>3</sup>.

<sup>1</sup>A. I. Rabin, The use of the Wechsler-Bellevue scales with normal and abnormal persons, Psychological Bulletin, vol. 42, no. 7, July, 1945, p. 413.

<sup>2</sup>George S. Klein, An application of the multiple regression principle to clinical prediction, Journal of General Psychology, vol. 38, Second Half, April, 1948, p. 159.

<sup>3</sup>Rabin, op. cit., p. 420.

Schofield<sup>4</sup> in his review of patterns on the Wechsler-Bellevue concluded that researchers failed to achieve high reliability because of uneven application of relevant variables. Marks<sup>5</sup> in an analysis of the test feels that since it was designed primarily as a test of intelligence it fails to meet the requirements of a diagnostic test.

Investigators have used several methods in analyzing patterns on the Wechsler-Bellevue. These fall in two broad categories: qualitative and quantitative. Since this study limits itself principally to the latter, it is considered appropriate to review these methods.

Among the earliest was the inter-individual comparison<sup>6</sup> in which the mean subtest score of one group was paired with the same of a second group. This however only serves to identify a group pattern, overlooking the unique contribution of the individual.

---

<sup>4</sup> W. S. Schofield, Critique of scatter and profile analysis of psychometric data, Journal of Clinical Psychology, vol. 8, no. 1, January, 1952, p. 16-22.

<sup>5</sup> Melvin R. Marks, A criticism of the use of the Wechsler-Bellevue Scale as a diagnostic instrument, Journal of General Psychology, vol. 49, First Half, July, 1953, p. 143-152.

<sup>6</sup> A. I. Rabin, Differentiating psychometric patterns in schizophrenia and manic-depressive psychosis, Journal of Abnormal & Social Psychology, vol. 37, no. 2, April, 1942, p. 270-272.

Later a far more meaningful approach was used. This was the intra-individual method where group means were avoided and efforts were made to predict on an individual basis. Both Wechsler<sup>7</sup> and Magaret<sup>8</sup> used this method, expressing pattern in terms of subtest deviations from the mean of all the subtests in the individual score. A second method used a reference point within the individual score such as the highest subtest. Rapaport<sup>9</sup> investigated pattern around the vocabulary score, Allen<sup>10</sup> used the information score. However, results while indicating trends, were for the most part inconclusive.

Rabin,<sup>11</sup> using a non-differentiated group of schizophrenics, devised a method of comparing one group with another by computing ratios of certain subtests to others

---

<sup>7</sup> D. Wechsler, The measurement of adult intelligence, Baltimore, The Williams and Wilkins Co., 3rd ed., 1944, 258 pages.

<sup>8</sup> A. Magaret, Parallels in the behavior of schizophrenics, paretics and pre-senile non-psychotics, Journal of Abnormal & Social Psychology, vol. 37, no. 4, October, 1942, p. 511-528.

<sup>9</sup> D. Rapaport, M. Gill and R. Schafer, Diagnostic Psychological Testing, vol. 1, Chicago, Year Book Publishers, 1945, 573 pages.

<sup>10</sup> R. M. Allen, The test performance of the brain injured, Journal of Clinical Psychology, vol. 3, no. 3, July, 1947, p. 225-230.

<sup>11</sup> A. I. Rabin, Differentiating psychometric patterns in schizophrenia and manic-depressive psychosis, Journal of Abnormal & Social Psychology, vol. 37, no. 2, April, 1942, p. 270-272.

and deriving indices. It is considered that this could also be a useful device in individual diagnosis. He assigned a rank order to each subtest within the individual score and established a list of subtests that hold up and do not hold up in schizophrenia.

Marks<sup>12</sup> feels that there is no relationship other than chance between agreement of patterns on the Wechsler-Bellevue and psychiatric diagnosis.

To summarize, it is felt that while many researchers have applied psychological testing to psychiatric diagnosis few resulting patterns proved useful in individual diagnosis. Such patterns, if they exist, would be a welcome tool in the armory of the diagnostician.

The present work attempts to meet this need by applying the Ottawa-Wechsler to paranoid schizophrenics. This test, designed to meet the requirements of a French-language population, can be considered a check on the Wechsler-Bellevue patterns.

Therefore the purpose of this experiment is to investigate the general hypothesis that paranoid schizophrenia is identifiable on the Ottawa-Wechsler. Three subsidiary hypotheses are also considered relevant:

---

<sup>12</sup> Melvin H. Marks, A criticism of the use of the Wechsler-Bellevue Scale as a diagnostic instrument, Journal of General Psychology, vol. 49, First Half, July, 1953, p. 152.

1. There is a characteristic pattern of the scatter around the mean of the 10 subtests, or using as a reference point an individual subtest score.

2. The difference between the verbal and performance IQ's can be used in diagnosis.

3. Certain subtests hold up and others do not hold up in paranoid schizophrenia, with the result that an index can be devised as an aid in differential diagnosis.

The term "hold up" is here intended to apply to certain abilities which drop least in a pattern of paranoid schizophrenia.

## CHAPTER II

### METHOD

In this chapter there follows a description of the experimental and control groups and an analysis of the method used in the experimental design.

The experimental group consisted of 40 hospitalized patients diagnosed Schizophrenia, paranoid type. There was no evidence of conflicting diagnoses. Cases selected were uncomplicated by neurological involvement, but were characterized by delusions and other evidence of mental disorganization. All were from either Hopital Saint-Michel Archange, Quebec, or the Ontario Hospital, Brockville. All were white, French-speaking Canadians.

The 40 subjects for the control group were chosen from the population utilized by Chagnon<sup>13</sup>, matched case for case with respect to age, race and education to correspond with the 40 psychotics. Table I presents the means and standard deviations of age and education, and the mean verbal and performance IQ's. Insufficient cases were available to include the factors of sex, occupation and intelligence, but with the exception of intelligence the groups as a whole were fairly comparable. Moreover, Wechsler<sup>14</sup> states that differences between sexes are insignificant.

---

<sup>13</sup> Maurice Chagnon, Manuel et normes de l'Echelle d'Intelligence Ottawa-Wechsler, Editions de l'Universite d'Ottawa, 1953, 56 pages.

<sup>14</sup> D. Wechsler, op. cit., p. 106.

TABLE I.- Mean age and education in years and mean verbal and performance IQs of the experimental and control groups

| Group             | N  | Age  |      | Education |       | IQ    |       |
|-------------------|----|------|------|-----------|-------|-------|-------|
|                   |    | Mean | S.D. | Mean      | S. D. | V.    | P.    |
| Experi-<br>mental | 40 | 40.8 | 5.3  | 8.5       | 3.2   | 90.7  | 79.4  |
| Control           | 40 | 40.6 | 5.1  | 9.0       | 2.4   | 109.3 | 109.1 |

The Ottawa-Wechsler had been administered to all 80 cases. This test is identical to the Wechsler-Bellevue except that it contains no vocabulary subtest. The comparison of the two groups in each of the 10 subtests is shown in Table II.

Since this experiment has sought to obtain results which would be useful in individual diagnosis, the intra-individual method has been preferred. This renders a more meaningful pattern of the factors which have played a part in the individual's illness. Where possible, group averages have been avoided since they tend to conceal unique characteristics.

In order to determine whether there was a pattern characteristic of paranoid schizophrenia, thereby demonstrating the initial sub-hypothesis, the first measure employed was the deviation of each subtest from the mean of all the subtests in the individual's score. The second measure used the deviation of each subtest from the score of certain subtests that were found to hold up in this study of paranoid schizophrenia. In order to represent both verbal and performance phases, Information and Object Assembly were the two subtests selected. The resulting patterns were then reapplied to the original data.

TABLE II. - Means and standard deviations obtained in ten subtests by experimental and control groups.

|        | Experimental |      | Control |      |
|--------|--------------|------|---------|------|
|        | M            | S.D. | M       | S.D. |
| Info   | 7.55         | 3.9  | 11.1    | 1.5  |
| Comp   | 7.32         | 3.5  | 11.4    | 1.42 |
| Digits | 7.22         | 3.7  | 9.0     | 1.3  |
| Arith  | 6.50         | 3.3  | 9.4     | 1.44 |
| Sim    | 7.57         | 3.5  | 11.4    | 1.6  |
| P.A.   | 4.82         | 3.2  | 10.3    | 1.7  |
| P.C.   | 4.42         | 3.0  | 10.7    | 1.4  |
| B.D.   | 5.80         | 3.2  | 9.2     | 2.4  |
| O.A.   | 7.35         | 3.6  | 9.6     | 1.9  |
| D.Sym  | 2.72         | 2.85 | 9.2     | 2.2  |

To find the discrepancies between the verbal and performance IQ's in both experimental and control groups, the sum of the number of verbal IQ's exceeding performance IQ's was determined and also the sum of the number of performance IQ's greater than verbal IQ's. The sign through  $\chi^2$  was then obtained using the formula:

$$\chi^2 = \sum \left[ \frac{(f_o - f_e)^2}{f_e} \right].$$

A mean rank order of the 10 subtests in all 80 cases was given by calculating the mean weighted score for each subtest and assigning rank orders from 1 to 10 in each group. The subtest which contributed most to the individual's total score was ranked One. This rank order for the experimental subjects was then compared to the controls and to Rabin's rank order through a rho correlation. The following was the formula:

$$P \text{ (rho)} = 1 - \frac{6 \sum D^2}{N(N^2-1)} \pm \frac{1.05(1-P^2)}{\sqrt{N-1}}$$

Finally an index was tabulated based on an arbitrary arrangement of individual subtest scores. Neither member of the ratio was composed exclusively of verbal or performance subtest scores, thereby eliminating any disadvantage deriving from an especially good verbal or performance ability. Two subtests that held up and two that did not hold up in this study were selected. The ratio used was:

Information + Object Assembly  
Arithmetic + Digit Symbol

This index was computed for each member of both groups and a mean index was obtained for the experimental subjects and for the controls. A critical ratio was computed using the formula:

$$GD = \frac{\sigma^2 M_1 + \sigma^2 M_2 - 2r_{12} \sigma M_1 \sigma M_2}{\sigma^2 M_1 + \sigma^2 M_2 - 2r_{12} \sigma M_1 \sigma M_2}$$

The mean index for the experimental group was then re-applied to both groups and the percentage of cases thus discriminated was determined.

CHAPTER III  
RESULTS AND DISCUSSION

An examination of the results of this study strongly supports the general hypothesis that paranoid schizophrenia is identifiable on the Ottawa-Wechsler.

Column 1 of Table III gives the profile effect around the mean of the 10 subtests. A further breakdown of this pattern showing the test characteristics of the experimental group is contained in Table IV. The diagnostic signs are those used by Wechsler<sup>15</sup>. A comparison with Wechsler's pattern for schizophrenia revealed significant differences in but 3 of the 10 subtests, which was not unexpected since his range is very broad. Similarities in the present study vary only from 0 to + +, whereas Wechsler found a greater variability of + to - -. Direction was reversed in Block Design which dropped to - - and in Object Assembly which rose to + +. The pattern resulting from the deviations around the mean of the 10 subtests when reapplied to each of the subjects in both experimental and control groups correctly picked up 86% of the schizophrenics and 18% false positives of the controls, or 4 out of 5. An arbitrary high cutting point of 7 out of 10 signs was used.

---

<sup>15</sup>Id., ibid., p. 152.

TABLE III.- Profile-effect of the experimental group around (1) mean of 10 subtests (2) two subtests that hold up in this study.

|       | Mean of<br>10 subtests | Info     | Obj. Ass. |
|-------|------------------------|----------|-----------|
| Info  | 0 to † †               |          | 0         |
| Comp  | 0 to † †               | 0        | 0 to - -  |
| D. Sp | 0 to † †               | 0 to - - | 0         |
| Arith | 0                      | 0 to - - | 0 to - -  |
| Simil | 0 to † †               | 0        | 0         |
| P.A.  | 0 to - -               | 0 to - - | 0 to - -  |
| P.C.  | 0 to - -               | 0        | 0 to - -  |
| B.D.  | 0 to - -               | 0 to - - | 0 to - -  |
| C.A.  | 0 to † †               | 0        |           |
| D. Sy | ---                    | ---      | 0 to - -  |

## RESULTS AND DISCUSSION

14

TABLE IV. - Distribution of percentage of experimental subjects obtaining Wechsler diagnostic signs on each subtest.

| Sign | Info | Comp | D.Sp. | Ari  | Sim  | P.A. | P.C. | B.D. | O.A. | D.SY |
|------|------|------|-------|------|------|------|------|------|------|------|
| ++   | 30   | 20   | 27.5  | 12.5 | 27.5 | 2.5  | 5    | 10   | 32.5 |      |
| +    | 5    | 17.5 | 12.5  | 7.5  | 2.5  |      |      | 12.5 | 17.5 |      |
| 0    | 65   | 55   | 42.5  | 70   | 62.5 | 60   | 45   | 45   | 25   | 17.5 |
| -    |      | 7.5  | 10    | 5    | 2.5  | 25   | 22.5 | 20   | 10   | 30   |
| --   |      |      | 7.5   | 5    | 5    | 12.5 | 27.5 | 12.5 | 15   | 52.5 |

TABLE V.- Distribution in percentages of cases picked up by reapplication of patterns to experimental and control groups.

| Pattern             | Experimental | Control (false positives) |
|---------------------|--------------|---------------------------|
| Mean of 10 subtests | 86           | 18                        |
| Info. score         | 77           | 5                         |
| Obj. Ass. score     | 84           | 2.5                       |

TABLE VI.- Discrepancies between verbal and performance IQ's of the experimental and control groups.

|                          | Control           |      | Experimental |      |
|--------------------------|-------------------|------|--------------|------|
|                          | Cases             | %    | Cases        | %    |
| Verbal above performance | 16                | 40   | 33           | 82.5 |
| Performance above verbal | 23                | 57.5 | 7            | 17.5 |
| N11                      | 1                 | 2.5  | 0            | 0    |
| Total                    | 40                | 100  | 40           | 100  |
| Chi square               | 30.16 (P = <0.01) |      |              |      |

The second and third columns of Table III contain the profile effect around two subtests that were found to hold up in the present study. Using the same criteria of 7 signs, the Information score pattern when reapplied to the data picked up 77% of the experimental group and 5% of the controls, or 3 out of four. The Object Assembly score pattern identified 84% and 2.5%, or 4 out of five. These results are contained in Table V.

In Table VI the differences between verbal and performance IQ in both groups have been compared without regard for the 10 point difference that Wechsler thought to be diagnostic with subjects of a nearly average IQ.

It was found that 82.5% of the experimental subjects had a verbal IQ greater than performance as compared with only 40% of the control group. This discrepancy may have been due to the illness or the fact that the gulf is larger as IQ drops<sup>16</sup>. However an examination of the extreme cases at both ends of the distribution produced no clear evidence for the second explanation. On this basis then, 4 out of 5 could be accurately diagnosed. This yielded a chi square of 30.16 with a P of less than 0.01.

---

<sup>16</sup>Chagnon, op. cit., p. 19

The mean rank order of the 10 subtests of both groups and Rabin's rank order are contained in Table VII. A rho correlation of  $.47 \pm .27$  was obtained between the experimental and control groups and  $.16 \pm .37$  between the experimental and Rabin's. Neither  $\rho$  is significantly different from a  $\rho$  of 0.00<sup>17</sup>. It can be said that the first five of these subtests: Similarities, Information, Object Assembly, Comprehension and Digits hold up in paranoid schizophrenia and that the last five do not hold up.

The results relating to the final sub-hypothesis are shown in Table VIII. The mean index for the control group was 1.20 and for the experimentals 2.10, giving a C.R. of 1.00 which was significant above the .50 level. This latter ratio when reapplied to all 80 cases and using a cutting score of 1.25 picked up 72.5% of the experimental subjects as well as 26% false positives among the controls, or almost 3 out of four. A cutting score of 1.50 would pick up 65% and only 12.5% false positives.

Table IX indicates that 80% of the experimental subjects had a larger index than the control population. Of the controls, 17.5% produced a larger index than the experimentals, and 2.5% showed no difference.

---

<sup>17</sup>T.R. Thornton, The significance of rank difference coefficients of correlation, Psychometrika, vol. 8, no. , 1943, p. 212.

TABLE VII.- Mean rank order ratings of 10 subtests in experimental and control groups, showing a comparison with Rabin's.

|        | Controls<br>(1) | Experimentals<br>(2) | Rabin's<br>(3) |
|--------|-----------------|----------------------|----------------|
| Info   | 3               | 2                    | 1              |
| Comp   | 1               | 4                    | 2              |
| Digits | 10              | 5                    | 8              |
| Arith  | 7               | 6                    | 3              |
| Simil  | 1               | 1                    | 7              |
| P.A.   | 5               | 8                    | 4              |
| P.C.   | 4               | 9                    | 6              |
| B.D.   | 9               | 7                    | 5              |
| O.A.   | 6               | 3                    | 10             |
| D.Sy   | 8               | 10                   | 9              |

$$\text{Rho (1) and (2)} = .47 \pm .27$$

$$\text{Rho (2) and (3)} = .16 \pm .34$$

Rank 1 indicates subtest making greatest contribution to individual's score.

TABLE VIII.- Significance of difference between the mean indices of the experimental and control groups.

| Group        | Mean Index | S.D. | C.R.  |
|--------------|------------|------|-------|
| Experimental | 2.10       | 1.07 | 1.00* |
| Control      | 1.20       | 0.42 |       |

\*Significant above 0.50 level.

TABLE IX.- Comparison of size of index between the experimental and control groups by pairs.

|                                   | Cases | %    |
|-----------------------------------|-------|------|
| Experimental greater than control | 32    | 80   |
| Control greater than experimental | 7     | 17.5 |
| No difference                     | 1     | 2.5  |
| Total                             | 40    | 100  |

The results seem to justify a tentative conclusion that the Ottawa-Wechsler is a useful tool in individual diagnosis. \* Though there is smaller variability in Similarities than in Wechsler's schizophrenic group and though a very high Object Assembly and very low Block Design run exactly counter to his results, the explanation may lie in the fact that the functions measured by the 10 subtests are still obscure. It may be that these differences are characteristic of paranoids and not of an undifferentiated schizophrenic population as was Wechsler's.

CHAPTER IV  
SUMMARY AND CONCLUSIONS

A review of the literature on the use of the Wechsler-Bellevue for diagnosis revealed lack of agreement in patterns and indices derived for the various nosological groups. Much of this disagreement was thought to have stemmed from poorly controlled variables.

The hypothesis was that when the factors age, racial background and education were controlled, a pattern and an index identifiable with paranoid schizophrenia could be established. Forty paranoid schizophrenics were matched case for case with forty normal controls; all had been given ten subtests of the Ottawa-Wechsler. A mean profile effect of the experimental group was applied to each of the 80 cases with the result that 86% of the experimental subjects and 18% false positives among the controls were picked out. Generally, diagnosis made on the basis of this pattern alone would have been correct about four-fifths of the time. The pattern around the Information score identified 77% correctly as schizophrenics and 5% false positives or 3 out of four. The Object Assembly profile picked 84% and 2.5, or about four out of five.

Investigation of the discrepancies in verbal and performance IQ's of the two groups revealed 82.5% of the

experimental subjects had a higher verbal IQ compared with 40% of the controls.

Mean rank order ratings were calculated for the 10 subtests and when compared with Rabin's, yielded a  $\rho$  (rho) of .16. Compared with the control group in this study the resulting  $\rho$  was .47. The first five of these subtests may be said to hold up in paranoid schizophrenia.

Finally an index was devised which would pick out 72.5% of the experimental group and 26% of the controls, or almost 3 out of four.

The findings contain a partial basis for definition of diagnostic indicators in Schizophrenia, paranoid type. Prediction may be sharpened in a less heterogeneous group where intelligence and duration of illness are controlled. Cautious interpretation is recommended since the devices have not actually been used to predict beyond this study. Validity needs to be checked by using other control groups. Differential diagnosis between other types of schizophrenia and paranoid should be investigated.

Allen, R.M., The test performance of the brain injured, Journal of Clinical Psychology, vol. 3, no. 3, July, 1947, p. 225-230.

Example of pattern around the Information subtest.

Chagnon, Maurice, Manuel et normes de l'Echelle d'Intelligence Ottawa-Wechsler, Editions de l'Universite d'Ottawa, 1953, 56 pages.

Describes population used in standardizing the Ottawa-Wechsler.

Harper, Edwing, Jr., Discrimination of the types of schizophrenia by the Wechsler-Bellevue Scale, Journal of Consulting Psychology, vol. 14, no. 4, August, 1950, p. 290-296.

Patterns of types of schizophrenia are picked up with the Wechsler.

Klein, George S., An application of the multiple regression principle to clinical prediction, Journal of General Psychology, vol. 38, Second Half, April, 1948, p. 159-179.

Useful review of literature on the Wechsler in diagnostic testing.

Kogan, William Sanford, An investigation into the relationship between psychometric patterns and psychiatric diagnosis, Journal of General Psychology, vol. 43, First Half, July, 1950, p. 17-48.

Contains useful review of methods by researchers using the Wechsler.

Magaret, A., Parallels in the behavior of schizophrenics, paretics and pre-senile non-psychotics, Journal of Abnormal & Social Psychology, vol. 37, no. 4, October, 1942, p. 511-528.

Example of use of intra-individual differences.

Marks, Melvin R., A criticism of the use of the Wechsler-Bellevue Scale as a diagnostic instrument, Journal of General Psychology, vol. 49, First Half, July, 1953, p. 143-152.

Thorough analysis of the construction of the Wechsler and why it fails as a diagnostic tool.

Rabin, A.I., Test-score patterns in schizophrenia and non-psychotic states, Journal of Psychology, vol. 12, First Half, July, 1941, p. 91-100.

Demonstrates use of characteristic indices.

Rabin, A. I., Differentiating psychometric patterns in schizophrenia and manic-depressive psychosis, Journal of Abnormal & Social Psychology, vol. 37, no. 2, April, 1942, p. 270-272.

This work uses the Rank Order of individual records or of group means of subtests. It also lists the subtests that "hold up" in schizophrenia.

Rabin, A.I., and W.H. Guertin, Research with the Wechsler-Bellevue test: 1945-1950, Psychological Bulletin, vol. 48, May, 1951, p. 211-248.

A basic reference work, since it contains a review of much of the literature.

Rapaport, D., M. Gill and R. Schafer, Diagnostic Psychological Testing, vol. 1, Chicago, Year Book Publishers, 1945, 573 pages.

Reichard, S., and R. Schafer, The clinical significance of the scatter on the Bellevue scale, Bulletin of the Menninger Clinic, vol. 7, no. 3, May, 1943, p. 93-98.

Demonstrates use of inter-individual group means as method of establishing pattern.

Schofield, W.S., Critique of scatter and profile analysis of psychometric data, Journal of Clinical Psychology, vol. 8, no. 1, January, 1952, p. 16-22.

This research reviews reasons why investigators failed to achieve high reliability on the Wechsler.

Wechsler, D., The measurement of adult intelligence, Baltimore, The Williams and Wilkins Co., 3rd ed., 1944, 258 pages.

Basic text containing description of test and its diagnostic uses.

## WEIGHTED SCORES OF EXPERIMENTAL GROUP

| CASE | INFO | COMP | D.SP | ARI | SIM | PA | PC | BD | OA | D.SY |
|------|------|------|------|-----|-----|----|----|----|----|------|
| 1    | 5    | 4    | 0    | 3   | 3   | 5  | 9  | 4  | 9  | 2    |
| 2    | 11   | 13   | 10   | 11  | 14  | 10 | 7  | 10 | 9  | 7    |
| 3    | 19   | 12   | 13   | 11  | 15  | 18 | 13 | 16 | 9  | 13   |
| 4    | 6    | 5    | 7    | 8   | 8   | 6  | 7  | 7  | 9  | 4    |
| 5    | 5    | 9    | 6    | 4   | 3   | 3  | 3  | 6  | 9  | 2    |
| 6    | 6    | 8    | 2    | 8   | 12  | 9  | 6  | 10 | 14 | 3    |
| 7    | 9    | 10   | 11   | 13  | 8   | 3  | 4  | 7  | 9  | 3    |
| 8    | 7    | 8    | 10   | 10  | 8   | 6  | 6  | 11 | 11 | 5    |
| 9    | 7    | 15   | 10   | 9   | 10  | 7  | 5  | 7  | 9  | 5    |
| 10   | 6    | 3    | 10   | 5   | 3   | 2  | 0  | 2  | 9  | 2    |
| 11   | 7    | 11   | 10   | 11  | 14  | 9  | 7  | 6  | 1  | 6    |
| 12   | 2    | 1    | 0    | 1   | 3   | 2  | 0  | 5  | 0  | 0    |
| 13   | 8    | 8    | 10   | 9   | 9   | 6  | 7  | 7  | 8  | 4    |
| 14   | 3    | 8    | 6    | 3   | 8   | 5  | 3  | 2  | 0  | 2    |
| 15   | 4    | 5    | 3    | 8   | 6   | 3  | 4  | 1  | 7  | 3    |
| 16   | 5    | 3    | 7    | 4   | 4   | 5  | 5  | 5  | 7  | 3    |
| 17   | 6    | 8    | 3    | 5   | 6   | 3  | 3  | 8  | 12 | 4    |
| 18   | 7    | 2    | 1    | 3   | 4   | 3  | 3  | 4  | 9  | 0    |
| 19   | 9    | 8    | 7    | 5   | 12  | 2  | 4  | 0  | 0  | 0    |
| 20   | 15   | 8    | 4    | 6   | 14  | 5  | 3  | 6  | 9  | 0    |
| 21   | 3    | 6    | 1    | 3   | 3   | 3  | 0  | 5  | 13 | 0    |
| 22   | 7    | 10   | 7    | 8   | 11  | 3  | 5  | 8  | 9  | 2    |
| 23   | 9    | 11   | 13   | 14  | 16  | 6  | 5  | 6  | 10 | 3    |
| 24   | 7    | 3    | 12   | 8   | 5   | 2  | 0  | 0  | 0  | 1    |
| 25   | 19   | 14   | 10   | 6   | 16  | 7  | 12 | 15 | 12 | 8    |
| 26   | 10   | 5    | 8    | 5   | 3   | 5  | 5  | 2  | 2  | 2    |
| 27   | 3    | 3    | 2    | 1   | 6   | 2  | 0  | 0  | 0  | 0    |
| 28   | 9    | 6    | 10   | 6   | 6   | 3  | 3  | 6  | 3  | 3    |
| 29   | 13   | 9    | 10   | 10  | 14  | 9  | 9  | 5  | 10 | 5    |
| 30   | 14   | 12   | 8    | 10  | 4   | 4  | 4  | 11 | 9  | 0    |
| 31   | 5    | 4    | 10   | 9   | 7   | 5  | 3  | 8  | 12 | 0    |
| 32   | 11   | 10   | 8    | 9   | 2   | 6  | 6  | 12 | 13 | 7    |
| 33   | 6    | 7    | 8    | 11  | 8   | 5  | 4  | 9  | 9  | 2    |
| 34   | 5    | 2    | 8    | 5   | 6   | 5  | 3  | 2  | 9  | 0    |
| 35   | 5    | 1    | 8    | 1   | 3   | 2  | 0  | 0  | 0  | 0    |
| 36   | 4    | 6    | 7    | 4   | 3   | 2  | 3  | 4  | 12 | 0    |
| 37   | 7    | 9    | 3    | 1   | 5   | 2  | 3  | 4  | 0  | 0    |
| 38   | 7    | 15   | 13   | 5   | 10  | 6  | 3  | 5  | 12 | 2    |
| 39   | 4    | 5    | 6    | 3   | 4   | 2  | 7  | 6  | 0  | 6    |
| 40   | 7    | 6    | 7    | 4   | 7   | 2  | 1  | 4  | 9  | 0    |

## WEIGHTED SCORES OF CONTROL GROUP

|     | INF | COMP | D.SP | ARI | SIM | PA | PC | BD | OA | D.SY | V.<br>IQ | P.<br>IQ |
|-----|-----|------|------|-----|-----|----|----|----|----|------|----------|----------|
| 1.  | 15  | 12   | 11   | 13  | 11  | 13 | 14 | 16 | 14 | 12   | 118      | 125      |
| 2.  | 16  | 14   | 12   | 14  | 17  | 10 | 12 | 13 | 14 | 13   | 131      | 115      |
| 3.  | 18  | 11   | 10   | 11  | 20  | 15 | 14 | 15 | 14 | 13   | 127      | 128      |
| 4.  | 8   | 11   | 10   | 10  | 14  | 13 | 14 | 12 | 14 | 8    | 107      | 117      |
| 5.  | 14  | 16   | 11   | 7   | 15  | 13 | 12 | 14 | 12 | 13   | 119      | 121      |
| 6.  | 11  | 20   | 7    | 11  | 12  | 9  | 9  | 10 | 10 | 11   | 117      | 101      |
| 7.  | 14  | 14   | 13   | 14  | 14  | 13 | 12 | 13 | 13 | 12   | 126      | 120      |
| 8.  | 9   | 9    | 12   | 8   | 13  | 13 | 12 | 11 | 10 | 11   | 105      | 115      |
| 9.  | 8   | 8    | 10   | 6   | 11  | 10 | 10 | 6  | 9  | 9    | 96       | 98       |
| 10. | 13  | 17   | 13   | 17  | 12  | 10 | 16 | 15 | 14 | 12   | 130      | 127      |
| 11. | 8   | 15   | 13   | 10  | 11  | 11 | 11 | 5  | 9  | 9    | 112      | 99       |
| 12. | 8   | 11   | 4    | 4   | 3   | 6  | 9  | 6  | 9  | 2    | 80       | 83       |
| 13. | 17  | 17   | 11   | 11  | 19  | 9  | 14 | 10 | 4  | 10   | 134      | 102      |
| 14. | 11  | 8    | 10   | 10  | 13  | 10 | 12 | 6  | 9  | 11   | 107      | 103      |
| 15. | 13  | 12   | 7    | 9   | 9   | 14 | 11 | 12 | 12 | 8    | 105      | 118      |
| 16. | 16  | 11   | 11   | 10  | 12  | 9  | 13 | 6  | 11 | 11   | 116      | 109      |
| 17. | 13  | 17   | 10   | 13  | 15  | 14 | 12 | 11 | 11 | 10   | 126      | 119      |
| 18. | 7   | 10   | 8    | 6   | 9   | 9  | 6  | 6  | 7  | 10   | 94       | 94       |
| 19. | 14  | 16   | 11   | 13  | 15  | 10 | 12 | 10 | 5  | 10   | 127      | 105      |
| 20. | 10  | 10   | 10   | 10  | 12  | 10 | 9  | 10 | 11 | 10   | 107      | 109      |
| 21. | 14  | 16   | 11   | 17  | 11  | 14 | 13 | 10 | 12 | 11   | 127      | 121      |
| 22. | 15  | 8    | 10   | 10  | 11  | 15 | 16 | 9  | 10 | 8    | 110      | 119      |
| 23. | 8   | 14   | 11   | 8   | 15  | 13 | 12 | 12 | 11 | 12   | 113      | 124      |
| 24. | 6   | 13   | 8    | 9   | 12  | 5  | 6  | 7  | 13 | 4    | 104      | 94       |
| 25. | 14  | 15   | 7    | 10  | 17  | 14 | 16 | 9  | 9  | 11   | 121      | 123      |
| 26. | 13  | 15   | 12   | 11  | 11  | 10 | 11 | 14 | 10 | 8    | 120      | 119      |
| 27. | 7   | 9    | 7    | 3   | 13  | 8  | 4  | 6  | 4  | 2    | 95       | 85       |
| 28. | 6   | 11   | 7    | 4   | 7   | 6  | 5  | 6  | 12 | 8    | 91       | 100      |
| 29. | 9   | 9    | 11   | 11  | 9   | 12 | 6  | 12 | 12 | 6    | 107      | 113      |
| 30. | 4   | 4    | 4    | 3   | 3   | 3  | 3  | 2  | 6  | 1    | 74       | 75       |
| 31. | 7   | 6    | 7    | 3   | 6   | 3  | 5  | 7  | 3  | 7    | 88       | 86       |
| 32. | 11  | 7    | 11   | 13  | 12  | 11 | 13 | 8  | 9  | 13   | 113      | 120      |
| 33. | 8   | 8    | 7    | 10  | 11  | 10 | 13 | 6  | 4  | 8    | 103      | 105      |
| 34. | 13  | 7    | 2    | 9   | 4   | 6  | 6  | 6  | 13 | 12   | 94       | 107      |
| 35. | 10  | 6    | 4    | 9   | 3   | 9  | 12 | 6  | 9  | 11   | 91       | 112      |
| 36. | 13  | 7    | 7    | 11  | 11  | 8  | 9  | 9  | 11 | 11   | 108      | 113      |
| 37. | 14  | 11   | 10   | 10  | 9   | 10 | 16 | 10 | 5  | 8    | 113      | 114      |
| 38. | 13  | 16   | 8    | 4   | 15  | 13 | 13 | 11 | 10 | 10   | 115      | 123      |
| 39. | 9   | 8    | 11   | 9   | 11  | 15 | 6  | 7  | 3  | 7    | 107      | 101      |
| 40. | 10  | 8    | 4    | 6   | 9   | 9  | 12 | 6  | 6  | 8    | 96       | 105      |

## APPENDIX 3

### AN ABSTRACT OF

#### AN ANALYSIS OF PATTERN ON THE OTTAWA-WECHSLER IN PARANOID SCHIZOPHRENIA

Pattern analysis on the French-language adaptation of the Wechsler-Bellevue is thought to be useful in obtaining greater accuracy in the individual diagnosis of paranoid schizophrenia. This study limits itself to the intra-individual method, avoiding so far as possible group means and their consequent concealment of unique characteristics of the individual.

The method explores pattern around (1) the mean of the 10 subtests in the individual scores, (2) the Information score (3) the Object Assembly score. These patterns when reapplied to the original data and a control group, produce statistically significant results in the expected direction.

A second method analyzes differences between verbal and performance IQ's. The discrepancies can be used as a diagnostic sign.

Finally a paranoid schizophrenic index is devised, making use of a ratio of high-to-low-ranking subtests. Results here also justify use of such an index in individual diagnosis.

ABSTRACT

30

The writer cautions that validity should be strengthened by using other controls, notably made up of other types of schizophrenia.