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An Approach to the Development of Intelligence in Using of WISC

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Since the last revised edition of Binet test was published in 1911, many tests have been modified for the purpose of measuring General intelligence in many countries. Since 1938, the different standpoint of Thurstone from this viz. the exploration of mental structure by Group factors and the diagnostic tests which have followed have been becoming popular gradually under the stimulus of practical need, therapy.

Stanford-Binet test, WAIS (Wechsler Adult Intelligence Scale) and WISC (Wechsler Intelligence Scale for Children) are representative in U.S.A. It is well known in Japan that Japanese editions of Binet test and Stanford-Binet test have been published by J. Suzuki, R. Kubo and K. Tanaka. Japanese edition of WISC has also been published by S. Kodama and his group. W—B upon which WAIS is based has been revised by A. Yoda, but WAIS has not yet been edited in Japan.

WISC, including WAIS and W—B, has characters both of General factor theory of Spearman and of Group factor theory of Thurstone. So total I.Q can be measured by WISC as well as by Stanford-Binet test, on the other hand, mental structure can be explained by the theory of Scatter.

Wechsler's idea that he intended to explain both General and Group intelligence at the same time by only one test was criticized by L. J. Cronbach, as follows "it is not possible to eat one's cake and have it."

Nevertheless, it can be said that at present, WISC is the most representative of all the tests that are intended to make the theory coincide with the Clinic.

Our approach is to find out how Verbal I.Q and Performance I.Q may be changed with the progress of the grade from the 1st of primary schools to the 3rd of secondary schools and how the relation between Verbal I.Q and Performance I.Q may be changed as I.Q is high or low.

Two aspects of mental structure, that is, Verbal I.Q. and Performance I.Q.
have not been explained by Stanford-Binet test, which is intended for measuring General intelligence. Of course, it will be a great problem to be solved in the future whether the aspects of mental structure are "two" or more, but we do not take up this problem now.

Procedure

Subjects were divided into 4 groups, primary School (1. 2), (3.4), (5.6) and secondary school (2.3). Total members of each group were respectively 599, 198, 367 and 470. Next, we divided each group into 5 stages according to D. Wechsler—under I.Q. 79, 80~90, 91~110, 111~119 and over 120. (7)

Conspicuousness of the difference between mean Verbal I.Q. and mean Performance I.Q. of members in each stage has been criticized. Table I indicates it. Curves of Verbal I.Q. and Performance I.Q. of each stage are clearly shown in Fig. 1.

Conclusion

As Table I and Fig. 1 show, Performance I.Q. of 1st and 2nd grades of the
primary school is always superior to Verbal I.Q. in all stages of intelligence. This relation between Performance I.Q. and Verbal I.Q. is the same with the case of inferior children of 3rd and 4th grades whose total I.Q. is under 90. In general, we can conclude that lower grades of the primary school are better in Performance which implies Visual Organization and Visual-Motor Coordination than in Verbal that is Essential Verbal, Attention and Concentration.

Normal and superior children of the 3rd and 4th grades, inferior and normal ones of the 5th and 6th grades of the primary school and inferior ones of the 2nd and 3rd grades of the secondary school are almost equal

Table II

<table>
<thead>
<tr>
<th>Age Level</th>
<th>Mean Difference (V-I.Q.) minus P-I.Q.</th>
<th>Standard Deviation of Difference</th>
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<tbody>
<tr>
<td>5</td>
<td>0.5</td>
<td>12.7</td>
</tr>
<tr>
<td>6</td>
<td>1.1</td>
<td>12.0</td>
</tr>
<tr>
<td>7</td>
<td>1.1</td>
<td>11.9</td>
</tr>
<tr>
<td>8</td>
<td>1.1</td>
<td>12.5</td>
</tr>
<tr>
<td>10</td>
<td>1.1</td>
<td>12.0</td>
</tr>
<tr>
<td>11</td>
<td>1.1</td>
<td>12.3</td>
</tr>
<tr>
<td>12</td>
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<tr>
<td>14</td>
<td>1.1</td>
<td>13.3</td>
</tr>
<tr>
<td>15</td>
<td>1.1</td>
<td>12.0</td>
</tr>
<tr>
<td>All Ages</td>
<td>0.0</td>
<td>12.5</td>
</tr>
</tbody>
</table>

N=200 for each age
in both Verbal I.Q. and Performance I.Q. that is, differences are not significant. On the Contrary, superior children of 5th and 6th grades of the primary school and normal and superior children of the 2nd and 3rd grades of the secondary school are higher in Verbal I.Q. than in Performance I.Q. In other words, it may be said that superiority of intelligence of the upper grades is predominated by Verbal.

Seashore's study seems to be inconsistent with ours. Table II shows the result brought about by the test to which were pur 2200 male and female children from 5 years to 15 years old. As the table shows, there is little mean difference between Verbal I.Q. and Performance I.Q.

This result is quite consistent with the theoretical research of the making of the test. If another experiment in U.S.A. support Seashores, it will be interesting to study the mental structure of American school children.

For instance, it may be presumed from table II, III and Fig. II that the study of Wechsler's is nearly similar to Seashore's though it has no direct reference to this problem. Because, in the study of Wechsler's, 170 out of
368 subjects are better in Verbal I.Q. than in Performance I.Q. and 182 subjects are quite the reverse.

But, the result we have met with is different from that with which Seashore met. The relation between Verbal I.Q. and Performance I.Q. in lower grades of the primary school is quite reverse to the relation between Verbal I.Q. and Performance I.Q. in the upper grades of the primary school and all the grades of the secondary school.

In order to confirm this, we compared our study with Wechsler's. Table III and Fig. II indicates it.

In table III, V > P indicates the proportion of subjects whose Verbal I.Q. is superior to Performance I.Q. and V < P indicates that of subjects whose Verbal I.Q. is inferior to Performance I.Q. As the table shows, in the case of inferior children, we can find a considerable difference between our study and the study in American—it may be thought that Japanese inferior children are drilled in Verbal more than American inferior children.

In other words, it is probably due to the difference of the educational system between the two countries. That is, in Japan, the social needs or the aspiration of parents and children to be superior in Verbal are very high, so there is an intense tendency to make every effort to teach children Reading, writing, and Arithmetical.

But, in the case of superior children, there is a nearly complete coincidence between our study and the American study and when we think of the similarity of curves in Fig. II, it can be understood that the relation between Verbal and Performance becomes reverse according to the superiority of intelligence.

But we need to make any more representative sample and continue to study hereafter.
Summary

1) In general, lower grades of the primary school are more excellent in Performance than in Verbal.

2) Superiority of intelligence in the upper grades is predominated by Verbal.

3) In the case of superior children, there is a nearly complete coincidence between American and Japanese children. But, in the case of inferior children, we can find a considerable difference between American and Japanese children.

References