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## The WISC Test Pattern of Children With Severe Reading Disabilities

By Margaret Muir  
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### The General Problem

The majority of intelligent children in the American public and private schools want to read accurately, effectively, and thoughtfully. The academic and social demands of our schools and society usually require the children to be able to read independently.

The major concern of this paper is the problem of the retarded readers. They are children whose reading achievement is less than their general measured ability.

### Related Research

During the last half century various causes of children's reading disabilities have been expounded. A few studies have tried to discover a specific WISC subtest pattern associated with the retarded reader. In many, the reported test results and conclusions are difficult to interpret and evaluate. The inferences are based upon data collected from fifteen to thirty-one retarded readers. Some studies used one or more years, while other studies used two or more years as the base amount of discrepancy between the retarded reader's expected reading level and his actual reading level as determined by the scores earned on the WISC and a standardized reading test.

In relation to the Wechsler Intelligence Scale for Children, Burks and Bruce (2) found that thirty-one retarded readers earned significantly high scores on the Picture Arrangement, Block Design, and Comprehension subtests, and significantly low scores on the Information, Arithmetic, and Coding subtests.

Graham (5) found statistically significant subtest score differences for thirty-one retarded readers: Arithmetic, Vocabulary, and Coding were significantly low; Similarities and Picture Completion were significantly high.

Altus (1) studied twenty-five retarded readers and found that Information, Arithmetic, and Coding were below the mean; and

Vocabulary, Digit Span, Picture Completion, and Object Assembly were above the mean subtest scores.

Hirst (6) used the two-way analysis approach in studying a limited number of retarded readers. He found that the subtests significantly above the two-way analysis mean were Picture Completion, Object Assembly, and Picture Arrangement. A large percentage of the group scored significantly below the two-way analysis mean on the Arithmetic, Coding, and Digit Span subtests with possibly low Vocabulary and Similarities subtest scaled scores.

### **A More Limited Problem**

Since the WISC is administered individually and because the writer of this paper has observed that retarded readers have more difficulty with specific subtests, it was decided that the WISC would be a profitable instrument for exploration in this area.

Several research studies have been completed and have found statistically significant differences for specific subtests on the WISC. However, the studies mentioned have not been in complete agreement with each other. The writer would like to select a larger population to recheck the retarded reader's WISC profile and submit it to the scrutiny of other interested persons.

### **Hypotheses**

1. Retarded readers will show a distinctive test pattern associated with the subtest scores on the WISC:
  - 1) Lower scores will be received in the subtest areas of Arithmetic, Coding, Vocabulary, and Information.
  - 2) Higher scores will be received in the subtest areas of Picture Completion, Block Design, Object Assembly, and Comprehension.
  - 3) There will be no significant difference between the total mean Performance and Verbal scaled scores received.
2. Retarded readers will be relatively weak in those parts of the intelligence test that require immediate and long-term memory of processes and information. These are the characteristics that are basic for an individual if he is to understand the written language.

### **Definition of Terms**

1. *Retarded readers* are those with discrepancies of two or more years between expected reading levels as derived from either the Verbal or

Performance score received on the Wechsler Intelligence Scale for Children and actual reading levels as measured by a standardized reading test. These children have attended public or private schools for the expected number of years for their ages.

2. *Distinctive test pattern* refers to the configuration, as shown on a scattergram, of the mean WISC subtest scaled scores.

3. *Standardized reading test* refers to the Gates Advanced Primary Reading Tests or the Gates Reading Survey.

### Procedure

Fifty Wechsler Intelligence Scale for Children and reading achievement test scores were withdrawn from the files of the Reading Center, Michigan State University, East Lansing, Michigan. These test scores had been gathered during the process of clinical diagnosis over a one year—three month period, dating from September 1959 to January 1961. The cases selected constituted the entire population so tested who met the requirements of operational definition of the retarded reader. The retarded reader is a child who is between the ages of 8-0 and 16-0 who achieved either a Verbal or Performance Scale I.Q. of 90 or higher, who received a discrepancy score of two or more years between the expected reading level and the actual reading level as measured by one of the Gates reading achievement tests (3, 4) for a child of his chronological age, who lived with an English-speaking family, and who had attended a public or private school for the expected number of years for his given age.

The Digit Span subtest (WISC) was eliminated, because it was administered to only 18 of the 50 test cases. The mean for each subtest was calculated. In order to determine the significance of the difference of the mean scores, the standard error of the mean was found and *t*'s were computed:

PC & PA: 2.736**	I & Co: 2.819**
BD & Co: 4.100**	A & S: 2.680*
S & OA: 2.699*	S & SP: 2.394*

\* .05 level of significance ( $t=2.021$ )

\*\* .01 level of significance ( $t=2.704$ )

The *t*'s for the other mean differences were not calculated because their level of significance can be inferred by inspection.

A study of table I will show the differences between means which are significant at the .01 and .05 levels of significance.

**Table 1**  
**Differences Between Means of WISC Subtest Scores**

	I	C	A	S	V	PC	PA	BD	OA	Co
I		1.16	.80	.54	.80	1.88*	.32	1.00	2.10*	2.82**
C	NS		1.96*	.62	1.96*	.72	.84	.16	.94	2.62**
A	NS	.05		2.68**	.00	2.68**	1.12	1.80*	2.90**	.66
S	NS	NS	.01		1.26	2.39**	.22	.46	2.69**	2.00**
V	NS	.05	NS	NS		2.68**	1.12	1.80*	2.90**	.61
PC	.05	NS	.01	.01	.01		2.13**	.88	.22	3.34**
PA	NS	NS	NS	NS	NS	.01		.68	1.78*	1.78*
BD	NS	NS	.05	NS	.05	NS	NS		1.10	4.10**
OA	.05	NS	.01	.01	.01	NS	.05	NS		3.56**
Co	.01	.01	NS	.01	NS	.01	.05	.01	.01	

\* Significant beyond the .05 level of significance.

\*\* Significant beyond the .01 level of significance.

NS—Not Significant

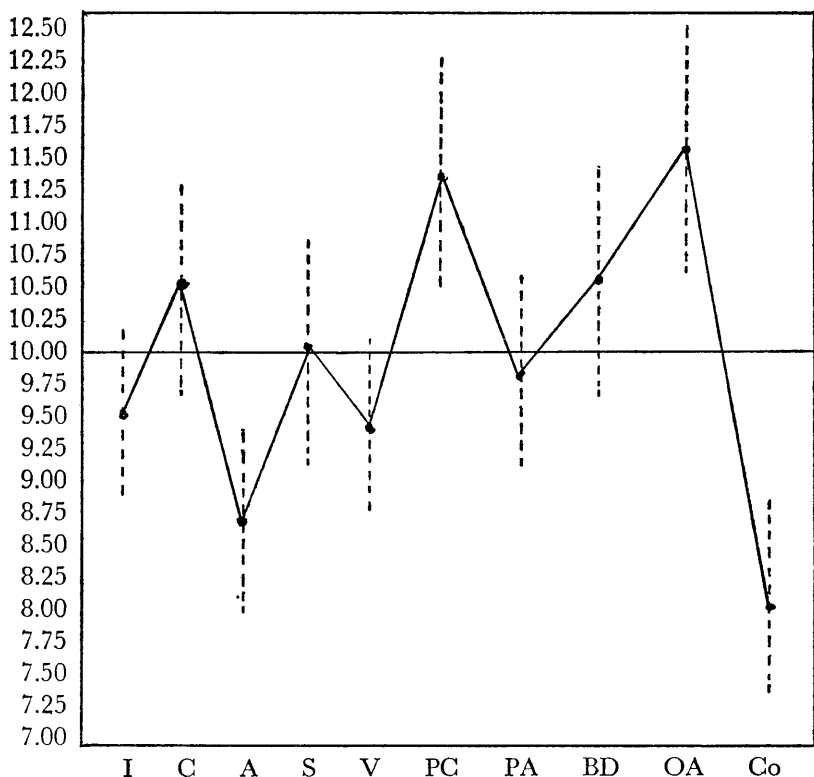
**Key:**

I: Information  
 C: Comprehension  
 A: Arithmetic  
 S: Similarities  
 V: Vocabulary  
 PC: Picture Completion  
 PA: Picture Arrangement  
 BD: Block Design  
 OA: Object Assembly  
 Co: Coding

### Summary of Findings

In the present study, fifty Wechsler Intelligence Scales for Children were withdrawn from the files of the Reading Center, Michigan State University, East Lansing, Michigan, which met the operational definition of retarded reader. The tests were statistically analyzed to determine whether a distinctive WISC subtest pattern existed for the retarded reader.

Table 2  
Mean WISC Subtest Scaled Scores



\* Mean

----- Standard error of mean

The retarded reader ranged from grades three to eleven, ages nine to sixteen, with a reading disability from two to six years. The fifty children, who represented the entire population of the Reading Center meeting the criteria for inclusion in this study, were made up of forty-nine boys and one girl. The mean chronological age for the group was 12 years-9 months; the mean grade in school was seven; and the mean reading retardation was slightly over three years.

Mean WISC IQ's were 98.46, 104.04, and 102.70 on the Verbal, Performance, and Full Scale scores, respectively. The Verbal scores ranged from 81 to 118, while the Performance scores ranged from 78 to 131 IQ points. The mean subtest scores of 9.98 are not significantly different from the expected normal mean score of 10.00. However, the subtest patterning is fairly distinctive.

The high subtest scores are Comprehension, Picture Completion, Object Assembly, and Block Design, while the low subtest scores are Arithmetic, Coding, Information, and Vocabulary. Similarities and Picture Arrangement are not significantly different from the mean. Coding and Arithmetic are significantly below the mean; Picture Completion and Object Assembly are significantly above the mean.

A comparative analysis of Burks and Bruce (2), Graham (5), Altus (1), Hirst (6), and the present study indicates that Information, Arithmetic, and Coding are significantly below the mean. Hirst, Altus, and the present study report that Picture Completion, and Object Assembly are significantly above the mean subtest scaled scores.

It can be concluded that the retarded readers do show a distinctive test pattern associated with the WISC subtest scores.

## Conclusions

Since the retarded reader may be low in associative memory, it can be inferred that he is unable to make an adequate association between a visual symbol and an auditory stimulus, exhibited by the low subtest scores that require such an association. Learning to read requires the ability to adequately associate a visual symbol with an auditory stimulus.

Learning is usually approached by the retarded reader through the availability of an immediate structured situation. This is substantiated by the scores earned above the mean on the more structured subtests of Comprehension, Block Design, Picture Completion, and Object Assembly. Therefore, it appears that the teaching materials

and measurements now being used in the areas of reading instruction and evaluation may have to be reconsidered.

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