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THE VALIDITY OF THE SUBTESTS OF THE WECHSLER INTELLIGENCE SCALE FOR CHILDREN WITH FIVE AND SIX YEAR OLDS

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CHAPTER I

INTRODUCTION

Statement of the Problem

The problem of this thesis is to determine to what extent the subtests of the Wechsler Intelligence Scale for Children (WISC) are correlated with the Revised Stanford-Binet and to ascertain whether the mean of each subtest approximates a weighted score value of ten.

The Revised Stanford-Binet has been used for years as the basic instrument in measuring general intelligence. Extensive research has been carried out on this test and clinicians in general regard it as very useful. The Stanford-Binet yields reliable mental ages and intelligence quotients which have served to indicate potentialities of future development.

The WISC, on the other hand, is a comparatively new scale. It is a point scale which includes a performance as well as a verbal scale. This latter feature caused psychologists to accept this new test with enthusiasm because they hoped it would answer many of their criticisms of the Stanford-Binet. However, it is necessary to substantiate clinical impressions of any new instrument. Detailed and comprehensive studies of the WISC must be made in order to determine its validity and to evaluate its specific merits.

Even aside from validity, it is important for clinical practise to know to what degree any two instruments are correlated.

Therefore, it is the main purpose of this thesis to determine the validity of the subtests of the WISC with five and six year old children, using the Revised Stanford-Binet as the criterion. It has frequently occurred to the writer that the WISC is inclined to underrate the children, particularly in the younger age groups. This opinion was strengthened after reading various studies on its validity. In every instance this scale under-estimated the children's ability, especially at the five year level.

Review of the Literature

During 1951, studies pertaining to the validity of the WISC and comparing it with the Revised Stanford-Binet, appeared in the journals, particularly the Journal of Consulting Psychology. These studies have proven helpful in substantiating the findings of the present thesis.

In a short article by Pastovic, we see a close relationship between the results therein obtained and the results of the present study. Fifty children were tested at the 5-6 level and the 7-6 level in order to investigate the relationship of the WISC with the Revised Stanford-Binet. For the 5-6 age group, Pastovic obtained a mean Binet IQ of 113.02 and a mean WISC full scale IQ of 103.16, a difference of 9.86 IQ points in favor of the Binet. The author

concludes that the WISC IQ should not be considered equivalent to a Binet IQ particularly at age levels below ten years.[1]

Krugman et al. also undertook a study on the validity of the WISC comparing this instrument with the Revised Stanford-Binet.

> Before accepting an instrument like the WISC to take the place of the Binet, however, psychologists felt that not only would it be necessary to try it out to substantiate their clinical impressions of its value, but they would have to study the results in comparison with Binet results.[2]

In the Krugman study, children were tested at each age level from 5½ years to 15½ years. The results at the 5 and 6 year levels are given here because of their relationship to the problem undertaken by this writer. Thirty-eight 5 year olds and thirty-eight 6 year olds were given the WISC and the Revised Stanford-Binet. For the 5 year age group, the mean Binet IQ was 107.26 and the mean WISC IQ was 96.08, a difference of 11.18 IQ points. For the 6 year age group, the mean Binet IQ was 111.87 and the mean WISC IQ was 101.87, a difference of 10 IQ points in favor of the Binet.

1. John J. Pastovic and George M. Guthrie, "Some Evidence on the Validity of the WISC," Journal of Consulting Psychology, XV (October, 1951), 385-386.

2. Judith Krugman et al., "Pupil Functioning on the Stanford-Binet and the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XV (December, 1951), 475.

> A significant relationship exists between CA and difference between Stanford-Binet and WISC Verbal IQs. In general, the younger the child, the greater the difference in favor of the Stanford-Binet.[3]

Another significant result of this study is that there was a marked tendency for greater differences between Stanford-Binet and WISC IQs to be associated with the higher Stanford-Binet IQs.

> Throughout, there were fewer children who showed higher ratings on the WISC Full Scale than on the S-B. When such children are noted, they tend to be found more frequently at the lower S-B IQ levels, and the difference between the S-B and WISC IQs is generally small. The lower the IQ, then, the more likely the WISC and S-B ratings agree.[4]

Further evidence that WISC IQs tend to be lower than Binet IQs is found in an article by Weider, Noller, and Schramm. Their study was undertaken in Louisville on 106 children, ranging in age from 5-0 years to 11-11 years, who were given the WISC and the Revised Stanford-Binet (Form L). For the 5-0 to 7-11 age group the results were as follows: the mean Binet IQ was 100.0 and the mean WISC IQ was 92.7, a difference of 7.3 IQ points.[5]

The Muhr study was utilized in the present undertaking and proved to be an invaluable source of information. The results of this study may be summarized as follows:

3. Ibid., p. 481.

4. Ibid., p. 481.

5. Arthur Weider et al., "The Wechsler Intelligence Scale for Children and the Revised Stanford-Binet," Journal of Consulting Psychology, XV (August, 1951), 330.

The individual discrepancies of the children tested were analyzed and it was seen that 34 out of the 42 children received higher IQs on the Stanford-Binet than on the Wechsler. These differences ranged from 2-28 points.[6]

Subjects and Procedure

The group of children tested in this particular study consisted of 27 children from the Sarah Fisher Home in Farmington, Michigan; 4 boys from St. Francis Home, Detroit, Michigan; 17 children from Gesu School, Detroit, and 10 children from Holy Name School, Birmingham, Michigan. The ages ranged from 5 years and 0 months to 6 years and 11 months, i.e. just short of 7 years and 0 months.

TABLE I

AGE DISTRIBUTION

Age Group	Subjects	Age Group	Subjects
5-0 to 5-3	7	6-0 to 6-3	10
5-4 to 5-7	12	6-4 to 6-7	10
5-8 to 5-11	10	6-8 to 6-11	9

The 58 subjects studied in the present thesis were combined with the 42 five and six year olds who were studied in the Muhr investigation,[7] making a total of 100 five

6. Jean Muhr, "Validity of the Wechsler Intelligence Scale for Children at the 5 and 6 Year Level," Unpublished Master's Thesis, University of Detroit Library, 1952, p. 23.

7. Ibid., p. 6.

and six year olds. The following table contains the age distribution of both groups.

TABLE II

TOTAL AGE DISTRIBUTION

Age Group	Muhr Study	Present Study	Age Group	Muhr Study	Present Study
5-0 to 5-3	13	7	6-0 to 6-3	9	10
5-4 to 5-7	2	12	6-4 to 6-7	9	10
5-8 to 5-11	6	10	6-8 to 6-11	3	9

The Sarah Fisher Home in Farmington is a home for dependent children ranging from 5 days to 14 years of age. The home is designed on the cottage plan, each age group having its own cottage and play yard. A well-trained and well-qualified staff aims to provide every possible advantage for these children. St. Francis Home is a home for dependent boys from 5 to 18 years of age. This home is built on the congregate plan, but the staff is aware of the emotional and physical needs of each child. The schools utilized in this study are parochial schools located in two of the better residential sections of the city. The majority of the parents are from the middle and upper socio-economic brackets.

The WISC and the Revised Stanford-Binet (Form L) were administered to each child. To control the effects of fatigue and practice, counter-balanced order was utilized in

the administration. The two tests were administered alternately, so that one child was given the Stanford-Binet as the first test and the next child was given the WISC as the first test. The examiner, a graduate student in psychology, administered the tests after an intensive course in individual intelligence testing, following explicitly the directions for the tests as given in the respective manuals.

The interval between the administration of the two scales was kept at a minimum in order to forestall the possible effects of an increase in knowledge between the tests, an alteration in physical condition, and growth in maturity level. The time intervals for the administration of the two tests are presented in Table III. This table combines both groups of subjects.

TABLE III

TIME INTERVALS FOR THE ADMINISTRATION OF THE TWO TESTS

Time Intervals	No. of Subjects	Time Intervals	No. of Subjects
Same day	56	Eight days	8
One day	3	Nine days	1
Two days	2	Ten days	2
Three days	2	Twelve days	1
Five days	7	Thirteen days	1
Six days	4	Fourteen days	2
Seven days	6	Fifteen days	2
		Twenty days	1
		Twenty-three days	1
		One month	1

In the present study, the time of day was not rigidly controlled, but no test was administered before 8:00 a.m. or after 3:00 p.m. Thus the tests were given when the children were most likely to be in their best working condition. The children were carefully observed for evidences of physical weakness or fatigue. However, in the Muhr study, the time of day was more difficult to control and varied from child to child.

Test conditions, such as rapport, adequate praise and encouragement, and the physical conditions of the testing situation were held as constant as possible.

Form L of the Stanford-Binet was used in order to prevent the possible effect of form differences, and because this form has seen greater use in clinical practise.

CHAPTER II

PRESENTATION AND DISCUSSION OF DATA

Correlations Between the Wechsler Scales and the Stanford-Binet

The correlations between the Wechsler Full Scale and the Stanford-Binet are presented in Table IV. The correlations between the Wechsler Verbal and Performance Scales and the Stanford-Binet are presented in Tables V and VI.

TABLE IV

CORRELATIONS OF THE WECHSLER FULL SCALE WITH THE STANFORD-BINET

Subjects	r	SE	Sign.
5 year olds	.844	.143	1%
6 year olds	.785	.143	1%
5 & 6 year olds	.807	.101	1%

TABLE V

CORRELATIONS OF THE WECHSLER VERBAL SCALE WITH THE STANFORD-BINET

Subjects	r	SE	Sign.
5 year olds	.790	.143	1%
6 year olds	.711	.143	1%
5 & 6 year olds	.753	.101	1%

TABLE VI

CORRELATIONS OF THE WECHSLER PERFORMANCE SCALE WITH THE STANFORD-BINET

Subjects	r	SE	Sign.
5 year olds	.727	.143	1%
6 year olds	.715	.143	1%
5 & 6 year olds	.715	.101	1%

The correlation of .844 (SE: .143) for the five year olds indicates that the two scales are measuring the same capacity at this age level. The separate correlations of the verbal and performance scales for the five year olds, .790 (SE: .143) and .727 (SE: .143) respectively, are also indicative of the expected relationship.

The correlation of .785 (SE: .143) for the six year olds is an indication that the WISC and the Stanford-Binet are measuring practically the same quality with this group. The separate correlations of the verbal and performance scales for this age level, .711 (SE: .143) and .715 (SE: .143) respectively, also show that the two scales are measuring the same factor.

The correlations for the combined group, which amount to averages of the two sets of correlations for the subgroups, are of course in agreement with the above figures. Since all of the correlations are significant at the 1% level, we may safely say that the obtained relationship is reliable. The evidence suggests that the Performance Scale

is not notably different from the Verbal Scale.

Means of the WISC and Stanford-Binet Scales

The correlations between the WISC and Stanford-Binet scales are not sufficient evidence to establish the validity of the former. A comparison of the means and their differences is likewise necessary. The means and standard deviations of the Wechsler Full Scale and Stanford-Binet Scale are presented in Table VII; the Wechsler Verbal and Performance Scales are presented in Tables VIII and IX.

TABLE VII

MEANS OF THE WECHSLER FULL SCALE AND THE STANFORD-BINET SCALE

Ages of Subjects	Stanford-Binet		Wechsler		Diff.	t	Signif. Level
5	M	102.90	M	91.70	11.20	13.365	.1%
	SD	15.54	SD	13.28			
6	M	107.40	M	101.80	5.60	6.675	.1%
	SD	13.05	SD	12.40			
5 & 6	M	105.15	M	96.75	8.40	9.459	.1%
	SD	14.54	SD	13.81			

TABLE VIII

MEANS OF THE WECHSLER VERBAL SCALE

Subjects	M	SD
5 year olds	89.90	12.62
6 year olds	98.30	12.50
5 & 6 year olds	94.10	13.23

TABLE IX

MEANS OF THE WECHSLER PERFORMANCE SCALE

Subjects	M	SD
5 year olds	94.80	13.54
6 year olds	105.90	12.70
5 & 6 year olds	100.35	14.25

The means of the Stanford-Binet Scale for the five year olds, six year olds and combined groups were 102.90, 107.40, and 105.15 respectively. The means of the Wechsler Full Scale for the five year olds, six year olds and combined groups were 91.70, 101.80, and 96.75 respectively. These means are 11.20, 5.60, and 8.40 points lower than the means of the Stanford-Binet. We notice that the greatest discrepancy occurs at the five year level. From the observation and experience of this writer, the five year olds are at a disadvantage on the Wechsler. Generally, they were able to answer only the first two or three questions on each subtest and hence became discouraged. At the six year level, the WISC underrated the children to some extent. Perhaps this is due to a rapid increase in the difficulty of the items.

We see from these differences that despite the fact that the two scales are measuring the same capacity, there is an underestimation of this capacity by the Wechsler Full Scale. Further evidence of this may be obtained by

consulting journal articles, especially the studies of Pastovic, Krugman et al., and Weider (cf. Bibliography).

In order to emphasize this underestimation of intellectual capacity by the WISC, we have analyzed the individual discrepancies in the scores of the children tested. Table X presents the IQ points by which the Stanford-Binet scores surpassed or were lower than the WISC scores. These figures are for both age groups.

TABLE X

IQ POINTS BY WHICH THE STANFORD-BINET SCORES SURPASSED OR WERE LOWER THAN WISC SCORES

IQ Points Difference	No. of Cases in which Binet was Higher	No. of Cases in which Binet was Lower
1-4	13	13
5-9	21	7
10-14	19	2
15-19	16	0
20-24	7	0
25-28	2	0

Analyzing this table, we see that 78 out of 100 children tested received higher IQs on the Stanford-Binet than on the WISC. The differences ranged from 1 to 28 points. Only 22 of the children showed lower Binet scores than WISC scores. Usually, the WISC tended to underestimate the children who scored high on the Binet. In the instances where the WISC was higher, the Binet scores were

usually low. In order to clarify this difference in scores still further, let us consider the comparative test scores of subjects making maximal and minimal Binet and WISC scores.

TABLE XI

COMPARATIVE TEST SCORES OF SUBJECTS MAKING MAXIMAL AND MINIMAL BINET AND WISC SCORES

Highest Binet IQs			Lowest Binet IQs		
Subject	Binet	WISC Full Scale	Subject	Binet	WISC Full Scale
A	142	132	G	58	66
B	140	121	H	68	75
C	136	125	I	75	79
D	135	119	J	84	87
E	132	115	K	85	72
F	129	120	L	86	77

Highest WISC IQs			Lowest WISC IQs		
Subject	WISC Full Scale	Binet	Subject	WISC Full Scale	Binet
A	132	142	G	66	58
M	125	130	O	72	85
C	125	136	P	73	97
B	121	140	H	75	68
N	121	119	Q	75	77
F	120	129	L	77	86

In Table XI the Binet and WISC scores are compared for subjects who made the highest and lowest scores on each scale. It would appear that subjects who make the highest Binet scores have higher Binet than WISC IQs. Those who make the highest WISC scores, however, do not have lower Binet IQs. From this evidence, we can see that the WISC tends to draw the bulk of the higher scores closer to the mean. In the Krugman study we find a similar tendency:

> In the present study, the WISC gave results similar to the Revised Stanford-Binet (Form L) in the large majority of cases at the lower IQ levels, but the discrepancies appearing at the upper IQ levels may be considered too large to permit the use of the WISC in place of the S-B until further work has been done.[1]

Further evidence of this tendency may be seen in Table XII which presents the range of IQs on both scales.

TABLE XII

RANGE OF IQs ON THE REVISED STANFORD-BINET AND THE WISC

Scale	5 Year Old Range	6 Year Old Range	Both Groups
Stanford-Binet	58-140	89-142	58-142
WISC Verbal	65-121	72-120	65-121
WISC Performance	68-124	85-140	68-140
WISC Full Scale	66-125	77-132	66-132

From Table XII we see that the range of the WISC Performance

1. Krugman et al., loc. cit., p. 482.

Scale for both groups, 68-140, most closely approximates the range of the Stanford-Binet scale for both groups, 58-142.

Correlations of the Subtests of the WISC with the Stanford-Binet

We come now to the main problem of the present thesis, which is to ascertain to what extent the subtests of the WISC are correlated with the revised Stanford-Binet for five and six year old children. The data obtained in this study will be presented in tables according to the individual subtests of the WISC. Tables XIII, XIV and XV present the results of the five year olds, six year olds, and combined age groups respectively.

According to Table XIII the highest correlated subtests are Arithmetic .697, Coding .652, Block Design .649, and Picture Completion .626. These correlations indicate that the above-mentioned subtests are measuring the same capacity as the Stanford-Binet. It is worth noting that only one of these subtests, namely Arithmetic, is from the Verbal Scale. Next in order of their correlational value are Comprehension .562, Information .533, Digit Span .520, Mazes .520, Object Assembly .494, Similarities .465, and Vocabulary .416.

The lowest correlation was obtained on the Picture Arrangement subtest .180 (SE: .143). One reason that this is so low is probably that the pictures used in this subtest are too detailed for a five year old child. The first

picture in the series which has only the outlines of a dog is put together successfully by most five year old children. But, when the engine with its intricate lines is presented, they are unable to formulate any idea of putting it together properly. Likewise, very few five year olds are capable of getting the story underlying the succeeding pictures. They are satisfied merely to push the separate cards together and seem to see them as individual pictures rather than as a complete story. From the present evidence, we conclude that the Picture Arrangement subtest is invalid for five year old children.

TABLE XIII

CORRELATIONS OF THE SUBTESTS OF THE WISC WITH THE REVISED STANFORD-BINET FOR FIVE YEAR OLDS

Subtests of the WISC	N	r	SE
Information	50	.533	.143
Comprehension	50	.562	.143
Arithmetic	50	.697	.143
Similarities	50	.465	.143
Vocabulary	50	.416	.143
Digit Span	43	.520	.154
Picture Completion	50	.626	.143
Picture Arrangement	50	.180	.143
Block Design	50	.649	.143
Object Assembly	50	.494	.143
Coding	48	.652	.146
Mazes	31	.520	.183

TABLE XIV

CORRELATIONS OF THE SUBTESTS OF THE WISC WITH THE REVISED STANFORD-BINET FOR SIX YEAR OLDS

Subtests of the WISC	N	r	SE
Information	50	.516	.143
Comprehension	50	.360	.143
Arithmetic	50	.456	.143
Similarities	50	.546	.143
Vocabulary	49	.653	.144
Digit Span	44	.522	.152
Picture Completion	50	.445	.143
Picture Arrangement	50	.609	.143
Block Design	50	.547	.143
Object Assembly	50	.326	.143
Coding	50	.125	.143
Mazes	32	.590	.180

In analyzing Table XIV, we find the following correlations: Vocabulary .653, Picture Arrangement .609, Mazes .590, Block Design .547, Similarities .546, Digit Span .522, Information .516 and Arithmetic .456. From these correlations we have reasonable assurance that these subtests are measuring the same capacity as the Stanford-Binet. The correlations for Comprehension .360 (SE: .143), and Object Assembly, .326 (SE: .143) are rather doubtful. Nevertheless, when we consider the brevity of the subtests

we feel that these correlations indicate that they measure the same capacity as the Binet fairly well.

The lowest correlation for the six year old group is found on the Coding subtest, .125 (SE: .143). This low correlation indicates that this particular subtest is not a good measure of intelligence at the six year level. The element of speed may be a penalizing factor for children of this age. It was observed during the administration of this test that the majority of six year olds were slow and unhurried in their performance.

TABLE XV

CORRELATIONS OF THE SUBTESTS OF THE WISC WITH THE REVISED STANFORD-BINET FOR FIVE AND SIX YEAR OLDS

Subtests of the WISC	N	r	SE
Information	100	.534	.101
Comprehension	100	.489	.101
Arithmetic	100	.596	.101
Similarities	100	.512	.101
Vocabulary	99	.515	.101
Digit Span	87	.524	.108
Picture Completion	100	.565	.101
Picture Arrangement	100	.395	.101
Block Design	100	.609	.101
Object Assembly	100	.457	.101
Coding	98	.388	.102
Mazes	63	.565	.127

In an analysis of Table XV, we see that the highest correlations occur on the Block Design subtest, .609. The next highest correlations are Arithmetic, .596, Picture Completion, .565, Mazes, .565, Information, .534, Digit Span, .524, Vocabulary, .515, Similarities, .512, Comprehension, .489, and Object Assembly, .457. All of these correlations indicate that these subtests are measuring the same factors as the Binet. The correlations of Picture Arrangement, .395, and Coding, .388 are low enough to be doubtful and yet they are fairly good for such short subtests. The main criticism of the Comprehension subtest is that the test items increase in difficulty too rapidly. The young child fails these items, usually realizes his failure, and hence is inclined to discouragement. The Picture Arrangement subtest, because of its detailed designs, is too difficult for five year old children. They seem to see each picture as an entity in itself and fail to grasp the reason for placing them in logical order. At the six year level, the Coding subtest does not seem to be measuring the same factor as measured by the Binet. This may be due to the time element or to the fact that a test of this type has no appeal for young children. The Object Assembly subtest yields a rather low correlation for six year old children. This is probably due to the difficulty of the objects presented. When we consider the close similarity between this subtest on Form II of the Wechsler adult scale and the Object Assembly of the children's scale

it is not surprising that six year old children have trouble assembling the objects. It has been the writer's experience that many children give up after glancing at the pieces. Frequently during this subtest children comment, "This is too hard."

In order to clarify further the results of the present study, Table XVI presents the means and standard deviations of the subtests of the WISC. This analysis was undertaken in order to ascertain how closely the mean subtest scores approximate a mean score of 10.

In analyzing the means at the five year level, we see the following results: Information, 7.86, Comprehension, 8.88, Arithmetic, 8.84, Similarities, 8.34, Vocabulary, 8.16, Digit Span, 8.42, Picture Completion, 9.42, Picture Arrangement, 10.04, Block Design, 9.00, Object Assembly, 9.14, Coding, 8.54, and Mazes, 9.29. Picture Arrangement, 10.04, is the only subtest with a mean of 10 and since, according to the correlations, this was found to be an invalid test for five year old children, the mean has no particular value.

At the six year level, the means are as follows: Information, 9.12, Comprehension, 9.72, Arithmetic, 10.74, Similarities, 9.58, Vocabulary, 8.57, Digit Span, 10.36, Picture Completion, 11.24, Picture Arrangement, 10.14, Block Design, 11.60, Object Assembly, 11.28, Coding, 10.26, and Mazes, 10.50. Since the mean Binet score for six year olds was 107.40, we expect the mean subtest scores to

TABLE XVI

MEANS AND STANDARD DEVIATIONS OF THE SUBTESTS OF THE WISC

	5 Year Olds		6 Year Olds		Combined	
Subtests	M	SD	M	SD	M	SD
Information	7.86	2.55	9.12	2.86	8.49	2.78
Comprehension	8.88	3.33	9.72	2.81	9.30	3.11
Arithmetic	8.84	2.68	10.74	2.67	9.79	2.84
Similarities	8.34	2.96	9.58	3.42	8.96	3.26
Vocabulary	8.16	3.13	8.57	2.62	8.36	2.90
Digit Span	8.42	2.91	10.36	2.93	9.40	3.08
Picture Completion	9.42	3.22	11.24	2.74	10.33	3.12
Picture Arrangement	10.04	2.06	10.14	2.76	10.09	2.43
Block Design	9.00	3.10	11.60	2.74	10.30	3.20
Object Assembly	9.14	3.07	11.28	3.54	10.21	3.48
Coding	8.54	2.52	10.26	3.19	9.42	3.01
Mazes	9.29	2.67	10.50	1.94	9.91	2.40

approximate a mean score of 11. Two of the verbal subtests are very close to 11, Arithmetic, 10.74, and Digit Span, 10.36. All of the performance subtests are roughly satisfactory.

CHAPTER III

SUMMARY AND CONCLUSIONS

1. The Stanford-Binet and WISC were administered to a group of 58 children. The results of this study were combined with the results of the Muhr study which was conducted on 42 children. The children ranged in age from 5-0 years to 6-11 years. The IQ scores were statistically analyzed to determine the correlations of the subtests of the WISC with the revised Stanford-Binet.

2. Correlations between the Wechsler Full Scale and the Stanford-Binet Scale for the five year old, six year old, and combined groups were determined. Separate correlations of the Wechsler Verbal and Performance Scales with the Stanford-Binet for the five year olds, six year olds, and combined groups were also determined. The correlation (WISC Full Scale and Stanford-Binet Scale) for the five year group, .844 (SE: .143), indicated that the two scales were measuring the same capacity at this age level. The Verbal and Performance scale correlations for the five year group, .790 (SE: .143) and .727 (SE: .143) respectively, also indicated the expected relationship. The correlations for the six year group, Full Scale, .785 (SE: .143), Verbal Scale, .711 (SE: .143), and Performance Scale, .715 (SE: .143), again showed the expected relationship between the

two scales.

The correlation (WISC Full Scale and Stanford-Binet Scale) for the combined five and six year groups, .807 (SE: .101) showed that the two scales were measuring the same capacity. The Performance Scale correlation of .753 (SE: .101) and the Verbal Scale correlation of .715 (SE: .101) for both groups combined, further indicated that the two scales were measuring the same capacity. The significance level of 1% throughout these various groupings gives evidence that the obtained correlations are reliable.

3. The means for the two scales were determined for the five year old, six year old, and combined groups. The means of the Stanford-Binet for these groups respectively were 102.90, 107.40, and 105.15. The means of the Wechsler Full Scale for these groups respectively were 91.70, 101.80, and 96.75. A comparison of these means showed differences of 11.20, 5.60, and 8.40 points in favor of the Revised Stanford-Binet.

The means of the Wechsler Verbal and Performance Scales for the five year olds, six year olds and combined groups were also determined. The means of the Wechsler Verbal Scale for these groups respectively were 89.90, 98.30, and 94.10. The means of the Wechsler Performance Scale for these groups respectively were 94.80, 105.90, and 100.35. A comparison of these means with the Stanford-Binet means showed that the means of the Wechsler Performance Scale more closely approximated the means of the

Stanford-Binet than did the means of the Wechsler Verbal Scale, especially at the six year level.

4. Correlations between the subtests of the WISC and the Stanford-Binet were determined. These correlations were obtained for the five year group, the six year group, and both groups combined. At the five year level, all of the subtests were valid except Picture Arrangement which showed a correlation of .180. In general, the correlations were very good for such short subtests. At the six year level, all of the correlations were satisfactory except Coding, .125. The Object Assembly subtest, .326 (significant at the 5% level) and Comprehension, .360 (significant at the 2% level) were a little doubtful.

5. The means and standard deviations of the subtests of the WISC were computed. For the five year old group, all of the means are about 1 or 2 points too low except Picture Arrangement, 10.04, and this was an invalid test according to the correlations. At the six year level, all of the performance tests are about correct, whereas in the verbal scale there are only two that are about correct, the other four are off by one or two points.

6. The individual discrepancies between test scores were analyzed, and it was seen that 78 out of 100 children received higher IQs on the Stanford-Binet than on the WISC. These differences ranged from 1 to 28 points.

This will be answered only by continued work with the WISC, comparisons of large numbers of representative groups and research in clinical practise.

6. While awaiting conclusive evidence, psychologists may certainly use the WISC but should always check the results with the Stanford-Binet in cases where clinical judgment and WISC results do not agree.

BIBLIOGRAPHY

Altus, Grace T. "A Note on the Validity of the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XVI (June, 1952), 231.

This short article presents a contribution in evidence of validation of the WISC. A comparison was made between the WISC IQ and pupil rating on the California Test of Mental Maturity and the Progressive Reading Test. A sample of 55 students was selected for the testing. Their average age was 13-7 years; the mean IQ was 100. According to the results of this study, it would appear that relationships between the WISC and group test scores of reading and intelligence are sufficiently high to indicate that the WISC has considerable validity in similar school situations.

Bradway, Katherine P. "Predictive Value of Stanford-Binet Pre-School Items," Journal of Educational Psychology, XXXVI (January, 1945), 1-15.

The aim of this study was to analyze the predictive value of the pre-school items of the Revised Stanford-Binet Scale. The Scales were administered to 138 children between the ages of 2-5½ years. Verbal, non-verbal, memory, and number-concept scales were prepared from the items appearing at year levels II through VII on both Forms L and M of the Stanford-Binet Scale. The Binet Scales were rescored according to these four special scales.

Ten years later, the four scales were correlated with Stanford-Binet IQs for the same group of 138 children. The results indicated that the verbal and memory scales predicted later intelligence better than the non-verbal scale did.

Cohen, Bertram D. and Mary J. Collier. "A Note on the WISC and Other Tests of Children Six to Eight Years Old," Journal of Consulting Psychology, XVI (June, 1952), 226-228.

The Stanford-Binet, the Grace Arthur Point Scale, and the Wechsler Intelligence Scale for Children were administered to 53 children whose mean age was 7-5 years. These tests were administered to each child on three

separate days. As a result of this study, it was found that the Binet IQs and those of the Full Scale WISC correlated at .85 which indicates a high degree of consistency since it approaches the reliability coefficient reported for the Binet by Terman and Merrill. A lesser degree of association was found between the Grace Arthur and the Binet as compared with the Grace Arthur and the WISC.

Delattre, Lois and David Cole. "A Comparison of the WISC and the Wechsler-Bellevue," Journal of Consulting Psychology, XVI (June, 1952), 228-230.

In this study 50 children, ranging in age from 10 years, 5 months to 15 years, 7 months were given both the Wechsler-Bellevue, Form I and the WISC. Slightly higher IQs were obtained on the WISC, possibly because of practice effect. In 48 cases, the Wechsler was administered first, hence the WISC consistently had the advantage of practice. Comparison of subtest performance on the two scales showed correlations for most subtests in the area of .55. The highest correlation was .71 on the Digit subtest; the lowest was .19 on the Picture Arrangement subtest.

Frandsen, Arden N. and Jay B. Higginson. "The Stanford-Binet and the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XV (June, 1951), 236-238.

The revised Stanford-Binet (Form L), the Wechsler Intelligence Scale for Children, and the Stanford Achievement Test, Intermediate Battery (Form G) were administered to a sample of 54 fourth grade children. It was found that the Stanford-Binet correlates more closely with the WISC Verbal Scale than with the WISC Performance Scale. Both the Stanford-Binet and the WISC, according to the results of this study, are valid predictors of achievement as measured by the Stanford Achievement Test.

Goodenough, Florence L. "Studies of the 1937 Revision of the Stanford-Binet Scale. I. Variability of the IQ at Successive Age-Levels," Journal of Educational Psychology, XXXIII (April, 1942), 241-251.

The Revised Stanford-Binet was administered to 892 children between the ages of 2-15 years. About 51% of this number were boys, 49% were girls. Form L was administered to approximately 67% of the cases, Form M to 33%. It was found that variability is lowest at 6 years of age, highest at 2½ to 3 years and also at 12 years. The evidence presented in this study shows

that the difference in variability may result in changes as great as 8-12 points in the mean IQ.

Krugman, Judith I. et al. "Pupil Functioning on the Stanford-Binet and the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XV (December, 1951), 475-483.

The findings reported in this article are based upon 332 children (166 boys, 166 girls) who had been given both the WISC and the Stanford-Binet scales. According to the results of this study, differences between the Stanford-Binet and the WISC Verbal Scale IQs tended to be significant only at the younger age levels. There was a marked tendency for greater differences between Stanford-Binet and WISC IQs to be associated with the higher Stanford-Binet IQs. Differences between the Stanford-Binet IQ and the WISC Verbal and Full Scale IQs tend to be associated with chronological age because such differences were greater at the younger age levels.

Muhr, Jean P. "Validity of the Wechsler Intelligence Scale for Children at the 5 and 6 Year Level." Unpublished Master's Thesis, University of Detroit Library, 1952.

This study was undertaken in order to ascertain the validity of the WISC at the 5 and 6 year old level. The group studied consisted of 42 institutional children: 32 from the Sarah Fisher Home in Farmington, and 10 from Saint Francis Home in Detroit, Michigan. Both the Stanford-Binet and the WISC were administered to these children. It was found that the WISC seems to underestimate the child's intellectual capacity since it yields lower intelligence quotients. In this study, the discrepancy ranged from 2-28 points. The author concludes that the WISC should not be accepted as a valid indicator of the mental ability of children in the younger age levels.

Nale, Stanley. "The Childrens-Wechsler and the Binet on 104 Mental Defectives at the Polk State School," American Journal of Mental Deficiency, LVI (October, 1951), 419-423.

The purpose of this study was to discover the degree of relationship existing between the total IQs of 104 mentally defective patients on the Childrens-Wechsler Scale and the IQs of these same patients as obtained on the Revised Stanford-Binet. The youngest child tested was chronologically 8 years, 10 months of age; the oldest child was 15 years, 11 months. The statistical conclusion was that there is a marked degree

of relationship between the Binet and WISC test results. The mean WISC IQs for this age group of defectives is significantly higher than the mean Binet IQs.

Pastovic, John J. and George M. Guthrie. "Some Evidence on the Validity of the WISC," Journal of Consulting Psychology, XV (October, 1951), 385-386.

This study constituted an investigation on the relationship of the WISC and the Revised Stanford-Binet (Form L) with pre-school and second grade children. There were 100 children tested; 50 at 5 years, 6 months and 50 at 7 years, 6 months. The writers conclude that the WISC IQ is not equal to a Binet IQ at age levels below ten years since the WISC score is consistently lower than the Binet score at these age levels.

Seashore, Harold G. "Differences between Verbal and Performance IQs on the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XV (February, 1951), 62-67.

An analysis was made of the data obtained in the standardization research of the Wechsler Intelligence Scale for Children in order to throw light upon the problem of the importance of differences in IQs obtained from the verbal and performance tests in this scale. The results of this study show that individual children show relatively large discrepancies between their Verbal and Performance IQs. We can expect differences between Verbal and Performance IQs among children at all ages. Relatively more urban children have greater Verbal IQs than Performance IQs and the contrary is true of rural children. Children with professional and semi-professional backgrounds show a decidedly higher percentage of Verbal IQs greater than Performance IQs.

Sloan, William and Bernard Schneider. "A Study of the Wechsler Intelligence Scale for Children with Mental Defectives," American Journal of Mental Deficiency, LV (April, 1951), 573-575.

In the present study, the subjects consisted of forty mental defectives equally divided as to sex, who were given a Stanford-Binet (Form L), the Arthur Performance, Form I, and the Wechsler Intelligence Scale for Children. The results indicate close agreement between the performance section of the Wechsler test and the Arthur Performance test and closer agreement of the Binet with the Verbal section of the Wechsler than

with the Performance scale. In general, Performance IQs were found to be consistently higher than Verbal IQs.

Stacey, C. L. "Study of the Differential Responses on the Vocabulary Subtest of the Wechsler Intelligence Scale for Children," Journal of Clinical Psychology, VI (October, 1950), 401-403.

In this study, two groups of children were used as subjects, 24 comprised the mentally defective group and 27 were in the borderline group. Their responses were analyzed in terms of their total IQs on the WISC and according to their vocabulary responses which were categorized into descriptive, functional, or categorical definitions. Contrary to expectation, more descriptive responses occurred in the borderline group than in the mentally defective group and a greater proportion of functional responses occurred in the mentally defective group than in the borderline group.

Terman, Lewis M. and Maud A. Merrill. Measuring Intelligence. Boston: Houghton Mifflin Company, 1937.

This book describes in detail the Revised Stanford-Binet Scale, Forms L and M. The revision and standardization were based upon larger and more representative groups than the original Binet-Simon Scale. The Revised Stanford-Binet is also more extensive than the original both in range and in number of tests, and both forms provide for greater objectivity in scoring. The present volume presents the essential features of the revision and provides directions for administering and scoring the new scale.

Wechsler, David. Wechsler Intelligence Scale for Children. New York: The Psychological Corporation, 1949.

This manual presents a description of the Wechsler Intelligence Scale for Children (WISC) which is very similar to Form II of the adult scale. In the WISC, the MA is completely abandoned. The test was standardized on 2200 boys and girls from a wide geographic distribution. The manual lacks evidence of the validity of the test as a whole, its subtests, or particular items. The WISC has many interesting possibilities for use as a clinical instrument because of its verbal and performance IQs and its possibilities for subtest analysis.

Wechsler, David. "Equivalent Test and Mental Ages for the WISC," Journal of Consulting Psychology, XV (October, 1951), 381-384.

This article presents three methods for obtaining mental age equivalents from the WISC. The first method presented is referred to as the Formula method in which the MA is treated as the unknown in the formula IQ = MA/CA. The next two procedures are the Mean Test-Age and Median Test-Age methods. For these it was necessary to construct a table of equivalent test-ages for all of the raw scores on each subtest. The author is opposed to the use of MA equivalents for intelligence test scores, but he concedes that they are useful if they are employed to show how a child of a given age compares with children of his own age.

Weider, Arthur, Paul A. Noller, and Theodore A. Schramm. "The Wechsler Intelligence Scale for Children and the Revised Stanford-Binet," Journal of Consulting Psychology, XV (August, 1951), 330-333.

This study was carried out on a group of 106 white Louisville children, ranging in age between 5 years, 0 months and 11 years, 11 months. The Wechsler Intelligence Scale for Children and Form L of the Revised Stanford-Binet were the two scales used. The data presented in this article have significance only in so far as the performance of normal children is compared. It was found as a result of this study that Binet IQs tend to be higher than WISC IQs for the same children.

Young, Florence M. and Virginia A. Pitts, "The Performance of Congenital Syphilitics on the Wechsler Intelligence Scale for Children," Journal of Consulting Psychology, XV (June, 1951), 239-242.

The Wechsler Intelligence Scale for Children was administered to 40 juvenile congenital syphilitics and 40 control subjects who ranged in age from 6 to 16 years. For both groups, the Verbal IQs were higher than Performance IQs, which is contrary to the usual findings for rural cases. In the present study, congenital syphilis was associated with inferior intelligence and with impairment of mental functions.