

A COMPARISON STUDY OF THE WECHSLER
INTELLIGENCE SCALE FOR CHILDREN-REVISED,
THE WOODCOCK-JOHNSON PSYCHO-EDUCATIONAL BATTERY
TESTS OF ACHIEVEMENT KNOWLEDGE CLUSTER AND THE
GUILFORD'S STRUCTURE OF INTELLECT MEMORY FACTOR

LINDA SUE EARHEART

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An Abstract
Presented to the
Graduate and Research Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
Education Specialist

by
Linda Sue Earheart
February, 1987

ABSTRACT

With the widespread use of the Woodcock-Johnson Psycho-Educational Battery Tests of Achievement for identification and placement of handicapped students, a large number of studies have been conducted to determine the relationship of the scores on the test with scores on the Wechsler Intelligence Test for Children-Revised (WISC-R). The majority of these studies have compared the WISC-R with the Cognitive Ability portion of the Woodcock-Johnson Psycho-Educational Battery. The thrust of the present study is to examine the scores on the Knowledge Cluster of the Woodcock-Johnson Psycho-Educational Battery Tests of Achievement and their relationship to the WISC-R Verbal, Performance and Full Scale Intelligence Quotients and Guilford's Structure of Intellect (SOI) memory factor.

Data were obtained for this study through standard school-based evaluations of 135 students, grades K-10, ages 6 years-3 months through 16 years-6 months. Of the 135 students, 90 were identified as learning disabled based upon the Tennessee State Department of Education criteria as outlined in the Student Evaluation Manual (1985), and 45 were identified as having no handicapping condition. Those students who were identified as having no handicapping condition were referred to in the study as regular students.

The Woodcock-Johnson tests were administered by two experienced Educational Diagnosticians. All WISC-R's were

administered by Certified School Psychologists.

A Pearson Product-moment correlation was used to analyze test scores comparing the WISC-R Verbal IQ, Performance IQ and Full Scale IQ standard scores with the Woodcock-Johnson Psycho-Educational Battery Tests of Achievement Knowledge Cluster Standard Scores and the memory factor mean score. Correlations were computed on the learning disabled students and the regular students. All correlations computed were found to be significant at the .001 level, with greatest significance found among regular students. The most significant correlation in both groups was found to be between the Verbal IQ and the Full Scale IQ. The highest correlation with the Knowledge Cluster Standard Score among the learning disabled students was found to be with the Full Scale IQ and among regular students with the Verbal IQ. In both groups, the memory factor mean score correlated most highly with the Verbal IQ.

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To the Graduate and Research Council:

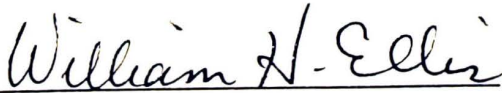
I am submitting herewith a Field Study written by Linda Sue Earheart entitled "A Comparison Study of the Wechlser Intelligence Scale for Children-Revised, the Woodcock-Johnson Psycho-Educational Tests of Achievement Knowledge Cluster and the Guilford's Structure of Intellect Memory Factor." I have examined the final form of this paper for form and content, and I recommend that it be accepted in partial fulfillment of the requirements for the degree Education Specialist, with a major in School Psychology.


Major Professor


Second Committee Member


Third Committee Member

Accepted for the Graduate
and Research Council:



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CHAPTER 1

Introduction to the Problem

With the widespread use of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests for identification and placement of handicapped students, a large number of studies have been conducted to determine the relationship of the scores on the test with scores on the Wechsler Intelligence Scale for Children-Revised (WISC-R). The majority of these studies have compared the WISC-R with the Cognitive Ability portion of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests. The thrust of the present study is to examine scores on the Knowledge Cluster of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests and their relationship to the WISC-R Verbal, Performance and Full Scale Intelligence Quotients and Guilford's Structure of the Intellect (SOI) memory factor.

Review of the Literature

The WISC-R is a widely used test of intelligence published in 1974. It is a revision of the 1949 WISC, a downward extension of the adult intelligence test, the Wechsler Bellevue Intelligence Scale. It covers an age range from 6 years-0 months to 16 years-11 months. It contains 12 subtests, six of which present verbal tasks and six of which present non-verbal performance tasks.

The normative sample of 2,200 American children was reported to be representative of the population based on the 1970 census data. The test scoring procedure yields a Verbal Intelligence Quotient, a Performance Intelligence Quotient and a Full Scale Intelligence Quotient with a mean of 100 and a standard deviation of 15. The average Standard Error of Measurement, based on all age groups, is 3.19 for the Full Scale, 3.60 for the Verbal Scale and 4.66 for the Performance Scale. Test-retest reliability coefficients are as high as .95 for the Full Scale, .93 for the Verbal Scale and .90 for the Performance Scale (Sattler, 1979).

The Woodcock-Johnson Psycho-Educational Battery of Achievement Tests is an instrument, published in 1977, which has become widely used as a part of the comprehensive evaluation required by PL 94-142 (Education of Handicapped Children, 1977). The instrument presents three parts. Part I, Tests of Cognitive Ability, is designed to measure general cognitive functioning, scholastic aptitude and some specific areas of cognitive functioning. Part II, Battery of Achievement Tests, consists of seven subtests which provide standard scores in reading, math and written language. Three other subtests provide a general knowledge standard score in the areas of science, social studies and humanities. Another area

consists of three subtests, each taken from one of the three clusters of Reading, Math and Written Language. These yield a Skills Standard Score. This cluster measures beginning scholastic skills and is of particular value for preschoolers and early primary students but can be used with older students. Part III, Tests of Interest Level, is designed to assess a student's preference for scholastic and/or non-scholastic activities (Hessler, 1984).

The test was normed on 4,732 United States subjects from 49 communities, stratified on the basis of sex, race, occupational status, geographic region and type of community. It may be used for grades K-12 and ages 3-65 years.

The Woodcock-Johnson Psycho-Educational Battery of Achievement Tests is useful in the assessment procedure in relation to special education certification, in part because the scoring system yields standard scores with a mean of 100 and a standard deviation of 15. This is directly comparable to the WISC-R in terms of determining discrepancies required for certification of learning disabled children. Tables are provided from which may be derived percentiles useful in other certification classifications. Standard scores may be derived by age or grade norms. Grade and/or age equivalents as well as an instructional range are

provided in the manual (Woodcock & Johnson, 1977).

Another useful feature of the instrument came out of work done by Marston and Ysseldyke (1984). They used data from the original norm sample to develop tables from which grade and age equivalents as well as standard scores and percentiles can be derived for a specific subtest. For example, the Reading Cluster is made up of Letter-Word Identification, Word Attack and Passage Comprehension. Generally, these are combined to derive a Reading Cluster Standard Score. Marston and Ysseldyke's tables make it possible to derive standard scores with a mean of 100 and a standard deviation of 15 for either one or all of the subtests.

The memory factor as described by Guilford is derived from his theory of intelligence. Memory is one of the five mental processes he included in his theory. The others are cognition, convergent-production, divergent-production and evaluation. According to Guilford, memory is simply the "retention of information in the same form in which it was stored" (Kaufman, 1979).

Kaufman (1973) noted that from the standpoint of Guilford's model tasks representing the memory process are underrepresented in the WISC-R. He included in his text (Kaufman, 1979) a discussion of Meeker's (1968, 1975) method for defining Guilford's structure of the intellect factors for the Wechsler batteries. Her

method is cumbersome and is time consuming. Kaufman (1979) included in his tables for interpretation of the WISC-R the factors included in Guilford's structure of the intellect. This allows for the more flexible interpretation of the WISC-R profile. The WISC-R subtests which are considered to be loaded on memory are Information, Arithmetic and Digit Span. Two of these three subtests, Arithmetic and Digit Span, also load on the Freedom from Distractability factor along with Coding. This factor was so named based on factor analysis of the Wechsler-Bellevue, Wechsler Adult Intelligence Scale and the 1949 WISC.

Also lending basis for the Freedom from Distractability factor was research by Wender (Kaufman, 1971) on minimally brain-impaired children. These children were given drug therapy and a decrease in distractability was accompanied by an increase in scores on the three subtests constituting the Freedom from Distractability factor. Kaufman (1979) found it difficult to imagine that children may do well on the three subtests merely as a result of attention. He considered it a possibility that it may reflect a cognitive ability rather than a behavioral attribute and should be taken into consideration as an active hypothesis when interpreting a child's WISC-R profile.

Bannatyne associated acquired knowledge with the

WISC-R Information, Arithmetic and Vocabulary subscales (Kaufman, 1979). With this overlap children who are having learning problems may also have deficits in acquired knowledge and/or memory. These deficits may also show up in the Knowledge Cluster Standard Score because it seems that retention of the knowledge, be it acquired purposely or incidentally, would depend on memory functioning. It would, therefore, be of interest to determine the relationship between the Knowledge Cluster Standard Score and the memory factor.

A review of the literature revealed a large number of correlation studies between the WISC-R and the Woodcock-Johnson Tests of Cognitive Ability, but few involving the relationship between the scores on the WISC-R and the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests. Naglileri and Pfeiffer (1981) found significant positive relationships between the WISC-R Verbal IQ and the Woodcock-Johnson clusters of Reading, Math and Written Language, using the Pearson product-moment correlation coefficient. They concluded that the Woodcock-Johnson results are more closely related to verbal abilities than non-verbal abilities for the 77 learning disabled children involved in the study. They also noted that the Woodcock-Johnson Math Cluster consistently correlated with the Verbal IQ. That is, correlations between the Math cluster score and

scale scores on the Verbal portion of the WISC-R ranged from .20 on Digit Span to .51 on Vocabulary, whereas correlations between the Math Cluster Standard Scores and WISC-R scale scores on the Performance portion ranged from $-.10$ on Coding to .28 on Block Design. From this data they concluded that the Woodcock-Johnson measures more than math ability. This study did not include the Knowledge Cluster score.

Hutton and Davenport (1985) conducted a study of the WISC-R as a predictor of achievement scores on the Woodcock-Johnson using the Reading, Math and Written Language Standard Scores. This study used 100 boys identified as learning disabled according to Texas Education Agency eligibility criteria. WISC-R strengths and weaknesses were identified through factor analysis. These factor loadings and WISC-R IQ's were used as predictor variables and the Woodcock-Johnson scores were used as achievement variables. Using stepwise multiple-regression analysis, the WISC-R Performance IQ was revealed to be the most powerful predictor of achievement in all three areas of achievement-Reading, Math and Written Language. Again, the Knowledge Cluster was not used in this study.

Arffa, Rider and Cummings (1984) conducted a correlation study between the Stanford-Binet (Form L-M) IQ and the Woodcock-Johnson Psycho-Educational Battery

of Achievement Tests. The instruments were administered to 60 Black preschoolers from predominantly lower socioeconomic backgrounds. This study revealed a moderately high correlation ($r=.56$) between the Stanford-Binet and Woodcock-Johnson Knowledge Cluster Standard Score.

The research most relevant to the present study was conducted and published by Bracken, Prasse and Breen (1984). This research involved 142 students evaluated through standard school-based assessments. Of the total participants, 104 were identified as learning disabled and 39 were not certified as handicapped. Evaluations were conducted by five Certified School Psychologists. The test administration design was not systematically counter-balanced. A Pearson product-moment correlation was used to compare the WISC-R Verbal IQ, Performance IQ and the Full Scale IQ with the Woodcock-Johnson Cognitive Battery as well as the four achievement tests. The highest correlation was found between the WISC-R Verbal IQ and the Knowledge Cluster among learning disabled students ($r=.59$). Among regular students, the correlation was not as high as among learning disabled students ($r=.49$). Overall, the highest correlation was between Math and the Verbal IQ among regular students ($r=.74$) and second highest was between Math and the Full Scale IQ among regular

students ($r=.73$). The correlation for learning disabled students between the WISC-R Verbal IQ and the Math cluster was less high ($r=.42$). In this study the lowest correlation in relation to the Knowledge Cluster was with the Performance IQ for learning disabled students ($r=.20$) rather than for regular students ($r=.39$).

Statement of Problem

This study will be an attempt to ascertain the relationship among the WISC-R Verbal, Performance and Full Scale Intelligence Quotients, the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests Knowledge Cluster Standard Score, and the memory factor on the WISC-R as described by Guilford.

During standard school-based evaluations conducted in the Robertson County School System, it became apparent that frequently a child's WISC-R IQ was often within range of their standard score on the Knowledge Cluster of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests. Hessler (1984) noted that frequently learning disabled students will perform at a level commensurate with their age and ability on the Knowledge Cluster, while functioning at a lower level in one or more other areas of achievement. Hessler (1984) saw this as a Low Achievement-High Knowledge Learning Disability which may indicate that the child has relatively good learning ability but has difficulty

learning specific academic skills.

An occasional notable exception to the close proximity of the Knowledge Cluster Standard Score to the WISC-R IQ's became evident. When the Knowledge Cluster Standard Score is depressed to a degree commensurate with the child's other achievement scores, Hessler (1984) called this profile the Generalized Achievement Disability. This profile may be related to a variety of factors. Hessler stated that it is most often associated with learning disabilities, mental retardation, and subjects with depressed background.

Nolan and Driscoll (1979) found a group of children who were learning disabled to also have a long-term memory deficit. While one would not want to generalize this to mean all learning disabled children, it would be of value for programming to note with what profile the memory deficit correlates most highly. Kaufman (1979) cited a number of references which view depressed scores in the WISC-R Arithmetic and Information subscales as typically characteristic of the profiles of children who experience reading disorders. Guilford associated these two subtests in addition to Digit Span with memory functioning (Kaufman, 1979).

Statement of Hypotheses

In view of the related research, the following hypotheses are proposed:

1. There will be a significant positive correlation between the Verbal Intelligence Quotient of the WISC-R and the Knowledge Cluster Standard Score of the Woodcock-Johnson among regular and learning disabled students.

2. There will be a higher correlation between the Verbal Intelligence Quotient and the Woodcock-Johnson Knowledge Cluster Standard Score among regular students than among learning disabled students.

3. There will be a lower correlation between the Woodcock-Johnson Knowledge Cluster Standard Score and the WISC-R Performance and Full Scale Intelligence Quotients than between the Woodcock-Johnson Knowledge Cluster Standard Score and the WISC-R Verbal Intelligence Quotient.

4. There will be a positive correlation between the Knowledge Cluster Standard Score and the WISC-R memory factor as described by Guilford among regular and learning disabled students.

5. There will be a higher correlation between the memory factor mean and the Woodcock-Johnson Knowledge Cluster Standard Score among learning disabled students than among regular students.

Method

The Sample

Permission was secured from the Superintendent of Robertson County Schools to use data for this study obtained through standard school-based evaluations of 135 students, grades K-12, ages 6 years-3 months through 16 years-6 months. Of the 135 students, 90 have an identified handicapping condition based on the Tennessee State Department of Education criteria for learning disability. The other 35 students were children referred for evaluation due to school problems, but were not found to meet criteria for any handicapping condition as outlined in the Student Evaluation Manual. These children will be referred to as "regular" students.

The Procedure

All scores of students used in the study were from evaluations following school-based referrals. Test administration design is not counter-balanced. In most cases, the Woodcock-Johnson was administered first by experienced Educational Diagnosticians. All WISC-R's were administered at a later date by Certified School Psychologists.

A Pearson product-moment correlation was used to analyze test scores comparing the WISC-R Verbal IQ,

Performance IQ and Full Scale IQ scores with the memory factor mean and the Woodcock-Johnson standard scores, with emphasis on the Knowledge Cluster.

CHAPTER 3

Results

Pearson product-moment correlations were computed on the data using the the computer program Statistical Package for Effective Educational Decisions (Blair, 1985). Correlations were computed on both the learning disabled and regular students.

The learning disabled sample consisted of 90 students. A sample this size involves 88 degrees of freedom and requires a Pearson Product-moment correlation coefficient of .3375 for the .001 level of significance (Spatz, 1981). Of the correlations computed, none were less than that required for statistical significance. The highest significant correlation among learning disabled students was between the Knowledge Cluster Standard Score and the WISC-R Full Scale IQ ($r=.56$). The least significant correlation was between the Knowledge Cluster Standard Score and the WISC-R Performance IQ ($r=.37$).

The regular sample of 35 students involves 33 degrees of freedom and requires a correlation coefficient of .2875 for the .001 level of significance (Spatz, 1981). None of the correlations computed on this group were less than that required for significance.

A significant positive correlation was found

between the WISC-R Verbal IQ and the Knowledge Cluster Standard Scores of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests among both groups. Among learning disabled students, the correlation coefficient was .54. Among regular students, the correlation coefficient was .80.

A comparison of correlations between the Knowledge Cluster and the WISC-R Verbal IQ found the correlation to be more significant among regular students ($r=.80$) than among learning disabled students ($r=.54$). This was also the finding comparing the memory factor mean with the Verbal IQ. Among learning disabled, the correlation was .81 and among regular students was .88. However, it is doubtful if the difference between the two correlation coefficients is significant.

Computation of the correlation coefficients resulted in a lower correlation between the Knowledge Cluster Standard Scores and the WISC-R Performance and Full Scale IQ's than between the Knowledge Cluster Standard Scores and the Verbal IQ's for the regular students. These correlation coefficients were .80 for the Verbal IQ, .52 for the Performance IQ and .73 for the Full Scale IQ. Findings for the learning disabled sample were different in that the Full Scale IQ correlation coefficient was higher than both the Performance and Verbal IQ coefficients. Correlation

coefficients with the IQ's for the learning disabled sample were .54 for the Verbal IQ, .37 for the Performance IQ and .56 for the Full Scale IQ.

A significant positive correlation was found between the Knowledge Cluster Standard Scores and the WISC-R memory factor as described by Guilford in both groups. The correlation between the Knowledge Cluster and memory factor mean among learning disabled students was .45, and among regular students it was .74.

CHAPTER 4

Discussion

This study investigated the correlations among the scores of learning disabled and regular students on the WISC-R, the memory factor mean and the Woodcock-Johnson Knowledge Cluster. Three of the five hypotheses are supported by the findings in the study.

Like Bracken, Prasse and Breen (1984), a significant positive correlation was found between the WISC-R Verbal IQ and the Woodcock-Johnson Knowledge Cluster Standard Scores in both groups. However, the study found this correlation to be more significant for the regular group rather than for the learning disabled group. These findings support the hypotheses of this study, but are not in agreement with the Bracken, Prasse and Breen study, which found a higher correlation among learning disabled students. Although the correlations among learning disabled students were similar in both studies, this study found a higher correlation among regular students than did Bracken, Prasse and Breen.

When comparing the Knowledge Cluster Standard Score with the WISC-R Verbal, Performance and Full Scale IQ's, the hypothesis was supported only in part. Among regular students, it was found that the correlation coefficients are higher between the WISC-R Verbal IQ and the Knowledge Cluster Standard Scores ($r=.80$) than those

coefficients between the Knowledge Cluster Standard Score and the WISC-R Performance ($r=.53$) and Full Scale IQ ($r=.73$) scores. A difference was found among learning disabled students in that the correlation coefficient between the Full Scale IQ and the Knowledge Cluster ($r=.56$) was higher than the coefficients between the Knowledge Cluster and the Verbal ($r=.54$) and Performance IQ ($r=.37$) scores. The difference between the correlation coefficients is small. Bracken, Prasse and Breen (1984) found a less significant relationship among regular students in their study.

Sixty-four percent of the variance between the Verbal IQ and the Knowledge Cluster Standard Score among regular students may be accounted for by common factors. The Knowledge Cluster Standard Score may hold about 54% of its variance in common with the WISC-R Full Scale IQ and only 28% of common variance with the WISC-R Performance IQ. If one were looking for predictors, the WISC-R Verbal IQ would be the strongest predictor of the Knowledge Cluster Score for regular students in this study.

Among learning disabled students, the difference comparing coefficients of the Full Scale IQ and Knowledge Cluster and the Verbal IQ and Knowledge Cluster is small. It appears that this could easily vary either way with studies or groups. In this group,

the Knowledge Cluster Standard Score holds 29% of its variance in common with the WISC-R Verbal IQ, 14% of its variance in common with the WISC-R Performance IQ and 31% of its variance in common with the WISC-R Full Scale IQ. There is little difference in percentage of covariance between the Knowledge Cluster Standard Score and either the WISC-R Verbal IQ or the WISC-R Full Scale IQ.

The memory factor mean, using the scale scores of the WISC-R subtests Information, Arithmetic and Digit Span, was found to correlate in a significant positive way with the Knowledge Cluster Standard Scores in both groups as well. This suggests that among learning disabled students the two scores covary or hold only 20% of their variance in common. These findings suggest that among regular students regular students 55% of the variance among scores may be attributed to the same cause. While in both groups the correlations were significant, a much greater significance was found among regular students. The findings, therefore, do not support the hypothesis which addresses the memory factor mean. No studies in the review of the literature were found using the memory factor mean with which the current results could be compared.

While not the focus of this study, it is of interest to note that the findings of this study were

similar to those findings of the Bracken, Prasse and Breen (1984) study in relation the the Math Cluster of the Woodcock-Johnson among regular students. They reported a correlation between the WISC-R Verbal IQ and the Math Cluster Standard Score of .74 in comparison to .71 found by the current study. They found a correlation of .73 among regular students between the WISC-R Full Scale IQ in comparison to .69 found by the current study. Among learning disabled students, Bracken, Prasse and Breen found a .42 correlation between the WISC-R Verbal IQ and the Math Cluster Standard Score, as compared to a correlation of .51 in the current study. Like Naglileri and Pfeiffer (1981), one might conclude that the Woodcock-Johnson Math Cluster measures more than math abilities. The current study resulted in lower correlation coefficients for both regular students ($r=.55$) and learning disabled students ($r=.37$) between the WISC-R Performance IQ and the Math Cluster, than were found when comparing the WISC-R Verbal IQ and Full Scale IQ to the Math Cluster. These results are unlike those of Hutton and Davenport (1985), who found in their study using stepwise multiple-regression the WISC-R Performance IQ to be the strongest predictor for Reading, Math and Written Expression Cluster Standard Scores.

CHAPTER 5

Summary and Conclusions

The primary purpose of this study was to determine the correlation among scores attained on the Wechlser Intelligence Scale for Children-Revised, the Knowledge Cluster of the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests and the memory factor mean derived from the subtests of Information, Arithmetic and Digit Span of the WISC-R. Scores were used from school-based evaluations following referral for school problems. Of the 135 students whose scores were used in the study, 45 met the criteria to be certified as learning disabled according to Tennessee State Department of Education criteria as outlined in the Student Evaluation Manual. Ninety of those students attained scores which met the criteria for no handicapping condition outlined in the Student Evaluation Manual.

A Pearson product-moment correlation was computed for scores concerned in the hypotheses. Correlations were computed on the learning disabled students and regular students. All correlations computed were found to be significant at the .001 level, with greatest significance found among regular students. The most highly significant correlation in both groups was found to be between the Verbal IQ and Full Scale IQ scores.

The highest correlation with the Knowledge Cluster Standard Score among the learning disabled students was found to be with the Full Scale IQ and among regular students with the Verbal IQ. In both groups, the memory factor mean score correlated most highly with the Verbal IQ, as would be expected.

REFERENCES

- Arffa, S., Rider, L. I., & Cummings, J. A. (1984).
A validity study of the Woodcock-Johnson Psycho-Educational Battery and the Stanford-Binet with black preschool children. Journal of Psycho-Educational Assessment, 2, 73-74.
- Blair, G. (1985). Statistical Package for Effective Educational Decisions. Clarksville, Tennessee: Instructional Engineering.
- Bracken, B. A., Prasse, D. P., & Breen, M. J. (1984).
Concurrent validity study of the Woodcock-Johnson Psycho-Educational Battery with regular and disabled students. Journal of School Psychology, 2, 85-192.
- Education of Handicapped Children: Implementation of part B of the education of handicapped children. (1977). Federal Register, 42, 42474-42518.
(Cited in Hessler, 1984)
- Guilford, J. P. (1967). The nature of human intelligence. New York: McGraw-Hill.
(Cited in Kaufman, 1979)
- Hessler, G. L. (1984). Use and interpretation of the Woodcock-Johnson Psycho-Educational Battery. Allen, Texas: DLM Teaching Resources.

- Hutton, J. B., & Davenport, M. A. (1985). The WISC-R as a predictor of Woodcock-Johnson achievement cluster scores for learning disabled students. Journal of Clinical Psychology, 41(3), 410-413.
- Kaufman, A. S. (1973). Analysis of the McCarthy Scales in terms of Guilford's structure of intellect model. Perceptual and Motor Skills, 36, 967-976.
- Kaufman, A. S. (1979). Intelligent testing with the WISC-R. New York: John Wiley & Sons.
- Marston, D, & Ysseldyke, J. (1984). Derived subtest scores for the Woodcock-Johnson Psycho-Educational Battery. Allen, Texas: DLM Teaching Resources.
- Meeker, M. N. (1969). The structure of the intellect. Columbus, Ohio. Charles E. Merrill. (Cited in Kaufman, 1979)
- Meeker, M. N., (1975). WISC-R template for SOI analysis. El Segundo, California: SOI Institute. (Cited in Kaufman, 1979)
- Naglieri, J. A., & Pfeiffer, S. (1981). Correlations among scores on WISC-R and Woodcock-Johnson Achievement Tests for learning disabled children. Psychological Reports, 49, 913-914.

- Nolan, J. D., & Driscoll, R. L. (1979). Memory deficits in learning disabled children. (Paper presented at the meeting of American Psychological Association) Toronto. (Cited in Kaufman, 1979)
- Sattler, J. M. (1982). Assessment of children's intelligence and special abilities. Boston: Allyn and Bacon, Inc.
- Spatz, C., & Johnston, J. O. (1981). Basic statistics: tales of distribution (second edition). Monterey: Brooks/Cole Publishing Company.
- Tennessee State Department of Education. (1985). Student evaluation manual. Nashville: Tennessee State Board of Education.
- Woodcock, R. W. & Johnson, M. B. (1977). Woodcock-Johnson Psycho-Educational Battery. Hingham, Massachusetts: Teaching Resources Corporation.

TABLES

Table 1

Means and Standard Deviations for Regular Students

Variable	Mean	Standard Deviation
1 VIQ	88.614	11.035
2 PIQ	88.068	10.915
3 FSIQ	87.136	10.926
4 Memory X	7.845	2.185
5 Reading	88.750	12.261
6 Math	88.773	10.722
7 Written Language	88.568	10.889
8 Knowledge	88.909	11.675

Table 2

Corelation Matrix for Regular Students

Variable	1	2	3	4
5	0.665	0.610	0.695	0.674
6	0.713	0.541	0.692	0.697
7	0.573	0.587	0.625	0.609
8	0.803	0.528	0.735	0.739

Table 3

Means and Standard Deviations for Learning Disabled

Variable	Mean	Standard Deviation
1 VIQ	91.811	12.928
2 PIQ	97.456	11.233
3 FSIQ	93.856	11.010
4 Memory X	7.787	2.090
5 Reading	80.644	11.233
6 Math	83.378	12.463
7 Wrtitten Language	82.344	10.945
8 Knowledge	89.033	16.375

Table 4

Correlation Matrix for Learning Disabled

Variable	1	2	3	4
5	0.517	0.216	0.467	0.419
6	0.509	0.338	0.467	0.419
7	0.513	0.138	0.415	0.405
8	0.535	0.369	0.560	0.451

APPENDIX

AUSTIN PEAY STATE UNIVERSITY

INFORMED CONSENT STATEMENT

The purpose of this investigation is to determine the relationship of the Verbal, Performance and Full Scale Intelligence Scale for Children-Revised, the Woodcock-Johnson Psycho-Educational Battery of Achievement Tests Knowledge Cluster Standard Score, and the memory factor on the WISC-R as described by Guilford. The scores used for the study will be obtained from records of children evaluated in the Robertson County School System from January, 1985 to May, 1986. Information collected will also include the child's age and grade at the time of evaluation and their handicapping condition, if any. Demographic data will be used for purposes of analysis only. There are no potential hazards which may occur to the child or the school system because names will not be used. The benefit which may result from participation in the study may be more beneficial interpretation of test data when these instruments are used for evaluation.

The results of the study will be made available to you upon request.

Thank you for your cooperation.

Linda S. Earheart

I agree for the present study to be conducted in the Robertson County School System under the supervision of a faculty member at Austin Peay State University. I have been informed, either orally or in writing of both, about the procedures to be followed and the risks involved. The investigator has agreed to answer any further inquiries about the procedures. I understand that I am free to terminate participation at any time without penalty or prejudice and have all data obtained withdrawn from the study and destroyed. I have also been told of any benefits which may result from participation.

Name

Signature

Date