4-25-1995

Ability achievement discrepancies: diagnosis and future implications

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Ability Achievement Discrepancies: Diagnosis and Future Implications

by

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A Thesis

Submitted in partial fulfillment of the requirements of the Master of Arts Degree in the School Psychology of Rowan College

5-2-95

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Date Approved 4/25/95

Abstract

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Ability Achievement Discrepancies:
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Dr. Klanderman
School Psychology

The purpose of the current study was threefold: First to determine if the predicted achievement method is a more accurate statistical method to determine ability achievement discrepancies than the simple difference method, second to determine if the VIQ score on the WISC 111 could predict achievement level as accurately as the FSIQ score, and third to assess the current achievement level of four individuals previously diagnosed with a reading disability. The sample used in this study consisted of eight children who were assessed at the Rowan College Learning and Assessment Center. The statistical procedures employed were based on the WIAT manual's tables (pg.188) and Alfonso's tables (1993). The significance of the findings was determined according to the critical tables provided in the WIAT manual (pg 192).

Based on the statistical procedures the following results were determined. The predicted achievement method and the simple difference method detected the same significant ability achievement discrepancies. The VIQ was found to be as accurate a predictor of

achievement as the FSIQ. Those individual's previously diagnosed as reading disabled did not continue to demonstrate significant achievement ability discrepancies.

Mini Abstract

Natalie Fischer
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The purpose of the current study is threefold: to determine if the predicted achievement method is more accurate than the simple difference method, if the VIQ is as accurate a predictor of achievement level as the FSIQ, and to assess the current achievement level of four individuals previously diagnosed as reading disabled.

Statistical procedures determined that the predicted achievement method and the simple difference method detected ability achievement discrepancies equally. The VIQ is as accurate at predicting achievement level as the FSIQ. Those individual's previously diagnosed as reading disabled did not continue to demonstrate significant ability achievement discrepancies.

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CHAPTER ONE

NEED

One of the most common methods for determining which children are eligible for learning disabilities services employed by the state is the discrepancy between children's IQs and their achievement scores (Chalfant 1984). Mercer, Hughes and Mercer (1985), report that states are decreasing reliance on other diagnostic indicators and increasing reliance on discrepancies, in establishing LD eligibility criteria. IQ-achievement discrepancy is expressed as the difference between the IQ and a standardized achievement score. A child is judged (in) eligible for LD services by the difference produced between IQ and achievement.

Since Public Law 94-142, comparison of intellectual ability with academic achievement has been key in determining if a specific learning disability is present. PL 94-142 states:

1. The child does not achieve commensurate with his or her age and ability levels in one or more of the areas listed, when provided with learning experiences appropriate for the

child's age and ability levels; and

2. The (multi-disciplinary) team finds that a child has a severe discrepancy between achievement and intellectual ability in 1 one or more of the following areas: oral expression, listening comprehension, written expression, basic reading skill, and reading comprehension.

The subject of "severe discrepancy" is controversial. Defining what criteria is necessary to calculate ability-achievement discrepancies is still unresolved. Still, the majority of states (84%) specify a discrepancy as a necessary condition for eligibility of LD services (Mercer et all. 1985).

PURPOSE

The purpose of the current study is to compare full scale IQ scores and verbal IQ scores as predictors of achievement level. These IQ scores will be measured by the WISC 111. The achievement level will be measured by the WIAT. Secondly, the simple difference method for determining if there is a significant ability achievement discrepancy will be compared to the predicted achievement method. Also, a follow up on four children who were previously diagnosed as reading disabled

be reevaluated.

HYPOTHESIS

It is expected that the regression formula will be superior to the simple difference formula in determining ability-achievement discrepancies.

It is expected that the VIQ score will be as effective as the FSIQ score in predicting achievement levels.

Also, it is expected that those individual's previously diagnosed as reading disabled will continue to show significant ability-achievement discrepancies.

THEORY

The predicted achievement method is considered to be one of the most psychometrically sound procedures for determining significant ability- achievement discrepancies (Heath and Rush 1991; Reynolds 1990). The method uses correlation between ability and achievement in a regression equation to calculate predicted achievement scores.

If the differences between an actual or obtained score and a predicted achievement score exceeds a certain value, then a significant ability-achievement discrepancy exists.

Defining what criteria is necessary to calculate ability achievement discrepancies has been subject to debate. The most widely recognized criteria was developed by the Special Education Programs Work Group on Measurement Issues in the Assessment of Learning Disabilities, sponsored by the U.S. department of Education. (1985 article, Cecil Reynolds). The six criteria are:

1. National normative data should be provided for large stratified random sample of children.
2. National normative data for the tests being contrasted must be highly comparable or the same.
3. Correlations between achievement and ability should be based on appropriate sample.
4. Tests should be individually administered and provide age-based standard scores scaled to a common metric.
5. Measures should have a high level of reliability.
6. Other reliability for performance-based measures of writing should be addressed.

DEFINITIONS

Correlation Techniques- They are used to show the relationship between two different tests scores. (e.g. reading and vocabulary).

Mean- The average of a group of a scores

Median- The measure of central tendency.

Mode- the most frequent score in a group.

r- The standard symbol for a correlation coefficient, subscripts being used to name the variables correlated when lack of subscript could cause ambiguity.

t score- The ratio of any normally distributed variant to its estimated standard error.

z score- A function related to r and used as a transformation for r in testing the reliability of a correlation coefficient and of the difference between 2 correlation coefficients.

ASSUMPTIONS

1. The WISCIII is a reliable and valid measure of ability.
2. The WIAT is a reliable and valid measure of achievement.

LIMITATIONS

Reynolds (1990) cautioned "determining a severe discrepancy" does not constitute the diagnoses of LD, it only establishes that the primary symptom of LD exists.(572). Reynolds (1990) suggests the following;

1. Evidence separate from test results should indicate that the child has a "failure to thrive" or lack of attainment in one of the principal areas of school learning. (572).

2. Clinical evidence and direct observation by experienced professional must indicate that child has some form of "psychological process disorder; such as attention and concentration difficulties or problems of conceptualization, information processing or comprehension of written and spoken language. (572).

3. Examiners must ascertain that observed behavior symptoms of deficits in child's learning are NOT due to deficits in child's retardation, emotional disturbance, educational and economic disadvantages.

4. Examiner must determine that deficits do not result from factors in medical or developmental history of child.

Overview

Predicting achievement level based on ability is a useful tool for identifying symptoms of a learning disability. The regression discrepancy formula can determine if the symptom of a LD is present when a severe discrepancy between ability and achievement exists. In the next chapter much of the pertinent literature describing the regression discrepancy formula and its superiority to the simple discrepancy is reviewed. There will be special emphasis on verbal abilities as predictors of achievement. Also reviewed are longitudinal research studies which follow select samples of at risk or LD children over time.

CHAPTER TWO

REVIEW OF THE LITERATURE

Numerous articles support the regression method for calculating discrepancy between IQ and achievement as superior to the simple difference discrepancy (Reynolds 1985, Shepard 1980, Wilson and Cone 1984 and Braden and Weiss 1982). Unlike the simple difference discrepancy, the regression method is not directly influenced by IQ (Braden et all 1985). Further more, Flanagan and Alfonso (1993) demonstrate how the regression equation can be used to predict achievement. "The VIQ may be used to determine ability- achievement discrepancy because it has a higher predictive validity with achievement. (Minskoff, Hawks, Steidle, & Hoffman 1989."

Stuart and Coltheart (1988) review stage theorists models on reading acquisition. Frith's (1985) and Chall (1983) both theorize that reading skills develop in a hierarchical and time ordered progression.

The link between verbal skills, including language acquisition and reading ability has been explored in a number of ways, these include: the study of current language skills of children with reading problems, the retrospective study of early development of children with reading difficulties, and the follow up study of the later of each of these approaches.

THE REGRESSION MODEL

Braden and Weiss (1988), conducted a study which compared the use of simple difference discrepancies and regression discrepancies. The subjects (N=2263) were in second and fifth grade. Group tests of achievement (MAT) and of ability (OLSAT) were used for the comparison. The data indicates that blacks and whites have different average discrepancies and that blacks are less likely to qualify for LD programs than whites when simple discrepancy criteria are used.

Regression criteria did not produce different average

discrepancies for ethnic groups and they are more likely to produce proportionate ethnic composition in discrepant and non-discrepant groups. The results of this study confirm previous predictions of the effects of simple discrepancy criteria and regression discrepancy.

REGRESSION METHODS AND PREDICTING ACHIEVEMENT

Flanagan and Alfonso (1993) provide tables of WIAT sub tests and composite predicted-achievement standard scores based on WISC-III verbal and performance IQS. The tables allow for quick determination of ability-achievement discrepancies when used with critical values table.

The WIAT was administered to 91 children, aged 6-16 years diagnosed with learning disabilities. (WIATT manual chapt 5, pg 161). The results of the 48 scores obtained on the WISC-III and WIAT indicated the presence of severe ability-achievement discrepancies in the group as a whole. This discrepancy was expected due to the fact that children

diagnosed with learning disability generally are not achieving at a level commensurate with their ability.

STAGE THEORISTS AND READING ACQUISITION

Frith's model (1986) of reading development assumes that normally developing readers pass through at least three phases of development in processing linguistic information during the reading acquisition phase. Interaction between the constitutional and environmental factors are important to understanding reading acquisition and the reasons for reading failures.

The first phase of Friths model is the Logo graphic stage. the child instantly recognizes familiar words, and letter order is ignored. Phonology is retrieved after the word is identified. The child will not guess at isolated unfamiliar words, but will use text to guess unfamiliar words.

The second phase is the Alphabetic stage. The child knows and uses correspondences between individual graphemes and phonemes. Letter order is crucial and words are sequentially decoded grapheme by grapheme. In this stage, phonological decoding is paramount.

The third stage is the Orthographic stage. The child instantly analyses words into orthographic units, without phonological conversion.

Chall's (1983) model of reading acquisition recognizes six stages, however for the purpose of this study I will focus on the first two. In the first stage, (birth -kindergarten), children learn to speak and understand language. Phoneme awareness is present at this stage. According to Chall, many reading disabled children lack phonemic awareness. Paying direct attention to meaning of words parallels young children and prevents the child from recognizing that words are made up of parts.

The second stage of Chall's model (grades 1 and 2), children learn to use letters as cues. Using letters as cues is called decoding. Decoding requires mapping of letters to phonemes. According to Chall, many reading disabled children at this stage have problems with decoding.

LONGITUDINAL STUDIES:

READING ABILITY

Diane Sawyer (1992) tests a model of expected relationships between language abilities and reading achievement via, measures from the beginning of Kindergarten through third grade. Sawyers findings were considered in the context of Frith's three phase hypothesis of reading acquisition. Sawyer's (1992) hypothesis is that " language processing abilities specifically linked to reading acquisition are not discretely related but, instead, probably build one upon another in a hierarchical and time ordered progression."

At each grade level, Sawyer describes what skills influenced reading achievement. In Kindergarten, global language abilities influenced holistic measures of reading achievement including, letter and number naming. In first grade, earlier accomplishments had a direct effect on word recognition as well as word and phoneme segmentation measured in Kindergarten. Comprehension at the first grade level was influenced primarily by word recognition abilities at the same time.

In second grade, comprehension influenced word

recognition. In third grade, word recognition and comprehension were essentially independent.

LONGITUDINAL READING ACHIEVEMENT PREDICTIONS

Badian (1982), conducted a four year follow up study of 180 children administered a predictive reading test prekindergarten. The children lived in a predominantly white suburb and the families were close to the national median in number of year of education and income. By grade 8, 116 of the original sample were attending school in the district. There were 58 boys and 58 girl subjects. The screening measures used in the study included verbal items- tell a story about a picture, and select sub tests for standard intelligence scale. Visual Motor Tasks-name writing, copying forms, pencil use, cutting. Readiness Items- ability to count, name colors, letters and shapes.

Reading sub tests of standard achievement were used as follow up criterion measures. Relationships between screening and reading performance at grade 3 and 8 were significant (r=.6-.7). Over 85% were correctly classified as problem or

non-problem readers. The best single predictors were, measures of language. Specifically, selected verbal sub tests of the intelligence scale given at Kindergarten.

Children as a group performed relatively stable from third through fifth grade. One fourth of poor readers were adequate readers at grade 8. Many of the false positive children were from high SES families with no history of learning disabilities in the families.

Prediction is improved when scores on screening measures are combined with family histories of LDs, birth history, and order, SES and language skills. Applying biographical information correctly identified poor readers from 43% to 93%.

KAUAI STUDIES

The Kauai studies followed 2203 women on Hawaiian island in the first trimester of pregnancy. The ethnic breakdown was: 35% Japanese background, 3% Caucasian, 35% Hawaiian. Almost 700 children were followed at intervals over 18 years. The SES of the families was low. Assessments took place at birth, one year, 20 months, 10 years and 18 years.

By age 10, one third of the children had experienced some

learning or behavioral problem. Environmental influences grew stronger as the child grew older. Key variables associated with negative outcomes included: biological conditions, care giving or environmental conditions, and child behavioral characteristics.

An interesting finding in this study was a subset of 42 girls and 30 boys who were predicted to be at risk (four or more predictive signs before age 2) but were well functioning adults at age 18. Many of these children were first born and described as having good recuperative powers.

LANGUAGE PROBLEMS: A KEY TO EARLY READING PROBLEMS

According to Mann (1986), reading is a two component process: 1. language processing skills include speech perception, vocabulary skills, linguistic short term memory, syntax and semantics. 2. Phonemic awareness, which is sensitivity to parts (phonemes) in words. Mann's findings indicate that poor readers are deficient in all aspects of

language processing skills except syntax and semantics, and consistently used phonemic awareness as a predictor of future reading ability and achievement among beginner readers.

The skills involved in reading include: processes of perceiving, recognizing, remembering, and interpreting letters and words. Alphabets represent phonemes. Phoneme awareness has been a problem for many young children and poor readers. Phonemes are abstract units of language and readers must be explicitly aware of them.

SUMMARY

Research has consistently proven that the use of the regression discrepancy formula is superior to the simple discrepancy method. Also, research has demonstrated how the regression discrepancy formula is a useful tool for predicting achievement. When a severe discrepancy between ability and achievement exits, the symptom of a LD is present. The research has cautioned not to rely solely on discrepancy for LD eligibility however, to date it is presently a necessary criteria for classification in many states.

According to stage theorists, reading is a process that builds on previous skills. Language is a predictor and precursor to reading acquisition. The two main problem areas that poor

readers seem to encounter are phonemic awareness and decoding skills.

Overall, Longitudinal studies have concluded that children with learning disabilities can be accurately identified as early as pre-K. The majority of these problem readers remain problem readers over the years.

The current study follows the techniques mentioned above to determine how successfully the regression formula can predict ability-achievement discrepancies and whether these discrepancies will remain constant in the future.

CHAPTER THREE

DESIGN OF THE STUDY

Sample

The sample consisted of eight children whose parents responded to a flyer circulated at Rowan College (see Appendix). Low cost assessment was conducted by interns in the LDTC program and the School Psychology program. All tests were individually administered by an intern under the supervision of a professor. The testing took place during the fall semester of 1994 over three testing days. Each testing day was approximately two hours long. The children ranged in age from six to twelve years old. All of the children came from middle class to upper middle class homes.

The sample consisted of eight children, five males and three females. The mean age for the males was 8.3 , and the mean age for the females was 9.8 . The children lived in the Gloucester County area and voluntarily came to the center to be tested in response to the circulated flyers.

A select sub sample previously tested at Rowan College

Assessment and Learning Center was reevaluated as an update to assess current developmental and academic status. The four children, two female and two male were tested two to three years previously and all had been identified as reading disabled. The purpose of the reevaluation was to provide descriptive data as to each of the individuals current achievement level.

Measures

The information for this study was obtained from the records produced at Rowan College Assessment and Learning Center by the participating interns in the LDTC and School Psychology program. The test used to measure ability was the WISC 111-R. The Wechsler test is one of the most widely used measures of intelligence and ability. The verbal intelligent quotient (VIQ) was utilized for the purpose of this study. The verbal section of the WISC 111-R consists of six sub tests including, Similarities, Comprehension, Vocabulary, Digit Span, Information and Arithmetic.

The Wechsler was normed on a sample of 1200 children which represented the national population. Scores are reported as standard scores and percentiles. Sub test and composite scores are obtained from the test. Each standard

mean of 100, and a standard deviation of 15. Each sub test score has a mean of 10 and a standard deviation of 3.

To measure the child's reading achievement level, the Wechsler Individual Achievement Test (WIAT) was administered. The WIAT is an individually administered test that assesses achievement in students grades K-12. Test administration is straight forward and clear directions for administration and scoring are provided.

The WIAT assists in identifying students who have learning disabilities. Aptitude achievement discrepancies can be determined with the Wechsler intelligence scales provided by tables included in the WIAT manual.

The standardization sample is adequate as is evidence for validity. Internal consistency and inter scorer reliability is limited and should be used for screening purposes only (Cohen 1993).

Scores on the WIAT are reported as standard scores and percentiles. Sub tests and composite scores are obtained from the test. Each standard score has a mean of 100 and a standard deviation of 15. The "average" student earns a score between 90 and 109 (McLoughlin and Lewis 1994). Each sub test score has a mean of 100 and a standard deviation of 15.

In this study the target items being measured are ability and achievement. There will be two individually administered tests one to measure ability and one to measure achievement:

1. The Wechsler Intelligence Test for Children; specifically the FSIQ which is the composite of the PIQ and the VIQ, and the verbal IQ, which is derived from the verbal sub tests.
2. The Wechsler Individual Achievement Test; specifically the reading composite achievement derived from the reading sub tests.

Design

In order to determine if the FSIQ obtained by the WISC-111 could accurately predict achievement level on the WIAT, two types of statistical procedures were compared. The predicted achievement method and the simple difference method. The literature has demonstrated that the predicted achievement method is considered to be one of the most psychometrically sound procedures for determining significant ability-achievement discrepancies (Heath and Rush 1991; Reynolds, 1990) and so when comparing FSIQ and VIQ as predictors of achievement this method was used.

The predicted achievement method uses correlation

between ability and achievement in a regression equation to calculate predicted achievement scores.

If the differences between the FSIQ actual or obtained score and a predicted achievement score exceeds a certain value, then a significant ability -achievement discrepancy exists (refer to WIAT manual pg 188).

Alfonso (1993), provides tables of WIAT predicted-achievement values based on the WISC 111 Verbal IQ so that these values do not have to be calculated manually(Appendix). The predicted scores can be used with critical values tables to facilitate the determination of significant ability achievement discrepancies.

Testable Hypothesis

Null Hypothesis 1: The simple difference method will detect ability achievement discrepancies as accurately as the predicted achievement method.

Alternate Hypothesis 1: The predicted achievement method will detect ability achievement discrepancies more accurately than the simple difference method.

Null Hypothesis 2: The VIQ will not predict achievement

level as accurately as the FSIQ..

Alternate Hypothesis 2: The VIQ will predict achievement level as accurately as the FSIQ.

Null Hypothesis 3: The discrepancy among the sub sample will not remain constant (previously established discrepancy 2-3 years ago.

Alternate Hypothesis 3: The discrepancy among the sub sample will remain constant.

Analysis

For the purposes of analyses it is assumed that the relatively homogeneous socioeconomic status and racial make-up will provide for non biased test results. The sub sample of children who were reevaluated all received maximum intervention (private tutors...), thus the descriptive data will demonstrate the either the in/effectiveness of intervention.

Summary

All data was obtained during the Fall semester of 1994, at Rowan College Assessment and Learning Center. The sub sample was previously evaluated at the Rowan College Assessment Center, however testing was administered by staff

not, interns. Individual ability- achievement predictions were calculated. The results will be presented and examined in relationship to the Null Hypotheses in chapter 4.

The sub sample of children whom were reevaluated will provide descriptive data which will be presented in table format as to whether ability- achievement discrepancies remain constant in the future. The results will be examined and their relationship to the null hypothesis 2, will be presented in chapter 4.

CHAPTER FOUR

ANALYSIS OF RESULTS

Results

Tables 4.1 and 4.2 provide itemized ability achievement discrepancies calculated according to two statistical procedures. Table 4.1 itemizes ability-achievement discrepancies; Differences between Wechsler FSIQ scores and WIAT sub test and composite standard scores. The predicted achievement method was calculated to determine if the discrepancy reached statistical significance.

Table 4.2 itemizes ability-achievement discrepancies; Differences between Wechsler FSIQ and WIAT sub test and composite standard scores. The simple difference method was calculated to determine if the discrepancy reached statistical significance.

Those individuals whose ability achievement discrepancies reached significant levels will be in bold type.

Table 4.1

WIAT subtests	FSIQ pred	Actual score	Difference	.05.sig	.01 sig
comprehension	119	123	4	12.62	15.81
composite read	120	118	-2	17.04	21.86
comprehension	93	153	60	14.41	18.24
composite rea	101	154	53	15.92	20.39
comprehension	124	106	-18	12.8	16.07
composite rea	125	93	-32	15.87	20.32
comprehension	101	95	-6	12.62	15.81
composite read	101	104	3	17.04	21.86
comprehension	91	108	17	11.77	14.64
composite rea	91	113	22	13.14	16.66
comprehension	121	160	39	18.35	23.48
composite rea	127	159	32	20.75	26.83
comprehension	116	90	-26	12.62	15.81
composite rea	116	88	-28	17.04	21.86
comprehension	111	102	-9	12.8	16.07
composite read	112	112	0	15.87	20.32

Based on FSIQ Scores on WISC 111

Ability Achievement Discrepancies; Differences Between FSIQ Scores and WIAT Sub test and Composite Scores Required for Statistical Significance. Predicted Achievement Method.

Table 4.2

WtAT subtests	FSIQ	Actual score	Difference	.05 sig	.01 sig
comprehension	119	123	4	11	14.48
composite reac	120	118	-2	8.82	11.61
comprehensior	93	153	60	10.6	13.95
composite rea	101	154	53	8.82	11.61
comprehensior	124	106	-18	10.6	13.95
composite rea	125	93	-32	8.32	10.95
comprehension	101	95	-6	11	14.48
composite reac	101	104	3	8.82	11.61
comprehensior	91	108	17	11.39	14.99
composite rea	91	113	22	8.86	11.61
comprehensior	121	160	39	10.18	13.41
composite rea	127	159	32	8.32	10.95
comprehensior	116	90	-26	11	14.48
composite rea	116	88	-28	8.82	11.61
comprehension	111	102	-9	10.6	13.95
composite reac	112	112	0	8.32	10.95

Based on FSIQ Scores on WISC 111

Ability Achievement Discrepancies; Differences Between FSIQ Scores and WIAT Sub test and Composite Standard Scores Required for Statistical Significance. Simple Difference Method.

Testable Hypotheses

In the first null hypothesis, it was expected that the simple difference method would detect ability achievement discrepancies as accurately as the predicted achievement method. Alternatively, it was expected that the simple difference method would not detect ability achievement discrepancies as accurately as the predicted achievement method.

It was found that the simple difference method and the predicted achievement method detected those individuals with significant ability achievement discrepancies equally. Therefore, null hypothesis one can be accepted and the alternate hypothesis 1 rejected.

Tables 4.3 and 4.4 provides a summary of the data necessary to test hypothesis two. Table 4.3 compares those individual's scores who reached significance in either of the above statistical procedures.

Table 4.4 itemizes ability- achievement discrepancies; Differences between Wechsler FSIQ and VIQ and WIAT sub test and composite standard scores. The predicted achievement method was calculated to determine if the discrepancy reached statistical significance in both cases.

Table 4.3

WIAT subtests	VIQ	Actual score	Difference	.05.sig
comprehension	112	123	11	12.62
composite read	112	118	6	17.04
comprehension	101	153	52	14.41
composite read	101	154	53	15.92
comprehension	123	106	-17	12.8
composite read	124	93	-31	15.87
comprehension	99	95	-4	12.62
composite read	99	104	5	17.04
comprehension	99	108	9	11.77
composite read	99	113	14	13.14
comprehension	125	160	35	18.35
composite read	126	159	35	20.75
comprehension	115	90	-25	12.62
composite read	115	88	-27	17.04
comprehension	124	102	-22	12.8
composite read	128	112	-14	15.87

Based on VIQ Scores on WISC 111

Ability Achievement Discrepancies; Differences

Between WISC 111 VIQ Scores and WIAT Sub test and

Composite Scores Required For Statistical Significance.

Predicted Achievement Method.

Table 4.4

WIAT subtests	FSIQ pred	Actual score	Difference	.05.sig
comprehension	119	123	4	12.62
composite read	120	118	-2	17.04
comprehensior	93	153	60	14.41
composite rea	101	154	53	15.92
comprehensior	124	106	-18	12.8
composite rea	125	93	-32	15.87
comprehension	101	95	-6	12.62
composite read	101	104	3	17.04
comprehensior	91	108	17	11.77
composite rea	91	113	22	13.14
comprehensior	121	160	39	18.35
composite rea	127	159	32	20.75
comprehensior	116	90	-26	12.62
composite rea	116	88	-28	17.04
comprehension	111	102	-9	12.8
composite read	112	112	0	15.87

Based on FSIQ Scores on WISC 111

Ability Achievement Discrepancies; Differences Between WISC 111 FSIQ Scores and WIAT Predicted and Actual Composite Scores Required For Statistical Significance.

Predicted Achievement Method.

Testable Hypothesis

In the second null hypothesis it was expected that the VIQ would not predict achievement level as accurately as the FSIQ. In the alternate hypothesis it was expected that the VIQ would predict achievement level as accurately as the FSIQ.

It was found that four individual's who were identified as having ability achievement discrepancy using FSIQ were also identified using VIQ. One individual found to have ability achievement discrepancy at the .05 and .01 level in reading comprehension and the composite reading score using the FSIQ, only reached significance at the .05 level in the composite reading score. Also, using the VIQ one individual not identified as having a discrepancy using FSIQ was identified at the .05 and .01 level using the VIQ in reading comprehension. Therefore, the null hypothesis 2 is rejected and the alternate hypothesis 2 is accepted.

Table 4.5 provides descriptive data for those individual's previously identified as reading disabled and their current status.

Table 4.5

WIAT subtests	FSIQ pred	Actual score	Difference	.05.sig	.01 sig
comprehension	119	123	4	12.62	15.81
composite read	120	118	-2	17.04	21.86
comprehension	93	153	60	14.41	18.24
composite rea	101	154	53	15.92	20.39
comprehension	116	90	-26	12.62	15.81
composite rea	116	88	-28	17.04	21.86
compehension	111	102	-9	12.8	16.07
composite read	112	112	0	15.87	20.32

Current Test Results of the Four Individual's Previously Diagnosed as Reading Disabled.

Testable Hypothesis

In null hypothesis 3, it was postulated that those individual's who were previously identified as reading disabled would not currently be identified as having a significant ability achievement discrepancy. Alternate hypothesis 3 stated that the discrepancy among the sub sample previously identified as reading disabled would remain constant.

It was found that of the four children previously identified as reading disabled, only two currently demonstrated a significant ability-achievement discrepancy. However, one of these achieved at a statistically higher level of achievement than the FSIQ score predicted. The second individual found to have a significant achievement ability discrepancy achieved a significantly lower level of achievement than the FSIQ score predicted.

Therefore, the null hypothesis 3 is accepted and the alternate hypothesis 3 is rejected.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Summary

The importance of IQ achievement discrepancy has been increasing among states as a diagnostic indicator in establishing LD eligibility criteria .(Mercer Hughes and Mercer 1985). comparison of intellectual ability with academic achievement has been key in determining if a specific learning disability is present since Public Law 94-142. One of the most psychometrically sound procedures for determining significant ability achievement discrepancies is the predicted achievement method (Heath and Rush 1991, Reynolds 1990). The research has cautioned not to rely solely on discrepancy for LD eligibility however, to date it is presently necessary criteria for classification in many states.

Research studies have consistently found that language skills are highly correlated to reading achievement (Mann 1986). Further, the VIQ score may be used to determine ability

achievement discrepancy because it has higher predictive validity with achievement (Minskoff, Hawks, Steidle & Hoffman 1989).

Lastly, longitudinal studies have concluded that children with learning disabilities can be identified as early as pre-K and that the majority of these problem readers remain problem readers over the years (Badian 1982, Sawyer 1992).

The sample used in this study consisted of 8 children who responded to low cost assessment services provided by LDTC and School psychology interns at Rowan College. The study was designed to determine the accuracy of the predicted achievement method over the simple difference method in detecting significant ability achievement discrepancies. Secondly to determine if VIQ could predict achievement level as accurately as FSIQ. Lastly to assess the current achievement level of 4 children previously identified as reading disabled. The statistical procedures employed were based on the WIAT manual's tables (pg.188) and Alfonso's tables (1993).

It was expected that the predicted achievement method would more accurately identify significant ability achievement discrepancy compared to the simple difference because it is not directly influenced by IQ. It was also expected that VIQ would

be as accurate a predictor as FSIQ in determining achievement level. Lastly, it was expected that those children previously identified as reading disabled would continue to demonstrate significant ability achievement discrepancies.

Conclusions

The following statistical procedures and comparisons were determined.

1. The predicted achievement method and simple difference method detected exactly the same significant ability achievement discrepancies.
2. The VIQ was found to be as accurate a predictor of achievement as FSIQ.
3. Those individuals previously identified as reading disabled did not continue to demonstrate significant achievement ability discrepancies.

Discussion

The theory behind the statistical procedures employed in this study conclude that the predicted achievement method is the most psychometrically sound procedures for determining significant ability achievement discrepancies. This is because the predicted achievement method is not directly influenced by IQ. This is beneficial because often times individual's whose IQ

is low does not show significant ability achievement discrepancies when using the simple difference method. In this study however all of the FSIQ scores fell within one standard deviation of the mean thus eliminating the chance of overlooking a significant discrepancy due to low IQ scores. The literature suggests that it is minorities and blacks who on average have lower IQ scores and so might be over looked. In the current study, all of the subjects were white and came from middle class to upper middle class families. The sample was not representative of the population as a whole. In this study it might have been expected that the simple difference method and the predicted achievement method would identify the same individual's who did demonstrate significant ability achievement discrepancies.

The VIQ was as effective as the FSIQ in predicting achievement level. This was expected due to the fact that school achievement is rooted in verbal skills. It is therefore concluded that the VIQ is equally as effective when computing predicted ability achievement discrepancies as the FSIQ.

Lastly, it was found in this study that those children previously identified as reading disabled did not currently achieve at a significantly lower level than their ability. The

mean age of the children at the time of reading disability diagnoses was 6.4 years of age. Due to their young age it is possible that the symptoms of a reading disability was due to a maturational lag. Also, these children all tested within the average to above average range as indicated by the Wechsler scores. Perhaps these children were better equipped to overcome their reading challenge. Third, all these children received tutoring and did not have a family history of disability. As Sawyer concluded in her 1993 study, predicting poor reading performance among pre-K children increased from 43% to 93% when biographical data was factored. biographical data was not factored in the current study.

Implications for Future Research

Since past research has found the predicted achievement method to be the most statistically sound method for calculating ability achievement discrepancies this should be the method employed. The importance of determining ability achievement discrepancy is great in determining which individuals are eligible for LD services. If other statistical procedures are directly influenced by IQ scores, and minorities average lower on IQ, than these individual's might not be

identified even if a disability exists.

VIQ seems to be as effective in predicting achievement level as FSIQ and should be utilized especially when PIQ and VIQ are discrepant. It is important to assess every individual's strengths and weaknesses. In school, successful achievement is directly related to verbal skills. If a child's FSIQ is inflated due to a high PIQ, the individual might not succeed in school but at the same time might not demonstrate a significant ability achievement discrepancy. In the future it would be interesting to compare children who do have discrepant PIQ and VIQ scores and their achievement levels.

Finally, diagnosing a child as reading disabled should not be based solely on achievement ability discrepancies. This study has demonstrated that these discrepancies could be overcome. In fact, three of the four children previously identified did not demonstrate a significant discrepancy currently. The affects of classifying or labeling a child has been researched extensively. If in fact three out of four at beginning reading age overcome the disability then perhaps a new method of assessment is required. Sawyer (1993) has stated that correctly identifying poor readers pre-K increased from 43% to 93% when biographical data was considered. Future research should

attempt to duplicate Sawyers findings.

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APPENDICES

Appendix A

ASSESSMENT AND LEARNING CENTER
Department of Special Educational Services/Instruction
Rowan College of New Jersey
Glassboro, New Jersey 08028

EDUCATIONAL AND COGNITIVE EVALUATIONS FOR SCHOOL-AGE CHILDREN

What: The Assessment Center is currently able to provide educational testing for children ages 6 through 12. Assessments will be provided by certified teachers who are graduate students enrolled in our program leading to certification as Learning Disability Teacher/Consultants and School Psychologists. These graduate students receive direct supervision by either Dr. Sharon Bianco, Dr. Donna Hathaway, or Dr. John Klanderman.

Test Instruments:

A. Measures of educational achievement (e.g., reading, math and language)

B. Measures of cognitive ability

When: Learning/Educational evaluation requires two sessions; cognitive evaluation requires one.

Learning	Cognitive
October 27 and November 3	November 15
November 7 and November 14	November 16
November 10 and November 17	December 6
November 21 and November 28	December 7

Where: The sessions are scheduled in the Assessment and Learning Center, Robinson Building, Rowan College

Time: 4:15 to 6:15 p.m.

Cost:

Either Educational Achievement or Cognitive	Both
$25 for Rowan College students	$35
$40 for all others	$50

Product: Parents will receive a written evaluation of their child's performance. A conference will be scheduled to discuss the test data.

Contact: Eleanor Wilson, ALC Secretary
Robinson Building
Phone: 256-4512

Age	VIQ	PIQ	FSIQ
8	124	130	129
7.8	101	80	90
8.3	133	139	137
9.4	99	105	102
12.1	98	79	87
6.8	135	137	140
9.8	121	125	123
8.1	125	107	118

WISC III Results