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A COMPARATIVE STUDY OF THREE ALTERNATIVE PROCEDURES
FOR IDENTIFYING SEVERE DISCREPANCY IN
LEARNING DISABLED STUDENTS

by

Carol Tully Uhlman

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership

Western Michigan University
Kalamazoo, Michigan
April 1987

A COMPARATIVE STUDY OF THREE ALTERNATIVE PROCEDURES
FOR IDENTIFYING SEVERE DISCREPANCY IN
LEARNING DISABLED STUDENTS

Carol Tully Uhlman, Ed.D.

Western Michigan University, 1987

The purpose of this study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement with two alternate procedures: (a) the "expert opinion" of learning disability teachers, and (b) the results of the multi-disciplinary evaluation team report (MET). An ex post facto design was used. Hessler's procedure was applied using WISC-R full scale scores as the ability measure and reading, mathematics, and written language scores from Part 2 of the Woodcock-Johnson Psycho-Educational Battery as measures of achievement.

Subjects were 27 fourth and fifth grade students legally identified as learning disabled and receiving special education services in learning disability programs taught by certified teachers of the learning disabled. Each subject was enrolled in one of six school districts within a single special education region located in the state of Michigan. Both test scores and copies of the MET reports were obtained from confidential school records; questionnaires were used to collect the expert opinions of the learning disability teachers of the subjects.

Correlation coefficients were computed for the three procedures studied. Major findings were:

1. For reading achievement there was low, little, or no correlation between the procedures.
2. For mathematics achievement there was low to moderate correlation between the procedures.
3. For written language achievement there was low, little, or no correlation between the procedures.

Given these findings three unplanned post hoc examinations were made using correlation coefficients. One finding of this post hoc analysis was that the higher the student's IQ, the higher the correlation between IQ and the "expert opinion" that a severe discrepancy existed; this same correlation was not found when IQ was compared to the MET.

A conclusion of this study is that Hessler's (1985) procedure is as good as, but no better than, the two alternate procedures. Although Hessler's procedure is recommended, given the small number of subjects and level of strength of the findings, caution should be exercised in using it as a mandatory criterion for identification of learning disabled students.

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Carol Tully Uhlman

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CHAPTER I

INTRODUCTION

Learning disabilities is a special education category of handicapping conditions identified in federal (Education for All Handicapped Children Act, 1975) and state (Public Act 198, 1971) laws. All handicapped students including learning disabled are legally entitled to a free appropriate education at public expense (U.S. Department of Health, Education and Welfare, Office of Education [USOE], 1976). The total number of identified handicapped children (4.4 million) stabilized in 1985; however, the number of learning disabled increased to 42.2% of the handicapped population, while the number in other handicapping categories decreased compared to previous years. The number of students identified as learning disabled in the United States has grown from none in 1960, prior to legal definitions and identification procedures, to nearly 2 million in 1985 (U.S. Department of Education [USDE], 1986).

The Problem

Definitions and identification procedures for learning disabilities were primarily conceptual rather than operational in the early 1980s. Learning disabilities was described as a generic term for a wide assortment of children (Kavale & Nye, 1981). The numbers and types of students identified as learning disabled varies depending on

the definition used (Ysseldyke, Algozzine, & Epps, 1982). The result was nebulous and idiosyncratic identification and educational placement procedures. Resolution of definitional issues is needed to alleviate the confusion surrounding this handicapping condition (Tucker, Stevens, & Ysseldyke, 1983).

A "necessary but insufficient condition" for legal identification of a learning disability is the demonstration of a severe discrepancy between ability and achievement. Additional criteria must also be met (USOE, 1977). Severe discrepancy is not synonymous with learning disability. All students with a severe discrepancy between ability and achievement are not learning disabled. A severe discrepancy may be the result of other conditions, such as a physical or emotional impairment, or environmental, cultural, or economic disadvantage.

The portion of the learning disability identification procedure requiring demonstration of a severe discrepancy between ability and achievement was given increasing emphasis by researchers, experts, and practitioners in learning disabilities in attempts to operationalize and standardize identification procedures during the 1980s. Proposed procedures for determining a severe discrepancy progressed from simple number of years below grade level to various uses of Wechsler Intelligence Scale for Children-Revised (WISC-R, Wechsler, 1974) to a variety of expectancy formulas. Major advances came with the introduction of procedures using standard scores and procedures which incorporated ability scores determined by methods which took into account the fact that achievement scores tend to regress toward

the mean when compared to ability scores. The state of the art in 1986 was the procedure proposed by Hessler (1985) which is simple for the practitioner to apply, yet is conceptually and mathematically sound. None of the proposed procedures prior to Hessler's had yet been shown to be valid or acceptable as a standard for identification of learning disabled students and Hessler's had not yet been studied. The lack of a standard operational definition of learning disabilities and specifically the severe discrepancy between ability and achievement portion of the nonoperational definition was still a major problem for researchers and practitioners in the area of learning disabilities in 1986. The research question to be addressed by the study was: How does Hessler's (1985) procedure for identifying a severe discrepancy between ability and achievement compare with two alternative procedures using learning disabled students as subjects.

Hessler's procedure is presented in detail in Chapter II. One alternate procedure was the multidisciplinary evaluation team (MET) report including the Assessment and Diagnostic Summary for Specific Learning Disabilities form. The multidisciplinary evaluation team report is the legal form completed by the persons evaluating or reevaluating a suspected handicapped student (Appendix A). The MET Assessment and Diagnostic Summary for Specific Learning Disabilities is the legal form completed by the multidisciplinary evaluation team which specifies the area or areas in which a severe discrepancy between ability and achievement is determined to exist in addition to other assurance statements for qualifying for special education services as learning disabled (Appendix B). The second alternate

procedure was the "expert opinion" of teachers of the learning disabled. Expert opinion is defined as the opinion of professionally trained and certified teachers of the learning disabled by the state of Michigan.

Definition of Terms

The terms used in the study are defined as follows:

Ability: performance on tests designed to measure ability, intelligence, or potential for learning. The ability test used in the study was the WISC-R.

Achievement: performance on tests designed to measure academic achievement in areas of study such as reading, mathematics, and written language. The achievement test used in this study was the Woodcock-Johnson Psycho-Educational Battery, Part 2.

Expert opinion: the opinion of professionally trained and state certified teachers as teachers of the learning disabled.

Hessler's (1985) procedure: a specific procedure for determining a severe discrepancy between ability and achievement using standard scores and ability scores which reflect the tendency of achievement test scores to regress toward the mean when compared to ability test scores. This is discussed in greater detail in Chapter II.

Learning disability: a handicapping condition identified by federal and state laws.

Learning disabled students: students who have been evaluated and determined to have the specific handicapping condition identified

as a learning disability according to federal and state laws and guidelines.

Practitioners: professionals researching, evaluating, teaching, or supervising in the field of learning disabilities, especially teachers and teacher consultants of the learning disabled and school psychologists.

Severe discrepancy: the degree of difference between test scores of ability and test scores of achievement for individual students.

Research Objectives

The purpose of the study was to compare Hessler's (1985) procedure, the results reported on the MET report, and the expert opinion of learning disability teachers to determine the degree of agreement between them regarding which students had a severe discrepancy between ability and achievement and to compare specific academic achievement areas. The 11 research questions addressed were:

1. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading?
2. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in reading?

3. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading?

4. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

5. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

6. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

7. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language?

8. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in written language?

9. What is the degree of the relationship between the multi-disciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language?

10. What is the degree of the relationship between the multi-disciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in oral expression?

11. What is the degree of the relationship between the multi-disciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in listening comprehension?

Importance of the Study

The primary importance of the study of Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement is its practical significance for practitioners in the field who are charged with identifying learning disabled students. Hessler's procedure could be the first step in operationalizing and standardizing the legal definition and identification procedures for learning disabilities of which severe discrepancy is a "necessary but insufficient condition." Researchers and experts could then devote efforts to operationalizing and standardizing the remainder of the

definition and identification procedures. Consistency statewide and from state to state in identification and placement procedures could result. A better understanding of this "thing" called learning disabilities would help researchers, experts, practitioners, educators, parents, and students.

Limitations of the Study

Nine limitations of the study were:

1. The study was restricted to the "severe discrepancy between ability and achievement" portion of the learning disability definition and identification procedures.
2. Only reading, mathematics, and written language were the areas of academic achievement considered.
3. The WISC-R was used as the measure of intellectual ability.
4. The reading, mathematics, and written language subtests of the Woodcock-Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977), Part 2, were used as measures of achievement.
5. Only fourth and fifth grade students identified as learning disabled and receiving services in a state of Michigan categorical funded learning disability program taught by a certified teacher of the learning disabled were used as subjects.
6. The "expert opinion" of the subjects' teachers of the learning disabled and legal forms completed by the multidisciplinary evaluation team were used as the alternative procedures for comparison to Hessler's (1985) procedure.

7. The study was conducted in six public school districts in the state of Michigan comprising Kent County Special Education Region II. Only public school students and programs were involved.

8. Results may be biased because subjects were drawn from a population already identified by the multidisciplinary evaluation team which was one of the alternative procedures. This may have influenced the subjects' learning disability teachers' responses to questions about the subjects which were used as the second alternative procedure.

9. A procedural error in initiating data collection procedures may have contributed to a decrease in the number of subjects from the potential 76 to the 27 included in the study.

The study was conducted through the office of the regional director of special education. Letters requesting permission to include data on their child were mailed to the parents of all 76 potential subjects without first consulting individually with administrators in the local school districts. Some local school administrators believed formal procedures for their district had not been followed and were reluctant to cooperate in completion of the data collection procedures. One consequence of this was that follow-up letters to parents who did not respond to the original mailing could not be sent.

Overview

The purpose of Chapter I has been to introduce the study with a presentation of the research problem, definition of terms, the

research objectives, importance, and limitations of the study. There are four remaining chapters. Literature relevant to the definition of a learning disability, identification of learning disabilities, tests used to determine ability and achievement, and procedures used in the identification of a severe discrepancy between ability and achievement are reviewed in Chapter II. Included in Chapter III are descriptions of the setting, subjects, instruments, procedures for data collection, and data analysis methods. The results of the analysis of the data are presented in Chapter IV. A discussion of the results including conclusions and recommendations for future research is contained in Chapter V. Appendices are included for the organization of pertinent documents and supplemental information.

CHAPTER II

A REVIEW OF THE LITERATURE

The purpose of the study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in learning disabled students with two alternate procedures.

The review of relevant literature is organized into five sections. The term learning disability is defined in the first section. In section two the identification of learning disabilities including general procedures and prevalence is reviewed. Issues related to testing and specific tests are reviewed in section three. The fourth section contains a review of descriptive and empirically based literature relating to the identification of a severe discrepancy between ability and achievement. Chapter II concludes with a summary of the previous literature related to the focus of the study.

Definition of Learning Disability

Learning disability has been defined by various experts and by law. These definitions have been primarily conceptual rather than operational.

The experts' definitions were reviewed by Chalfant and Scheffelin (1969). They reported a variety of terms commonly used in learning disability definitions:

Characteristics which are often mentioned include disorders in one or more of the processes of thinking, conceptualization, learning, memory, speech, language, attention, perception, emotional behavior, neuromuscular or motor coordination, reading, writing, arithmetic discrepancies between intellectual achievement potential and achievement level, and developmental disparity in the psychological processes related to education. (p. 1)

A typical example of the experts' definitions of a learning disability in the 1960s is that of Kirk (1962). He stated that:

A learning disability refers to a retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, spelling, writing, or arithmetic resulting from a possible cerebral dysfunction and/or behavioral disturbance and not from mental retardation, sensory deprivation, or cultural or instructional factors. (p. 263)

The United States Congress mandated a free appropriate education for handicapped children including a category identified as learning disabilities with the passage of the Education for All Handicapped Children Act of 1975. Learning disability was defined as:

The term "children with learning disabilities" means those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such disorders include such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such a term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbances, or environmental, cultural, or economic disadvantage. (p. 22)

The state of Michigan mandated education of the handicapped with the passage of PA-198 (1971); however, Michigan has a long history of providing education for the handicapped. The Michigan Special Education Rules (Michigan State Board of Education, 1983) define learning

disability (R 340-1713) much the same as the federal government (Appendix C).

All definitions, expert and legal, are vague and conceptual rather than operational. They are simultaneously inclusionary and exclusionary. The two salient features common to nearly all definitions are: (a) a severe discrepancy between ability and achievement must be present and (b) the academic achievement problems are not directly attributable to other handicapping conditions.

Identification of Learning Disabilities

Legal Procedures

The procedures for identifying learning disabilities have been outlined in federal (U.S. Department of Health, Education and Welfare, Office of Education [USOE], 1977) and state laws. State laws vary, but all must include the minimum required by federal law.

The United States Office of Education (USOE, 1977) published Procedures for Evaluating Specific Learning Disabilities which added to the original definition of learning disabilities the criterion of a severe discrepancy between ability and achievement in one or more of seven areas: oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematics calculation, or mathematics reasoning. The identification of a learning disability and severe discrepancy is to be determined by a multidisciplinary evaluation team (MET) consisting of at least the student's teacher and one person qualified to conduct individual

diagnostic examinations of children such as a school psychologist, speech-language pathologist, or remedial reading teacher.

The state of Michigan (Michigan State Board of Education, 1983) requires that a multidisciplinary evaluation team (MET) complete a comprehensive evaluation as outlined in R 340.1725 (Appendix O).

[The] "multidisciplinary evaluation team" means a minimum of 2 persons who are responsible for evaluating students suspected of being handicapped. . . . The team shall include at least 1 special education-approved teacher or other specialist with knowledge in the area of the suspected disability. (p. 3)

A comprehensive reevaluation of each special education student is required at least every 3 years. The MET prepares a report and submits it to an individualized educational planning committee (IEPC) for final disposition.

An important component of the evaluation is the determination of a severe discrepancy between ability and achievement which is a "necessary but insufficient condition" for being legally identified as learning disabled. The determination of a severe discrepancy requires the administration of various tests by qualified personnel.

Prevalence

The number of students legally identified as learning disabled in the United States has grown from none in 1960 prior to legal definitions and identification procedures to nearly 2 million in 1985. The number of learning disabled students in the United States receiving special education services increased by 130.7% between 1976 and 1985 with 1.5% of this increase between 1984 and 1985. The total

number of handicapped children counted stabilized in 1985; however, the number of learning disabled increased while the number in other handicapping categories decreased compared to previous years.

A state-by-state comparison shows some disparity in the percentage of the total student population aged 3 to 21 identified as learning disabled in 1985 based on USDE (1986) information. In most states from 2% to 3% were identified as learning disabled, the range was 0.8% (Wyoming) to 4.7% (Rhode Island). In the state of Michigan 3.1% of its student population were identified as learning disabled in 1985 which was an increase of 1% from 1984.

Estimates of the prevalence of learning disabilities are varied. Berk (1984) reported that state-by-state estimates range from less than 1% to 7% and nationwide it is about 3%. Reynolds (1984) stated the state-by-state estimates can vary from less than 2% to 35% depending on the individual state's criteria.

A survey of 149 researchers, policy makers, and teacher trainers in 1981 indicated estimates of prevalence ranging from 0 to 70% with 3% generally being the accepted figure (Tucker et al., 1983). These results were compared and reported to be similar to those obtained in a 1975 study (3 to 5%). Estimates of the age at which a learning disability could be identified ranged from 0 to 9 years (Tucker et al., 1983). Placement most frequently occurs in first through fifth grades (Cone, Wilson, Bradley, & Reese, 1985).

There are four major, interrelated reasons for the disparity in both numbers identified and estimates of prevalence of learning disabilities. They are: (a) lack of an operationalized definition

of learning disabilities, (b) improper or lack of application of the severe discrepancy criterion, (c) failure to develop appropriate mathematical models for severe discrepancy, and (d) the specific ability and achievement tests chosen to determine severe discrepancy (Cone et al., 1985; Reynolds, 1984; Salvia & Ysseldyke, 1981).

Tests

Standards for evaluation and use of ability and achievement tests have been developed (American Psychological Association [APA], 1985). Tests should have a manual describing administration and scoring procedures; the development of the test including its purpose, reliability, and validity; information on the norm group; norming procedure; and any relevant research. Each test should be administered by qualified persons following standardization procedures. Any test used for assessment should be carefully reviewed, evaluated, and used according to these standards.

The United States (USOE, 1977) and state of Michigan (Michigan State Board of Education, 1983) laws state that qualified individuals will administer diagnostic tests. Test developers also set qualification criteria for the use of their tests.

A qualified individual is familiar with APA standards and has an educational and experiential background giving that person the technical and conceptual skills to apply the standards, judge tests accordingly, and meet test developers' qualifications for administration and interpretation.

Criteria for evaluating ability and achievement tests for use in determining a severe discrepancy between ability and achievement have been proposed by Berk (1984); Hanna, Dyck, and Holen (1978, 1979); Salvia and Ysseldyke (1981); and Woodcock (1984). The following criteria are essential:

1. Both ability and achievement test scores should be transformed into the same score metric.
2. Both tests should meet APA standards, have psychometric precision, a reliability of .9 or better, and demonstrated validity.
3. Both tests should be normed on the same national sample or on comparative samples.

Ability Tests

One of five different individually administered tests of ability was used in 90% of the 307 studies of learning disabilities in which a specific intelligence test was indicated in a review of literature by Kavale and Nye (1981). Each of these tests is individually administered and norm referenced. The Wechsler Intelligence Scale for Children (Wechsler, 1974) was used in 70% of the studies followed by the Stanford-Binet (Terman & Merrill, 1973) in 10%, Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) in 7%, and Slosson Intelligence Test (Slosson, 1981) or McCarthy Scales of Children's Abilities (McCarthy, 1972) in 3%. The remaining 10% of the 307 studies did not specify the test used to measure intelligence.

Wechsler Intelligence Scale for Children-Revised (WISC-R)

The WISC-R is an individually administered test of general intelligence for children aged 6 to 16 years, 11 months. There are 12 subtests, 10 comprising the full scale score with a mean of 100 and a standard deviation of 15. Half of the subtests make up a verbal scale and half a performance scale. APA standards for psychological tests have been satisfied. The manual provides specific instructions and relevant statistical data. Average reliabilities of the verbal, performance, and full scale are: .94, .90, and .96 with a standard error of measurement of 3.19 points for the full scale score. The standardization sample is representative of the U.S. population. The WISC-R is technically superior to other general intelligence tests and has excellent reliability, validity, and standardization. The WISC-R has been the subject of thousands of research studies and reviews (Anastasi, 1982; Buros, 1938-1978; Salvia & Ysseldyke, 1981; Sattler, 1982). Three 1985 reviews reaffirm the WISC-R, although not perfect, to be the most popular and best test available for measuring general intelligence (Bortner, 1985; Detterman, 1985; Witt & Gresham, 1985).

Stanford-Binet Intelligence Scale (Binet)

The Binet which was first designed to separate normal from retarded children was developed in 1905 and has undergone several revisions and renormings since. The 1972 norms of the 1968 revision covers ages 2 through 18 years. An age based IQ score with a mean of

100 and standard deviation of 16 is obtained. The Binet does not satisfy all APA test standards. The manual is incomplete and administration and scoring procedures are complicated and sometimes difficult to understand. The standardization sample for the 1972 norms is not representative of the U.S. population, but closer than previous norms. Reliability and validity for this edition are inadequate because data reported are for previous editions. Reviewers have commented that the Binet has had a place in the history of intelligence testing but has outlived its usefulness. Faith in it is no longer warranted (Freides, 1978; Salvia & Ysseldyke, 1981; Sattler, 1982). A revised edition of the Binet became available in early 1986. Questions have been raised about the manual, validity, and reliability of the 1986 edition of the Binet (Fagan, 1986; Sandoval & Irvin, 1986). Now, late 1986, is too soon to tell if the Binet will be able to reestablish its role as "the intelligence test."

Peabody Picture Vocabulary Test-Revised (PPVT-R)

The PPVT-R is a test of receptive language for ages 2 years, 6 months to 40 years. This edition is essentially the same as the original PPVT. The PPVT-R is a nonverbal, multiple choice test in which the examinee is asked to indicate which of four pictures corresponds to a word spoken by the examiner. The PPVT-R does satisfy most APA standards. The median split-half reliability is .81 to .83 for the two forms. The standard error of measurement for the standard score is 7 points. The standardization sample is representative of the U.S. population. No validity information is presented.

Reviewers state the PPVT-R is an easy to use test of receptive language for a wide age range. They caution against substitution of standard scores from the PPVT-R or IQ scores of the PPVT for scores of general intelligence (McCallum, 1985; Salvia & Ysseldyke, 1981; Sattler, 1982). The PPVT-R is not equivalent to a test of general intelligence such as the WISC-R or Binet.

Slosson Intelligence Test (Slosson)

The Slosson is a screening test originally introduced in 1961 designed to evaluate mental ability in nearly everyone. The Slosson provides mental ages which can be transformed into an IQ with different means and different standard deviations at different age levels. Means range from 91.7 to 114.6 and standard deviations from 16.7 to 31.2. A Binet type scale is used and it contains several items from the Binet. The Slosson does not satisfy APA standards. The manual does not present accurate or complete information. The standardization sample is not representative of the U.S. population. Validity and reliability information is inadequate and based upon previous editions. Reviewers have found the Slosson to be psychometrically inadequate and a poor measure of intelligence. They advise against making placement decisions based upon it (Oakland, 1985; Reynolds, 1985; Salvia & Ysseldyke, 1981; Sattler, 1982).

McCarthy Scales of Children's Abilities (McCarthy)

The McCarthy is a test of general intelligence for children aged 2 years, 4 months, 16 days through 8 years, 7 months, 15 days. There

are 18 subtests making up verbal, perceptual-performance, quantitative, memory, and motor scales. Fifteen of the subtests make up the general cognitive index which has a mean of 100 and standard deviation of 16. The McCarthy satisfies APA standards for psychological tests. The manual is complete and provides relevant data on standardization and reliability which are excellent. The average split-half reliability of the general cognitive index is .93 and test-retest reliability is .90 with a standard error of measurement of 4 points. Validity appears to be adequate. Reviewers have stated that the McCarthy is an excellent test and should be popular for ability testing of the age group (Anastasi, 1982; Salvia & Ysseldyke, 1981; Sattler, 1982; Woolrich, 1985). The McCarthy will never achieve the frequency of use of a test such as the WISC-R because of the young and limited age range and limited number of verbal items.

Achievement Tests

The Wide Range Achievement Test (WRAT) (Jastek & Jastek, 1978) and the Peabody Individual Achievement Test (PIAT) (Dunn & Markwardt, 1970) were the most often used individually administered achievement tests in the 1970s and early 1980s to determine an ability-achievement discrepancy. The WRAT was the most frequently used (58%) and the PIAT was second (13%) in the 307 research studies of learning disabilities reviewed by Kavale and Nye (1981).

Wide Range Achievement Test (WRAT)

The WRAT is a brief pencil and paper test that measures reading, spelling, and arithmetic. There are two levels; Level 1 for ages 5 to 11 years, 11 months, and Level 2 for ages 12 to 64 years, 11 months. The 1978 revision is the fourth since it was originally introduced in 1936. Three types of scores are obtained: grade ratings, percentile, and standard scores with a mean of 100 and standard deviation of 15. The WRAT does not satisfy all APA standards. The standardization sample was not representative of the U.S. population. Split half reliability ranges from .94 to .98. Test-retest reliability is not reported in the manual; however, it has been shown to be .87 to .98 for emotionally disturbed and slow learners (Woodward, Santa-Barbara, & Roberts, 1975). Standard errors of measurement range from 0.88 to 1.70 on the various subtests and levels. Validity data reported in the 1978 manual is based on earlier editions which have been criticized by various reviewers in Buros (1938-1978). The WRAT is a very limited screening test. The authors' claims regarding its usefulness are not substantiated (Matuszek, 1985; Saigh, 1985; Salvia & Ysseldyke, 1981; Sattler, 1982).

Peabody Individual Achievement Test (PIAT)

The PIAT is a screening test for reading recognition, reading comprehension, mathematics, spelling, and general information for use with children in grades kindergarten through 12. The format is

primarily multiple choice. Individual scores in these areas and a total score which can be reported in grade equivalents, age equivalents, percentiles, and standard scores based on age or grade with a mean of 100 and standard deviation of 15 are obtained. The PIAT satisfies APA test standards. The manual is complete and reports relevant data. Reliability and validity fall within an acceptable range. Median test-retest reliability for the total test is .89 with a median range of .64 to .88 for each of the subtests. The median standard error of measurement for the total test is 12. The standardization sample was representative of the U.S. population. The PIAT is a good screening device but should not be used for making special education placement decisions (French, 1972; Lyman, 1972; Salvia & Ysseldyke, 1981; Sattler, 1982). Neither the eighth nor ninth editions of the Mental Measurements Yearbooks (Buros, 1978; Mitchell, 1985) have reviews of the PIAT.

Co-Normed Ability and Achievement Tests

The only two tests of ability and achievement co-normed on the same population are the Woodcock-Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977) and the Kaufman-Assessment Battery for Children (Kaufman & Kaufman, 1983). These represent a major step forward for professionals trying to assess ability-achievement discrepancies.

Woodcock-Johnson Psycho-Educational Battery (W-J)

The W-J is a comprehensive co-normed test of ability, achievement, and interest for ages 3 through adult. Scores can be reported by grade score, age score, percentile, and standard score with a mean of 100 and standard deviation of 15 based on grade or age. Various less common score reporting methods are also possible. Part 1 contains 12 subtests comprising an ability cluster score and Part 2 comprises four achievement cluster scores in: reading, mathematics, written language, and knowledge. Part 3 contains the five tests of interest. The W-J satisfies APA test standards. The manual accompanying the test and the technical manual on development and standardization sample was representative of the U.S. population. Split-half reliability mean coefficients in the .85 to .89 range for all cluster scores except perceptual speed (.70) are reported. Median reliability for Part 2 subtests are: reading, .96; mathematics, .92; written language, .94; and knowledge, .93. Validity data are comprehensive and appear adequate to good. One fault is that standard error of measurements are not provided for the subtests or cluster scores. The W-J was the first co-normed ability-achievement test. The test manual sets a standard for others to follow. The W-J is technically excellent and has very satisfactory norming, reliability, and validity (Cummings, 1985; Kaufman, 1985; Salvia & Ysseldyke, 1981; Sattler, 1982). Scoring can be complicated because of the amount of mathematical computation required. The general cognitive index score from Part 1 (ability) may not be interchangeable with the

WISC-R full scale for learning disabled children (Sattler, 1982).

Part 2 is a more comprehensive measure of achievement than the WRAT or PIAT (Cummings, 1985).

Kaufman-Assessment Battery for Children (K-ABC)

The K-ABC is a test of intelligence and achievement for ages 2 years, 6 months through 12 years, 6 months. The concept of testing sequential versus simultaneous processing as a measure of intelligence is used. Four global scores are obtained: simultaneous processing, sequential processing, mental processing composite (simultaneous plus sequential), and achievement. There are six subtests in the achievement scale: Expressive Vocabulary, Faces and Places, Arithmetic, Riddles, Reading/Decoding, and Reading/Understanding. Scores based on age can be reported by percentile, age equivalent, grade equivalent, and standard score with a mean of 100 and standard deviation of 15. The K-ABC satisfies APA standards. The administration and interpretive manuals provide detailed instructions and information. Norms are based on a representative sample of the U.S. population. Split-half and test-retest reliability for global scores range from .77 to .97 with preschool scores usually having the lower reliability. Construct validity appears good. The K-ABC is a technically superior test presenting an innovative approach to intelligence testing; however, interpretation requires highly trained and qualified experts (Anastasi, 1985; Coffman, 1985; Page, 1985). Final evaluation of its validity and usefulness cannot be made now, just 3 years after its publication.

Summary

The criteria by which tests of ability and achievement frequently used in determining a severe discrepancy between ability and achievement were reviewed and the results of the review are shown in Table 1.

The WISC-R is the preferred and best test of general ability available in 1986. The 1973 Binet is outdated, and the 1986 revision is already controversial. The PPVT-R is not a test of general ability and its scores are not interchangeable with those of the WISC-R or Binet. The Slosson is psychometrically inadequate and its use for placement decisions is not advised. The McCarthy is an excellent test, but only for a limited age range (2 through 8). The W-J Part 1 is technically excellent, but scoring is complicated and the general cognitive index may not be equivalent to the WISC-R full scale score. The K-ABC is just 3 years old and uses a new approach to intelligence testing; therefore, its validity and usefulness have not yet been established.

The W-J Part 2 is the best available individually administered achievement test. The W-J meets APA standards, has been demonstrated to be valid, and is a more comprehensive measure of reading, written language, and mathematics than the WRAT or PIAT. The WRAT has been the most used, but it is a very limited screening test which does not satisfy APA standards. The PIAT, second in popularity, does satisfy APA standards, but is also a screening test and should not be used for placement decisions. The validity of the achievement subtests,

Table 1
Criteria Used in Reviewing Tests of Ability and Achievement

Tests	General information		APA standards					Other criteria			
	Age range (yrs. & mos.)	Purpose	Manual	Adequate instructions	Reliability data	Validity data	Norm group and procedures	Same metric (mean = 100 SD = 15)	Reliability .9 or better	Demonstrated validity	Norm group representative of U.S. population
Ability tests											
WISC-R	6-0 to 16-11	General intelligence	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Binet	2-0 to 18-0	General intelligence	Yes	No	No	No	No	No	No	No	No
PPVT-R	2-6 to 40-0	Receptive language	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes
Slosson	.5 to 27-0	Intelligence screening	Yes	Yes	No	No	Yes	No	No	No	No
McCarthy	2-4 to 8-7	General intelligence	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 1—Continued

Tests	General information		APA standards					Other criteria			
	Age range (yrs. & mos.)	Purpose	Manual	Adequate instructions	Reliability data	Validity data	Norm group and procedures	Same metric (mean = 100 SD = 15)	Reliability .9 or better	Demonstrated validity	Norm group representative of U.S. population
<u>Achievement tests</u>											
WRAT	5-0 to 64-11	Achievement screening	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
PIAT	5-3 to 17-11	Achievement screening	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
<u>Co-normed ability and achievement tests</u>											
W-J	3-0 to adult	Part 1 (ability)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
		Part 2 (achievement)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
K-ABC	2-6 to 12-6	Ability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
		Achievement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

as well as, the entire K-ABC has not yet been demonstrated.

Based on the review of the literature, the WISC-R (ability) and W-J Part 2 (achievement) tests together meet the criteria outlined above for use in determining a severe discrepancy between ability and achievement. Their scores can both be transformed into standard scores with a mean of 100 and standard deviation of 15. Both tests meet APA test standards, have psychometric precision, reliabilities of .9 or better, and demonstrated validity. The norming population was comparative; both were representative of the U.S. population.

Identification of Severe Discrepancy

The state of the art in the identification of a severe discrepancy between ability and achievement has progressed in five overlapping stages. The first stage was simple number of years below grade level, WISC-R verbal-performance difference, and WISC-R profile analysis. Then came a variety of expectancy formulas; followed by Stage 3, the use of standard scores; Stage 4, the addition of regression toward the mean consideration; and Stage 5, Hessler's (1985) procedure. Various procedures advocated at each stage except 5, Hessler's, have been reviewed and found lacking (Berk, 1981, 1982, 1984; Cone & Wilson, 1981; Hanna et al., 1979; Kaufman, 1976a, 1976b, 1979; McLeod, 1979; O'Donnell, 1980; Reynolds, 1984; Salvia & Ysseldyke, 1981; Shepard, 1980).

Stage 1

Number of Years Below Grade Level

Number of years below grade level is simply subtracting the grade equivalent (GE) score in a subject area obtained from a standardized achievement test from the student's actual grade placement. Two or more years below grade placement is the usual criterion for determining a discrepancy. If a student has been retained one or more years local policy may be to use expected rather than actual grade placement. The advantages of this procedure are its simplicity and ease of application. There are four major weaknesses: (a) intelligence is not taken into consideration, (b) GE units are not equal to one another, (c) its application results in overidentification in the upper grades and underidentification in the lower grades because the standard deviation of GE units increases with each grade, and (d) overidentification in the lower intelligence quotient range and underidentification in the higher range.

WISC-R V-P Difference

Difference between Verbal (V) and Performance (P) scores on the WISC-R simply involves subtracting the lower score from the higher. The strength is its ease of computation after the WISC-R is administered. The primary weakness involves the confusion of statistically significant V-P differences with the frequency of occurrence in the normal population. A difference of 9 points ($p < .15$), 12 points ($p < .05$), and 15 points ($p < .01$) is significant according to

Wechsler (1974, p. 34); however, a V-P difference of at least 18-19 points occur in about 15% of the normal population, 25 points in 5%, and 31-33 in 1% (Kaufman, 1979, p. 26). Even if a V-P difference score is both significant and abnormal, it has not been demonstrated that this method is valid or reliable for identifying learning disabled students.

WISC-R Profile Analysis

The pattern of WISC-R subtest scaled scores is analyzed to determine if the pattern is indicative of a learning disability. The strength of this method is its apparent simplicity after the WISC-R is administered. The primary weakness is that although characteristic group patterns have been identified their application to the individual student profile of scores have produced inconsistent results (Kaufman, 1979).

Stage 2 (Expectancy Formulas)

A variety of expectancy formulas, some very complex, have been suggested for producing a difference score between ability and achievement. These formulas include those proposed by the Bureau of Education for the Handicapped (BEH) (USOE, 1976), Bond and Tinker (1967, 1973), Harris (1961, 1971), Horn (1941), Monroe (1932), Myklebust (1968), and Young (1976). Academic achievement is primarily defined as reading. Mathematics is occasionally included. There are no significant strengths in any of these formulas. Most of them are not even easy to understand or apply. They offer no

distinct advantages over the simple years below grade level approach even though they include an ability component. There are seven primary problems:

1. They are all based on the erroneous assumption that achievement follows a straight line growth pattern. There is an increased range and variability of obtained scores for students at higher grade levels.
2. They use a grade equivalent scale that results in inconsistencies, for example fewer arithmetic problems are identified.
3. When discrepancy values are obtained by multiplying the expected values by a fractional constant, the results are biased in the direction of applying a more stringent underachievement criterion for older and brighter students.
4. They ignore the comparability of each test's norm group.
5. Errors in measurement are not considered.
6. The effects of regression toward the mean are not accounted for.
7. A prior knowledge of incidence is not included.

None of these formulas has been shown to be valid or reliable for identifying learning disabled students (Berk, 1982, 1984; Cone & Wilson, 1981; Willson & Reynolds, 1984; Wilson, Cone, Busch, & Allee, 1983).

Stage 3 (Standard Scores)

The next major step forward in identifying a severe discrepancy between ability and achievement came with the introduction of

standard score procedures by Erickson (1975); Hanna et al., (1978, 1979); and Shepard (1980). These standard score procedures alleviate most problems associated with the previous expectancy formulas except measurement error, regression toward the mean, comparability of norm groups, and incidence.

An estimated true difference score procedure using standard scores (Salvia & Ysseldyke, 1981) was next. The reliability of a difference and the standard deviation of a difference are computed in the same manner as for a single score. When a difference is assumed reliable at a particular level of confidence the true difference can be estimated in the same manner as estimating the true difference score on one test. This procedure which is not simple for the practitioner to apply eliminates some regression due to the effects resulting from less than perfect reliability of each measure; but it does not eliminate the effects of regression toward the mean.

Stage 4 (Regression Toward the Mean)

Regression error is an insidious source of error that results from the imperfect correlation between tests. The lower the correlation between the tests the greater the regression error. Regression error is absent at the mean but becomes greater further from the mean when comparing scores on two tests. The concept of achievement test scores regressing toward the mean when compared to IQ scores from tests of ability was first introduced by Thorndike (1963). When comparing scores on IQ tests to scores on achievement tests the further from the mean the IQ test score the more the achievement test

score will regress toward the mean. When looking for a discrepancy between ability and achievement, a discrepancy might appear to be present with high IQ test scores when the discrepancy is due to regression effects rather than an actual difference between ability and achievement. With lower IQ test scores an actual difference between ability and achievement may not be evident if regression toward the mean is not considered. Students with lower IQs may appear to be overachievers while students with higher IQs may appear to be underachievers or have a discrepancy between ability and achievement if regression effects are not considered. Failure to take regression toward the mean into account will result in overidentification of high IQ students and underidentification of lower IQ students when comparing scores on tests of ability and tests of achievement. The consensus of researchers and experts in the field in the late 1970s and 1980s is that any procedure for determining a severe discrepancy between ability and achievement must allow for the regression toward the mean of achievement scores upon IQ (Cone & Wilson, 1981; Hessler, 1985; McLeod, 1979; Wilson, 1974; Wilson & Cone, 1984; Woodcock, 1979, 1984, 1985).

Two primary procedures have been proposed for determining severe discrepancy incorporating the effect of regression toward the mean. McLeod (1979, 1981) developed a set of tables showing regressed IQ scores and expected GE level of achievement for various ages. The primary flaw in this model is the use of GE scores for predicted achievement levels. GE scores as noted above are notoriously inaccurate and misleading. The state of Iowa (Iowa State Department of

Public Instruction, 1981) developed a procedure for identifying learning disabilities using standard scores and regression tables. Again, the problem is using GE for determining expected achievement.

Studies Comparing Discrepancy Procedures in Stages 1 Through 4

There have been five studies applying various ability-achievement discrepancies described above. Little or no validity has been demonstrated for any of them.

Algozzine, Forgnone, Mercer, and Trifiletti (1979) applied two formulas, one BEH, and one a modified version of BEH using data from two groups, one hypothetical ($N = 102$) and one consisting of a random selection of kindergarten through 11th graders identified as learning disabled in the State of Florida. The results showed that the BEH formula produced consistent results when the IQ was 100 and identified more discrepancies at lower IQs and less at higher IQs for both groups. The modified formula produced similar results for the sample group but was more consistent for the hypothetical group. This may have been because the sample group came from a select group identified as learning disabled by state criteria. The ability test used was either the WISC, Wechsler Preschool and Primary Scale of Intelligence (WPPSI), or Binet. The achievement test used was not specified.

O'Donnell (1980) applied seven discrepancy formulas (Bond & Tinker, 1973; Harris, 1970, 1976; Horn, 1941; Monroe, 1932; Myklebust, 1967; Smith, 1977) to existing data on 240 special education students. These students were nonrandomly sampled from six

categories of special education, primarily middle class from five locations in Kansas and Missouri. The results indicated that none of these formulas discriminate learning disabilities from other categories. Reading and mathematics were the only academic areas used and there was no indication of the tests upon which either achievement or ability was based.

Fisher (1982) applied three discrepancy formulas (BEH; Algozzine's et al., 1979, modified BEH; and a standard score comparison) to WISC-R and PIAT scores on 162 students referred for behavior and/or academic problems in one Virginia school district. The results indicated that none of these formulas identified the same group of students identified by teachers as learning disabled.

Valus (1983) applied the Hanna-Dyck-Holen and state of Iowa procedures to data gathered from 100 randomly selected teachers of the learning disabled in Kansas and Iowa regarding their most recently placed student. The results indicated that one-third of the students did not demonstrate a severe discrepancy between ability and achievement with either procedure.

Cone et al., (1985) applied the Iowa procedure to data on 1,839 kindergarten through 12th graders in the programs for the learning disabled in Iowa. The sample was representative of the Iowa population. The results indicated that 75% of those students met a moderate level of academic discrepancy. The WISC-R was consistently used as the ability measure. The WRAT was used more frequently than the PIAT for the achievement measure. The PIAT consistently yielded higher standard scores than the WRAT and thus more students were

identified as having discrepancies when the WRAT was used as the achievement measure. Placement decisions appeared to be influenced by the test used to measure achievement.

Stage 5 (Hessler, 1985)

Hessler (1985) advocates a procedure using regressed IQ scores from an intelligence test with a mean of 100 and standard deviation of 15 and achievement scores converted to standard scores with a mean of 100 and standard deviation of 15. There are two steps in the procedure. The first step is finding the regressed IQ score on a table (Appendix E). This table was developed from the formula:

$$\text{Regressed Score} = \frac{r_{xy}}{X} (X - 100) + 100$$

where r_{xy} is the correlation between the intelligence test and achievement test (Woodcock, 1984, 1985). Next, the achievement score is subtracted from the regressed IQ. The difference score is an index of discrepancy.

Hessler's (1985) ability-achievement discrepancy procedure, although easy for the practitioner to apply, is founded on sound mathematics and state of the art knowledge. An ability-achievement discrepancy is measured by scores on tests and the measured discrepancy equals the true discrepancy \pm statistical error \pm regression error \pm biases (Woodcock, 1984).

Statistical error refers to the reliability of difference scores which is usually less than the reliability of each test. This is a function of the imperfect correlation and reliability of the tests being compared (Schulte & Borich, 1984). To reduce statistical

error, Hessler (1985) recommends the use of tests that are well normed, have established validity, and a reliability of at least .9.

Regression error refers to the regression toward the mean of achievement scores when compared to IQ scores. This is due to imperfect correlation between ability and achievement tests. The lower the correlation, the greater the regression. Hessler's (1985) table (Appendix C) showing regressed IQs is based on the correlation of various tests with achievement.

Biases are from four major sources: (a) confounded measures, (b) nondifferentiation by years in school, (c) nondifferentiation by achievement area, and (d) differences in the norming samples (Woodcock, 1984). Bias from the use of confounded measures results when a test to measure ability requires the use of the achievement the ability test is being used to predict; for example, a test of ability which requires reading used to measure expected achievement in reading. Nondifferentiation by years in school refers to the lack of consideration of the number of years a student has been in school when determining the ability and expected achievement levels. Nondifferentiation by achievement areas refers to not separating ability into various achievement areas for comparison of ability and achievement; for example, using a global ability score rather than an ability score in reading when comparing ability and achievement in reading. Differences in norming samples used in norming the test of ability and the test of achievement can produce biases; however, biases from differences in the norming samples can be reduced by using well standardized ability and achievement tests using national

normative data (Hanna et al., 1979). Eliminating all four sources of bias in ability and achievement tests is possible only with highly sophisticated procedures, even on tests of ability and achievement which have been normed on the same population (Hessler, 1985). The W-J is the only test which controls for these biases.

Discrepancy exists in degree, not as a dichotomy (Woodcock, 1984). The greater the required discrepancy set as the criterion for severe, the fewer cases will be selected. The criterion score needs to be set in order to operationally define a severe discrepancy (Berk, 1984).

The correspondence between standard score differences for various ability tests and achievement and the percentage of the general population that would be selected by those differences is shown in Table 2 which was developed by Hessler (1985) based on Woodcock's (1984) mathematically based tables.

An example of the use of Table 2 using 20 points as the definition of severe discrepancy would be that 5% of the population would have a severe discrepancy if the WISC-R full scale score were compared with the W-J Part 2; a 20-point difference between Parts 1 and 2 of the W-J would select between 2 and 5% of the population. Conversely, to select 5% a 20-point difference on the WISC-R and W-J Part 2 is necessary and only 18 points on the W-J.

Hessler (1985) states a severe discrepancy should be based on some multiple of the standard error of estimate (SEest). The SEest refers to the standard deviation of the achievement test scores for a group of subjects all having the same ability score (Woodcock, 1978).

Table 2
Approximate Standard Score Difference Necessary to
Select a Particular Percentage of Subjects
(Rounded to Closest Values)

Approximate correlation between IQ x achievement	SEest	15%	10%	6.5%	5%	2%	1%
.5 (PIQ, K-ABC, McCarthy)	13.0	14	17	20*	21	27	30
.6 (VIQ, FSIQ, Stanford-Binet)	12.0	13	15	18*	20	25	28
.7 (Woodcock-Johnson) Aptitude clusters	10.7	11	14	16*	18	22	25

*1.5 X standard error of estimate (SEest).

The use of 1.5 SEest would select 6.5% of the general population and approximately 5% of the general population would be identified as learning disabled (Hessler, 1985).

Hessler's (1985) procedure meets all criteria for selecting a severe discrepancy procedure outlined by Berk (1984). A severe discrepancy procedure should take into account six concerns:

1. The means and standard deviation of the ability and achievement test score distributions.
2. The correlation between the ability and achievement test scores.
3. Regression toward the mean.

4. The unreliability of the ability and achievement test scores.
5. The unreliability of the ability-achievement difference score.
6. Empirical information in determining the criterion for a "severe discrepancy."

Summary

The literature relating to procedures for determining a severe discrepancy between ability and achievement in learning disabled students has been reviewed. The legal definition of a learning disability has been given. The identification of a learning disability requires demonstration of a severe discrepancy between ability and achievement which is a necessary but insufficient condition for meeting the legal requirements for identification as learning disabled. The prevalence of learning disabilities has been estimated to be 3 to 5%. Criteria for tests used in the identification process for a severe discrepancy are met by the WISC-R and W-J Part 2. Hessler's (1985) procedure for determining a severe discrepancy is the culmination of the evolution of theory and research in ability-achievement discrepancy in 1986.

The methodology used in the comparative study of Hessler's (1985) procedure and two alternate procedures for determining a severe discrepancy between ability and achievement in learning disabled students is presented in Chapter III. In Chapter IV the results are presented. A discussion of the results including

conclusions, and recommendations for future research is contained in Chapter V.

CHAPTER III

METHODOLOGY

The purpose of the ex post facto study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in learning disabled students with two alternate procedures using data on legally identified learning disabled students. The two alternative procedures were the "expert opinion" of learning disability teachers and the results of the multidisciplinary evaluation team (MET) report.

The purpose of this chapter is to describe how the study was done. Included are descriptions of the setting, subjects, instruments, procedures, and data analysis methods.

Setting

The setting was the six public school districts in Michigan comprising Kent County Special Education Region II. These school districts are rural and suburban with a combined enrollment of 19,715 (Michigan Education Directory, Inc., 1987). Additional information on these school districts is presented in Appendix F.

There are 14 state of Michigan categorically funded programs for the learning disabled for elementary age students within the six public districts in Kent County Special Education Region II. There are also nine state categorically funded programs for the educable

mentally impaired and five programs funded as programs for the emotionally impaired which provide services to some elementary age learning disabled students in these school districts. Some programs serve only handicapped students whose label is the same as that of the program, other programs mix students with various handicaps, and others none of the student's special education label matches that of the program. There may be some educational inadequacies for some students as a result of this method of providing programs for the handicapped; however, most of them will be rectified with changes mandated in the revised rules (Michigan State Board of Education, 1986) which become effective July 1987. The districts work together on programming and students are assigned to programs both in district and out of district depending on need and space available. For example, a learning disability program located in one of these school districts may have students from that district plus students from any or all of the other five school districts in Region II.

Subjects

Subjects were all fourth and fifth grade learning disabled students ($n = 27$) in the setting who met the following criteria:

1. They had been legally identified as learning disabled by a multidisciplinary evaluation team (MET) and an individualized educational planning committee (IEPC) according to federal and state law.
2. Learning disabled was the primary special education label.
3. Their names were on the state of Michigan Fourth-Friday, 1986 audit of public school membership enrollments for learning

disabled. In the state of Michigan school membership is determined by the count of students enrolled on the fourth Friday of September at the beginning of each school year.

4. They were receiving services in a special education program in Kent County Special Education Region II, Kent County, Michigan, which was funded by the state of Michigan as a program for the learning disabled.

5. They were receiving services from a state of Michigan certified teacher of the learning disabled.

6. Parental permission to participate was obtained.

There were 76 possible subjects based on Criteria 3, 4, and 5; but only 30 of these met Criterion 6, and 3 of the 30 were eliminated from the study because they did not meet Criterion 1 or 2.

The "expert opinions" of the learning disability teachers ($n = 13$) of the subjects selected for the study were also included. The treatment of all subjects, parents of subjects, and learning disability teachers of subjects was in accordance with the ethical standards of the American Psychological Association (1981) and the Human Subjects Institutional Review Board of Western Michigan University.

Instruments

Subjects

The Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974) (WISC-R) was used as the measure of ability. The Woodcock-

Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977) (W-J), Part 2, Reading, Mathematics, and Written Language subtests were used as measures of achievement. Both tests meet APA (1985) standards, have reliability of .9 or better, and demonstrated validity. The norming population for both tests was comparative; both were representative of the U.S. population. Together they meet the criteria discussed in Chapter II for tests used to measure an ability-achievement discrepancy.

Teachers

A brief questionnaire using a Likert scale was used with each subject's learning disability teacher (Appendix G) to obtain the teacher's expert opinion. They were asked to sort each student into categories from definitely learning disabled to definitely not learning disabled. They were also asked to identify the area of discrepancy and how severe they felt that discrepancy was. Demographic data for each teacher was also gathered with another questionnaire (Appendix H).

Multidisciplinary Evaluation Team (MET)

Reports and forms previously completed by the multidisciplinary evaluation team as part of the legal evaluation procedure were obtained. These were used to substantiate that each subject had been determined to be learning disabled by the practitioners involved in the evaluation process and to determine the specific academic achievement area or areas in which each subject demonstrated a severe

discrepancy between ability and achievement. The composition of the multidisciplinary evaluation team varies for each student. Appendix A is a copy of the MET composite report. The area in which a severe discrepancy had been found was determined from the diagnostic statements checked on the MET form for specific learning disabilities (Appendix B).

Procedures

Data Collection

Subjects were identified from the state of Michigan Fourth-Friday audit forms for learning disabled students turned in to the intermediate school district office. Parent's names and addresses were obtained from the regional director of special education.

A letter was sent to the parents of each subject (Appendix I) explaining the purpose of the study and requesting permission to include information on their child. Parents were asked to sign a Permission to Participate form (Appendix J) and a standard release form for confidential information used by the intermediate school district (Appendix K). The specific confidential information requested was the MET Composite Report (Appendix A) including the MET Assessment and Diagnostic Summary for Specific Learning Disability (Appendix B), and test scores reported in the psychological report, teacher consultant report, and learning disability teacher's report. A stamped, self-addressed envelope was included with the letter and forms. A second mailing was planned for 10 days later but was not

done because of the backlash from a procedural error in initiating the data collection procedures, i.e., not working through formal administrative channels in each of the individual school districts.

The study was conducted through the office of the regional director of special education. Letters requesting permission to include data on their child were mailed to the parents of all 76 potential subjects without first consulting individually with administrators in the local school districts. Some local school administrators believed formal procedures for their district had not been followed and were reluctant to cooperate in completion of the data collection procedures. One consequence of this was that follow-up letters to parents who did not respond to the original mailing could not be sent.

Personal contact was made with each administrator in charge of special education for the school districts within 1 week following the mailing to parents. Follow-up contact was maintained by phone and letter. Individual arrangements were made with district administrators for obtaining the information from the confidential files of each student whose parents had signed release forms and permission to participate forms.

A cover letter (Appendix L), demographic information form (Appendix H), and questionnaire titled Learning Disability Teacher Response Form (Appendix G) accompanied by a copy of the signed Permission to Participate form (Appendix J) were sent to each student's learning disability teacher.

Test scores were obtained from the confidential information records obtained from the local school districts. All subjects had been administered the WISC-R within the previous 3 years. The WISC-R full scale scores were obtained from either the MET form or psychological report. W-J scores were obtained from the MET forms, psychological reports, teacher consultant reports, or teacher reports. Subjects who had not received the W-J ($n = 3$) were identified from the psychological, teacher consultant, and teacher reports. Arrangements were made with the parents of the students who had not received the W-J and those students were administered the test by a school psychologist.

After Data Collection

Each subject was assigned a code number and names and identifying information were removed from all material. A master list of subject's names and code numbers was maintained for use in any future study of the same subjects.

Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement was applied to the WISC-R full scale score and the W-J age based standard scores. The full scale score was regressed according to the table in Appendix E using the middle column which shows the correlation of the WISC-R full scale score with achievement to be .6. The reading, mathematics, and written language scores were each subtracted from the regressed WISC-R score to obtain a difference score in each achievement area. A 20-point difference in one or more of the three areas was considered a severe

discrepancy. A 20-point difference was selected for four reasons: (a) A 20-point difference would identify 5% of the general population as learning disabled, (b) approximately 5% nationwide have been identified as learning disabled, (c) the estimate of prevalence of learning disabilities is generally 3% to 5%, and (d) subjects had previously been identified as learning disabled and so theoretically should be in the 5% group.

Data were transferred to a Data Organization Form (Appendix M) as they came in. A check mark on the MET form for learning disabilities indicating a severe discrepancy between ability and achievement in basic reading skill or reading comprehension was considered a severe discrepancy in reading and a check mark in mathematics calculation or mathematics reasoning was considered a severe discrepancy in math for purposes of the study. All other MET and teacher data were recorded exactly as reported. The results of the application of Hessler's (1985) procedure were recorded. Data were then entered on an Apple IIc computer for analysis with The Research Assistant (Watkins & Kush, 1985) computer program.

Data Analysis

Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in reading, mathematics, and written language was compared to the multidisciplinary evaluation team reports specifying areas of severe discrepancy and to the expert opinion of teachers of the learning disabled by answering 11 research questions using data gathered through the previously described

procedures. The statistical methods used for data analysis were two types of correlation coefficients: (a) point-biserial correlation coefficients and (b) phi correlation coefficients.

Research Questions

Reading

Research Question 1. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading (Question 3a on the LD Teacher Response Form)?

Research Question 2. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in reading?

Research Question 3. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading (Question 3a on the LD Teacher Response Form)?

Mathematics

Research Question 4. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability

teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics (Question 3b on the LD Teacher Response Form)?

Research Question 5. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

Research Question 6. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics (Question 3b on the LD Teacher Response Form)?

Written Language

Research Question 7. What is the degree of the relationship between Hessler's (1985) procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language (Question 3c on the LD Teacher Response Form)?

Research Question 8. What is the degree of the relationship between Hessler's (1985) procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in written language?

Research Question 9. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language (Question 3c on the LD Teacher Response Form)?

Oral Expression

Research Question 10. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in oral expression (Question 3d on the LD Teacher Response Form)?

Listening Comprehension

Research Question 11. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in listening comprehension (Question 3e on the LD Teacher Response Form)?

Test Statistics

Correlation coefficients were used for answering the 11 research questions. Hessler's (1985) procedure produces a variable measured

on a nominal scale. The learning disability teacher's expert opinion was expressed on an interval scale. The multidisciplinary evaluation team's variables are on a nominal scale. The point-biserial correlation coefficient was used for answering Research Questions 1, 3, 4, 6, 7, 10, and 11. The phi coefficient was used for answering Research Questions 2, 5, and 8. The correlation coefficients were interpreted using the general "rule of thumb" set forth in Hinkle, Wiersma, and Jurs (1979, p. 85).

Summary

The methodology used was the ex post facto comparative study of Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in reading, mathematics, and written language with two alternate procedures: (a) the multidisciplinary evaluation team report and (b) the expert opinion of learning disability teachers has been presented. The setting was six public school districts comprising one regional group for providing special education services with 14 learning disability programs for elementary age students. Subjects were fourth and fifth grade learning disabled students in these programs meeting six criteria ($n = 27$). Hessler's procedure was applied using the WISC-R full scale score and the W-J Part 2, Reading, Mathematics, and Written Language subtests age based standard scores for each subject. The results of the application of Hessler's procedure were compared to the multidisciplinary evaluation team's decisions and learning disability teacher's expert opinion using correlation coefficients.

The results of the investigation are presented in Chapter IV. Included in Chapter IV is information on the subjects, the learning disability teachers, the composition of the multidisciplinary evaluation teams, and the results of the data analyses relating to the 11 research questions. The study is concluded with a discussion of the results in Chapter V.

CHAPTER IV

RESULTS

The purpose of the ex post facto study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in learning disabled students with two alternate procedures using data on legally identified learning disabled students. Hessler's procedure was applied using the Wechsler Intelligence Scale-Revised (Wechsler, 1974) (WISC-R) full scale score regressed according to Appendix EC and age based scaled scores from the Woodcock-Johnson Psycho-Educational Battery, Part 2 (Woodcock & Johnson, 1977) (W-J). The two alternate procedures were: (a) the expert opinion of certified learning disability teachers and (b) the results of the multidisciplinary evaluation team report.

The findings of the study are presented in Chapter IV. Included in the chapter are descriptive information on the subjects, learning disability teachers, multidisciplinary evaluation team members, and test scores. Results of the planned data analyses as presented in Chapter III and additional data analyses follow the descriptive information. The chapter is concluded with a summary of the results.

Descriptive Information

Subjects

Letters were mailed to parents of the 76 students selected as subjects requesting permission to have access to confidential information on their child and to include that information in the study. The planned follow-up letter was not sent because of an unexpected negative backlash from some parents and school administrators. Some school administrators believed formal procedures for their school district had not been followed and were reluctant to cooperate in the completion of the data collection procedures. Some parents believed confidentiality had already been violated by the release of their names and addresses. Within 6 weeks following the mailing, 42 (55%) subjects' parents responded, 30 (72%) gave permission and 12 (28%) did not. The results of the mailing requesting parental permission for data on their child to be included in the study are shown by school district in Appendix N.

Three of the 30 subjects were excluded from the final study. One subject was excluded because the multidisciplinary report indicated that the subject was not learning disabled and ineligible for services. One subject was labeled emotionally impaired rather than learning disabled. The third subject had moved into the school district from out of state and no records were available. Thus, out of 76 possible subjects, 27 (36%) were included in the study.

The 27 subjects included in the study were fourth ($n = 15$) and fifth ($n = 12$) graders aged 9 ($n = 5$), 10 ($n = 16$), and 11 ($n = 6$)

receiving services in one of 13 state of Michigan categorically funded programs for the learning disabled in five out of the six school districts comprising one special education region. In the state of Michigan the amount of time a student spends in special education each school day is recorded on Fourth Friday forms as full time equivalency (FTE); 0.00 equals none to 1.0 which equals full time. The FTE in the learning disability program for the subjects was 0.04 to 1.0 and averaged 0.48.

A comparison of descriptive information on the subjects whose parents gave permission to have data on their child included in the study, those whose parents responded no, and those whose parents did not respond is shown in Table 3. The same information by school district is shown in Appendix O. The major difference between the groups was the average FTE. Those subjects whose parents did not respond had an average FTE of 0.62, those who responded no, 0.48, and 0.49 for those who responded yes. No other comparison of those who were included in the study with those who were not was possible because all other information was confidential and unavailable for the study.

Learning Disability Teachers

Thirteen of the 14 state of Michigan certified teachers of the learning disabled in the learning disabled programs were included in the study. One teacher was excluded because none of the parents of any of the teacher's students returned the permission forms. Eleven teachers returned their demographic forms and questionnaires on their

Table 3
 Descriptive Information on Subjects by Parental Response
 to Permission to Participate in the Study

Re- sponse	n	Sex		Age			Grade		FTE ^a	
		M	Fe	9	10	11	4	5	Range	Average
Yes	30	23	7	7	17	6	18	12	0.3-1.0	0.49
No	12	10	2	2	5	5	5	7	0.1-1.0	0.48
None	34	27	7	5	16	12	18	16	0.1-1.0	0.62
Total	76	60	16	14	38	23	41	35	0.1-1.0	0.55

^aFTE = Full Time Equivalency (1.0 = full time special education).

students within 10 days, one teacher responded after a follow-up letter, and one did not respond. All teachers had certification from the state of Michigan as teachers of the learning disabled, 36% had temporary certification and 64% had permanent certification. Eighty-two percent were also certified as a teacher consultant for the learning disabled or in other special education disability categories. They had an average of 8.7 years experience as special educators, 8.3 years experience in teaching learning disabled students, and 3.3 years experience teaching in their present learning disability program.

Multidisciplinary Evaluation Team

Forty-three different professionals in the five school districts were members of one or more of the 27 multidisciplinary evaluation teams, 1 team for each subject (Appendix P). Multidisciplinary evaluation teams had 1 to 3 members. The professionals included 8 school psychologists, 12 regular education teachers, 10 learning disability teachers, 4 learning disability teacher consultants, 3 school social workers, 2 speech-language pathologists, 1 teacher consultant for the emotionally impaired, 1 reading teacher, and 2 principals.

Data Organization Form

Data were taken from tests administered between May 1984 and December 1986. Test data on 5 subjects were from 1984, 9 from 1985, and 13 from 1986. The range of WISC-R full scale scores was 71 to 132 with a mean of 96 and a standard deviation of 16. The range of WISC-R full scale scores regressed according to Appendix E was 83-119 with a mean of 98 and standard deviation 10. The WISC-R scores and the difference scores between the WISC-R full scale regressed scores and the Woodcock-Johnson Psycho-Educational Battery, Part 1, achievement scores in reading, mathematics, and written language are shown in Table 4.

The results of the determination of the existence of a severe discrepancy between ability and achievement in one or more academic areas by the application of Hessler's procedure, the METs, and

Table 4
 Descriptive Data on WISC-R Scores and Difference Scores
 Between WISC-R Regressed Scores and
 W-J Subtest Scaled Scores

WISC-R full scale score	Low	High	Mean	<u>SD</u>
Unregressed	71	132	96	16
Regressed	83	119	98	10
<hr/>				
W-J subtest				
Reading	-32	18	-16	12
Mathematics	-29	12	-12	10
Written language	-43	18	-12	14

learning disability teachers were recorded on The Data Organization Form (Appendix M). Descriptive data on this information are shown in Appendix Q. The results of the application of Hessler's procedure showed that 42% of the subjects had a severe discrepancy in reading, 23% in mathematics, and 15% in written language. The MET reports indicated all 27 subjects were learning disabled and had a severe discrepancy in one or more academic areas with reading and written language occurring the most frequently. Five of the LD Teacher Response Forms (Appendix G) ($n = 27$) did not have responses to Questions 1 and 2 which asked if, in the teacher's expert opinion, the subject was learning disabled and if a severe discrepancy between ability and achievement existed. Twenty of the 22 subjects were

judged by the learning disability teachers to be learning disabled and to have a severe discrepancy between ability and achievement. The learning disability teachers' responses indicated the areas of greatest discrepancy to be written language followed by reading.

Data Analysis

Correlation coefficients were computed for the 11 research questions in order to compare the degree of relationships between the three procedures: (a) Hessler's, (b) the expert opinion of the learning disability teachers, and (c) the results of the multi-disciplinary evaluation team reports. The point-biserial correlation coefficient (r_{pb}) was used for answering Research Questions 1, 3, 4, 6, 7, 10, and 11. The phi coefficient (ϕ) was used for answering Research Questions 2, 5, and 8. The correlation coefficients were interpreted using the general "rule of thumb" set forth in Hinkle, Wiersma, and Jurs (1979, p. 85) which is shown in Table 5.

Table 5

Rule of Thumb for Interpreting the Size of a Correlation Coefficient

0.90 to 1.00 (-0.90 to -1.00)	Very high positive (negative) correlation
0.70 to 0.90 (-0.70 to -0.90)	High positive (negative) correlation
0.50 to 0.70 (-0.50 to -0.70)	Moderate positive (negative) correlation
0.30 to 0.50 (-0.30 to -0.50)	Low positive (negative) correlation
0.00 to 0.30 (0.00 to -0.30)	Little if any correlation

The results of the data analyses used to answer Research Questions 1 through 11 are shown in Table 6.

In addition to these 11 data analyses other unplanned post hoc analyses were done based on the findings of the first 11.

Table 6
Correlations Between Hessler's Procedure, the Expert
Opinion of Learning Disability Teachers (LDT),
and Multidisciplinary Evaluation Teams (MET)

	Hessler	LDT	MET
Reading			
Hessler	----	little if any ($r_{pb} = .24$)	little if any ($\emptyset = .22$)
LDT	little if any ($r_{pb} = .24$)	----	low positive ($r_{pb} = .31$)
MET	little if any ($\emptyset = .22$)	low positive ($r_{pb} = .31$)	----
Mathematics			
Hessler	----	low positive ($r_{pb} = .48$)	low positive ($\emptyset = .43$)
LDT	low positive ($r_{pb} = .48$)	----	low positive ($r_{pb} = .40$)
MET	low positive ($\emptyset = .43$)	low positive ($r_{pb} = .40$)	----

Table 6--Continued

	Hessler	LDT	MET
Written language			
Hessler	----	little if any ($r_{pb} = .16$)	little if any ($\emptyset = .12$)
LDT	little if any ($r_{pb} = .16$)	----	low positive ($r_{pb} = .45$)
MET	little if any ($\emptyset = .12$)	low positive ($r_{pb} = .45$)	----
Oral expression			
LDT	----	----	low positive ($r_{pb} = .33$)
Listening comprehension			
LDT	----	----	little if any ($r_{pb} = .11$)

Planned Data Analyses

Reading

Research Question 1. What is the degree of the relationship between Hessler's procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading?

The r_{pb} coefficient was .24. This is interpreted as little if any relationship.

Research Question 2. What is the degree of the relationship between Hessler's procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in reading?

The \emptyset coefficient was .22. This is interpreted as little if any relationship.

Research Question 3. What is the degree of the relationship between the multidisciplinary evaluation team's determination and learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in reading?

The r_{pb} coefficient was .31. This is interpreted as a low positive relationship.

Mathematics

Research Question 4. What is the degree of the relationship between Hessler's procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

The r_{pb} coefficient was .48. This is interpreted as a low positive relationship.

Research Question 5. What is the degree of the relationship between Hessler's procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

The \emptyset coefficient was .43. This is interpreted as a low positive relationship.

Research Question 6. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in mathematics?

The r_{pb} coefficient was .40. This is interpreted as a low positive relationship.

Written Language

Research Question 7. What is the degree of the relationship between Hessler's procedure and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language?

The r_{pb} coefficient was .16. This is interpreted as little if any relationship.

Research Question 8. What is the degree of the relationship between Hessler's procedure and the multidisciplinary evaluation team's determination in identifying the same students as having a severe discrepancy between ability and achievement in written language?

The \emptyset coefficient was .12. This is interpreted as little if any relationship.

Research Question 9. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in written language?

The r_{pb} coefficient was .45. This is interpreted as a low positive relationship.

Oral Expression

Research Question 10. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in oral expression?

The r_{pb} coefficient was .33. This is interpreted as a low positive relationship.

Listening Comprehension

Research Question 11. What is the degree of the relationship between the multidisciplinary evaluation team's determination and the learning disability teacher's expert opinion in identifying the same students as having a severe discrepancy between ability and achievement in listening comprehension?

The r_{pb} coefficient was .11. This is interpreted as little if any relationship.

Additional Data Analysis

Three additional unplanned post hoc data analyses were done based on the findings of the first 11.

1. The Pearson product-moment correlation coefficient for the WISC-R full scale score and the learning disability teacher's expert opinion of whether or not a subject was learning disabled was $-.38$. This is interpreted as a low negative relationship.

2. Correlation coefficients for the WISC-R full scale score and (a) the learning disability teacher's expert opinion and (b) the multidisciplinary evaluation team's determination of severe discrepancy in reading, mathematics, written language, oral expression, and listening comprehension were 0 to $-.7$. These are interpreted as no relationship to a high negative relationship. The coefficients are shown in Table 7.

3. The actual difference score between the WISC-R full scale score regressed and the W-J scores in reading, mathematics, and written language were compared to (a) the expert opinion of the learning disability teacher and (b) the multidisciplinary evaluation team's determination of discrepancy. The correlation coefficients were $-.22$ to $-.50$. These are interpreted as little if any relationship to a moderate negative relationship. The correlation coefficients are shown in Table 8.

Table 7

Correlations Between the WISC-R Score and (a) the Learning Disability Teacher's Expert Opinion (LDT) and (b) the Multidisciplinary Evaluation Team's Determination (MET) of Discrepancy Between Ability and Achievement

Achievement area	LDT	MET
Reading	low negative ($\underline{r} = -.39$)	none ($\underline{r}_{pb} = .00$)
Mathematics	moderate negative ($\underline{r} = -.61$)	low negative ($\underline{r}_{pb} = -.36$)
Written language	low negative ($\underline{r} = -.23$)	little if any ($\underline{r}_{pb} = .06$)
Oral expression	high negative ($\underline{r} = -.70$)	little if any ($\underline{r}_{pb} = -.18$)
Listening comprehension	low negative ($\underline{r} = 0.40$)	little if any ($\underline{r}_{pb} = -.12$)

Note. \underline{r} = Pearson product-moment correlation coefficient.
 \underline{r}_{pb} = Point biserial correlation coefficient.

Summary

The findings of the ex post facto comparative study of Hessler's procedure for determining a severe discrepancy between ability and achievement with two alternate procedures: (a) the expert opinion of learning disability teachers and (b) results of the multidisciplinary evaluation team reports, have been presented. The results of the data analyses indicate little if any correlation between Hessler's procedure and the learning disability teacher's expert opinion or the multidisciplinary evaluation team's determination in reading and

Table 8

Correlations Between the Actual Difference Score Between the WISC-R Full Scale Score Regressed and the W-J Scores and (a) the Learning Disability Teacher's Expert Opinion (LDT) and (b) the Multidisciplinary Evaluation Team's Determination (MET) of a Severe Discrepancy

Achievement area	LDT	MET
Reading	little if any ($\underline{r} = -.26$)	low negative ($\underline{r}_{pb} = -.41$)
Mathematics	low negative ($\underline{r} = -.48$)	moderate negative ($\underline{r}_{pb} = -.50$)
Written language	little if any ($\underline{r} = -.22$)	low negative ($\underline{r}_{pb} = -.39$)

Note. \underline{r} = Pearson product-moment correlation coefficient.
 \underline{r}_{pb} = Point biserial correlation coefficient.

written language, but a low positive correlation in mathematics.

Additional unplanned post hoc data analyses were done based on the results of the planned analyses.

The study is concluded in Chapter V. A summary of the study, a discussion of the results and conclusions, suggestions for future research, and implications for practitioners are presented.

CHAPTER V

DISCUSSION

The purpose of the ex post facto study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement with two alternate procedures. The discussion based on the findings of the study is divided into five sections: (a) a summary of the study from its inception through the statistical analyses of the data, (b) discussion, (c) conclusions, (d) suggestions for future research, and (e) implications for practitioners.

Summary

Prior to the mid 1980s, procedures for the identification of learning disabilities were nebulous and idiosyncratic; in part, this was due to the use of conceptual rather than operational definitions. Attempts to operationalize definitions and identification procedures concentrated on the portion of legal definitions requiring demonstration of a severe discrepancy between ability and achievement which is a necessary but insufficient condition for identification as learning disabled.

Experts in the field of learning disabilities in 1987 advocated that any procedure for determining a severe discrepancy between ability and achievement should use ability and achievement tests which meet American Psychological Standards (APA, 1985), have a mean

of 100 and standard deviation of 15, reliability of .9 or better, demonstrated validity, be normed on a sample representative of the U.S. population, and take into account the fact that achievement test scores tend to regress toward the mean when compared to ability test scores. Hessler's (1985) procedure meets these criteria. Used together, the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974) (WISC-R) and the Woodcock-Johnson Psycho-Educational Battery, Part 2 (Woodcock & Johnson, 1977) (W-J), meet the criteria for tests for use in determining a severe discrepancy between ability and achievement.

The purpose of the ex post facto study was to compare Hessler's (1985) procedure for determining a severe discrepancy between ability and achievement in learning disabled students with two alternate procedures: (a) the expert opinion of state of Michigan certified teachers of the learning disabled and (b) the results of the multi-disciplinary evaluation team (MET) report. Subjects were 27 fourth and fifth grade students (ages 9-11) legally identified as learning disabled and receiving special education services in state of Michigan categorically funded learning disability program taught by a state of Michigan certified teacher of the learning disabled in one special education region in the state of Michigan. Hessler's procedure was applied using the WISC-R full scale score as the ability measure and the W-J age based standard scores in reading, mathematics, and written language as achievement measures. A 20-point difference between the ability and achievement scores was used as the criterion for severe. The expert opinions of the subjects' learning

disability teachers were obtained with a questionnaire. Copies of the MET report on all subjects were obtained.

The results of the data analyses investigating the degree of the relationship between Hessler's (1985) procedure, the expert opinion of the learning disability teachers, and the determination of the MET in reading, mathematics, and written language ranged from little or no relationship to a moderate positive relationship. The lowest correlations were in written language and the highest in math.

Discussion

The findings of the study have enlarged the body of knowledge in the art of operationalizing the identification of a severe discrepancy between ability and achievement as a necessary but insufficient condition in the identification of learning disabled students in 1987. Based on the findings of the study none of the three procedures studied correlate highly with each other.

The 27 subjects out of the possible 76 included in the study seem to be representative of the population. The WISC-R, the ability measure, has a mean of 100 and standard deviation of 15; the WISC-R scores of the 27 subjects had a mean of 96 and standard deviation of 16. At least one subject was included from 13 out of a total of 14 learning disability programs. The number of subjects included in the study was fewer than anticipated primarily because of an unexpected negative backlash from some parents and school administrators. The study was conducted through the office of the regional director of special education. Some local school administrators believed that

formal procedures for their school district had not been followed and were reluctant to cooperate in the completion of the data collection procedures. Some parents believed confidentiality had been violated by the release of their names and addresses. Based on the limited information available about those not included in the study because their parents did not respond to the request to include information on their child, the only difference between them and those included was that those not included averaged approximately 45 minutes more each day in special education than those included. The average amount of time spent in special education each day for those subjects whose parents said yes was the same as for those whose parents said no.

The learning disability teachers appeared to be both educated and experienced to qualify as experts and render their expert opinion. All teachers were endorsed as teachers of the learning disabled and 82% were also approved as a teacher consultant for the learning disabled or in other special education categories. All teachers had bachelor's degrees, and 50% also had master's. They had an average of 8.7 years experience as special educators and 3.3 years as teachers in their present program.

The composition of the multidisciplinary evaluation teams varied. Forty-three different professionals were members of one or more multidisciplinary evaluation teams (Appendix P). The most consistent member was a school psychologist; one out of eight was a member of 24 out of the total of 27 teams. A study of the credentials of multidisciplinary evaluation team members was not conducted

as part of this study. A weakness of the study may be the large number of professionals serving on the teams and the probability that there were members such as regular education classroom teachers and principals with little or no training in the identification of learning disabilities.

Reading

Low correlations between the procedures studied were obtained in reading achievement. Hessler's (1985) procedure using WISC-R full scale scores and W-J scores with 20 points difference as the criterion for a severe discrepancy produced little or no correlation with the expert opinion of learning disability teachers (.24) or with conclusions of the multidisciplinary evaluation team (.22). There was a low positive correlation (.31) between the expert opinion of the learning disability teachers and the conclusions of the multidisciplinary evaluation team. The correlation between the actual difference score between the WISC-R and W-J and the expert opinion of learning disability teachers was little or none (-.26) and low negative with the conclusions of the multidisciplinary evaluation team (-.41). There was a low negative correlation between the full scale score of the WISC-R and the expert opinion of the learning disability teachers (-.39) and no correlation with the conclusions of the multidisciplinary evaluation team (.00).

Mathematics

Low to moderate correlations between the procedures studied were obtained in mathematics achievement. Hessler's (1985) procedure using WISC-R full scale scores and W-J scores with 20 points difference as the criterion for a severe discrepancy produced a low positive correlation with the expert opinion of learning disability teachers (.48) and with the conclusions of the multidisciplinary evaluation team (.43). There was a low positive correlation (.40) between the expert opinion of the learning disability teachers and the conclusions of the multidisciplinary evaluation team. The correlation between the actual difference score between the WISC-R and W-J was low negative with both the expert opinion of learning disability teachers (-.48) and with the conclusions of the multidisciplinary evaluation team (-.50). There was a moderate negative correlation between the full scale score of the WISC-R and the expert opinion of the learning disability teachers (-.61) and low negative correlation with the conclusions of the multidisciplinary evaluation team (-.36).

Written Language

Little to low correlations between the procedures studied were obtained in written language achievement. Hessler's (1985) procedure using WISC-R full scale scores and W-J scores with 20 points difference as the criterion for a severe discrepancy produced little or no correlation with the expert opinion of learning disability teachers (.12) or with conclusions of the multidisciplinary evaluation team

(.16). There was a low positive correlation (.45) between the expert opinion of the learning disability teachers and the conclusions of the multidisciplinary evaluation team. The correlation between the actual difference score between the WISC-R and W-J and the expert opinion of learning disability teachers was little or none (-.22) and low negative with the conclusions of the multidisciplinary evaluation team (-.39). There was little or no correlation between the full scale score of the WISC-R and the expert opinion of the learning disability teachers (-.23) or with the conclusions of the multidisciplinary evaluation team (-.06).

Oral Expression and Listening Comprehension

Hessler's (1985) procedure was not applied to oral expression or listening comprehension scores because the W-J does not assess these areas. The correlation between the expert opinion of the learning disability teachers and the conclusions of the multidisciplinary evaluation teams in oral expression was low positive (.33) and little or none (.11) in listening comprehension. In oral expression there was a high negative correlation (-.70) between the WISC-R full scale score and the expert opinion of the learning disability teachers and little or no correlation (-.18) with the conclusions of the multidisciplinary evaluation teams. In listening comprehension there was a low negative correlation (-.40) between the WISC-R full scale score and the expert opinion of the learning disability teachers and little or no correlation (-.12) with the conclusions of the multidisciplinary evaluation teams.

Conclusions

The findings of the comparative ex post facto study comparing three procedures for determining a severe discrepancy between ability and achievement using WISC-R full scale scores as the measure of ability and W-J age based standard scores as the measure of achievement lead to six conclusions applicable to Kent County Special Education Region II:

1. Hessler's (1985) procedure is neither better nor worse than the nonoperationally defined and idiosyncratic procedures used by multidisciplinary evaluation teams and learning disability teachers in reading and mathematics in 1984-1987.

2. The correlation between the expert opinion of the learning disability teacher and the conclusions of the multidisciplinary team is higher than the correlation between either of these two procedures and Hessler's (1985) procedure in written language. The W-J written language subtest has a reliability of .94; but there might be something idiosyncratic in the subtest, or it is not measuring the same skills or not measuring them in the same way as the learning disability teachers or multidisciplinary evaluation teams.

3. Learning disability teachers and multidisciplinary evaluation teams appear to use different methods or approaches to determine a severe discrepancy; however, this possibility was not studied. Correlations between the two groups in all five academic areas were little or none (.11) to low positive (.45).

4. The higher the student's IQ the more likely the learning disability teacher will identify a discrepancy between ability and achievement.

5. The IQ score has little or no relationship to the multi-disciplinary evaluation team's determination of a severe discrepancy between ability and achievement except in mathematics where there is a low correlation.

6. Based on the review of the literature and the findings of the study it appears that different people and different groups of people may be using different procedures for identifying a severe discrepancy and a generally accepted operational definition of severe discrepancy, if one exists, is still eluding practitioners and researchers.

Recommendations for Further Research

The findings of the comparative ex post facto study of three procedures for determining a severe discrepancy between ability and achievement in learning disabled students and the conclusions lead to four recommendations for further research:

1. Subjects could be selected from one school district which was supportive of the study and could provide a greater number of subjects than the 27 in the study and higher percentage of participation in the study.

2. The study could be replicated using data from tests that had been administered to subjects within a 12-month period prior to collection and analysis of all data.

3. The same methodology using Hessler's (1985) procedure could be implemented using different achievement tests which still meet the previously stated criteria. For example, the Diagnostic Achievement Battery (Newcomer & Curtis, 1984) which provides a score in each of the seven areas of discrepancy specified by law or achievement tests designed to measure achievement in only one or two areas such as the Test of Written Language (Hammill & Larsen, 1983) could be used.

4. Multidisciplinary evaluation teams could be studied to determine how and why teams come to their conclusions. Such a study could investigate the formal and informal basis for decision making, the importance of test scores, the role of clinical judgment or expert opinion, and the dynamics of these types of teams.

Implications for Practitioners

The importance of the study lies in its practical significance for practitioners in the field of learning disabilities charged with identifying a severe discrepancy between ability and achievement as one criterion in the identification of learning disabled students. There are three ways in which the findings of the study may inform practitioners. First, Hessler's (1985) procedure is recommended for use as a guideline in determining a severe discrepancy; but caution is advised before applying it as a mandatory criterion in the identification of a learning disability. Second, although Hessler's procedure is recommended, the findings are not at a level of strength that would permit either practitioners or researchers to say the search is over; thus, further and more intensive study of the methods used to

determine a severe discrepancy and to identify learning disabilities is needed. Third, the multidisciplinary evaluation team makes the final decision--does this child have a severe discrepancy between ability and achievement; is this child learning disabled--thus, every practitioner who serves as a member of such a team needs to carefully consider what their role is, what decisions they are making and why, as well as the decision-making process of the team as a whole.

APPENDICES

Appendix A

**Multidisciplinary Evaluation Team (MET)
Composite Report**

REGION II - KENT ISD

MULTIDISCIPLINARY EVALUATION TEAM (MET) COMPOSITE REPORT

_____ Initial Evaluation Form Completed by: _____
 _____ Re-evaluation Date: _____
 Student's Name _____ Birthdate _____ Age _____
 Race _____ Native Language of Student/Parents _____
 Operating District _____ District of Residence _____
 School _____ Grade _____ Case Coordinator _____
Diagnostic Evaluations and Reports Attached Dates Given

- 1) _____
- 2) _____
- 3) _____

Assessment and diagnostic data is attached for the following disability areas:

_____ R 340.1703 SMI _____ R 340.1706 EI _____ R 340.1709 POMI _____ R 340.1713 LD
 _____ R 340.1704 TMI _____ R 340.1707 HI _____ R 340.1710 SLI _____ R 340.1714 SXI
 _____ R 340.1705 EMI _____ R 340.1708 VI _____ R 340.1711 PPI

Current level of educational performance: _____

Based on the attached assessment and diagnostic data, the multidisciplinary evaluation team recommends that the above named student be identified as:

_____ Eligible for services for the _____ R 340. _____
 _____ Not eligible for special education services.

Team recommendations for special education and related services to be considered:

Team recommendations for annual goals and short-term instructional objectives:

As a member of the multidisciplinary evaluation team, I certify that this report reflects my conclusions:

<u>Signature</u>	<u>Position</u>	<u>Yes</u>	<u>No</u>
_____	_____	_____	_____
_____	_____	_____	_____

(MET Representative to IEP-C)

6/82

White copy - School File; Canary - Special Services

Appendix B

**MET Assessment and Diagnostic Summary
for Specific Learning Disabilities**

School District

**MULTIDISCIPLINARY EVALUATION TEAM
ASSESSMENT AND DIAGNOSTIC SUMMARY FOR
SPECIFIC LEARNING DISABILITY**

Student's Name _____

Birthdate _____

Date of Summary _____

District of Residence _____

Initial Evaluation _____

Re-evaluation _____

Required Team Members:

- At least one person qualified to conduct individual diagnostic examination of children such as a school psychologist, teacher consultant or teacher of speech and language impaired.
- Student's classroom teacher, or if the child does not have a regular teacher, a regular classroom teacher qualified to teach a child of his or her age or for a child of less than school age, an individual qualified by the state educational agency to teach a child of his or her age.

For re-evaluation include:

- Student's special education teacher:

Required information included in M.E.T. Reports

- Ability level
- Achievement levels
- Relevant behavior noted in classroom observation (by someone other than the child's regular classroom teacher) and the relationship of that behavior to this student's academic functioning
- Educational alternatives used in the classroom with this student
- Information from parents
- Educationally relevant medical findings (if any)
- Effects of emotional factors, environment, culture and economic level on this student's academic functioning

Location of Data

Diagnostic Statements:

This student has been found to have a severe discrepancy between achievement and ability in the following area(s):

_____Oral Expression, _____Basic Reading Skill, _____Listening Comprehension, _____Written Expression, _____Reading Comprehension,
_____Mathematics Calculation, _____Mathematics Reasoning.

Assurance Statements:

The student has been provided by general education with learning experiences appropriate for his/her age and ability levels.

- The student's severe discrepancy is not correctable without special education services.
- The severe discrepancy is not primarily the result of 1) visual, hearing or motor handicap, 2) mental retardation, 3) emotional disturbance or 4) environmental, cultural or economic disadvantage.

All of the above statements are true. _____Yes _____No

Attach to Composite Report

9/82

White copy - School File; Canary - Special Ed. Office

Appendix C

**State of Michigan R 340.1713
(Learning Disability Definition)**

R 340.1713 "Specific learning disability" defined; determination.

Rule 13. (1) "Specific learning disability" means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, of autism, or of environmental, cultural, or economic disadvantage.

(2) The individualized educational planning committee may determine that a child has a specific learning disability if the child does not achieve commensurate with his or her age and ability levels in 1 or more of the areas listed in this subrule, when provided with learning experiences appropriate for the child's age and ability levels, and if the multidisciplinary evaluation team finds that a child has a severe discrepancy between achievement and intellectual ability in 1 or more of the following areas.

- (a) Oral expression.
- (b) Listening comprehension.
- (c) Written expression
- (d) Basic reading skill.
- (e) Reading comprehension.
- (f) Mathematics calculation.
- (g) Mathematics reasoning.

(3) The individualized educational planning committee shall not identify a child as having a specific learning disability if the severe discrepancy between ability and achievement is primarily the result of any of the following.

- (a) A visual, hearing, or motor handicap.
- (b) Mental retardation.
- (c) Emotional disturbance.
- (d) Autism.
- (e) Environmental, cultural, or economic disadvantage.

(4) A determination of impairment shall be based upon a comprehensive evaluation by a multidisciplinary evaluation team, which shall include at least both of the following:

- (a) The child's regular teacher or, if the child does not have a regular teacher, a regular classroom teacher qualified to teach a child of his or her age or, for a child of less than school age, an individual qualified by the state educational agency to teach a child of his or her age.

(b) At least 1 person qualified to conduct individual diagnostic examinations of children, such as a school psychologist, a teacher of speech and language impaired, or a teacher consultant.

Appendix D

**State of Michigan R 340.1721a
(Evaluation Procedure)**

R 340.1721a Evaluation procedure.

Rule 21a. (1) Each student suspected of being handicapped shall be evaluated by a multidisciplinary evaluation team as defined in R 340.1701a(e). Members of the team may include other qualified personnel in areas related to the suspected disability, including, where appropriate, the following: health, vision, hearing, social and emotional status, general intelligence, academic performance, communicative status, and motor ability.

(2) The multidisciplinary team shall complete a diagnostic evaluation, including a recommendation of eligibility, and shall prepare a written report to be presented to the individualized educational planning committee by the appointed multidisciplinary team member. The report shall include, but is not limited to, information needed to determine eligibility and educational data which identifies the person's current level of educational performance. Information presented to the individualized educational planning committee shall be drawn from a variety of sources, including parent input, aptitude and achievement tests, teacher recommendations, physical condition, social or cultural background, adaptive behavior, and other pertinent information. No single procedure shall be used as the sole criterion for determining an appropriate educational program for a person.

(3) When evaluating a person suspected of being handicapped, the public agency shall assure that tests and other evaluation materials used by members of the multidisciplinary team comply with all of the following:

(a) Are administered by trained personnel in conformance with the instructions provided by their producer.

(b) Are validated for the specific purpose for which they are used.

(c) Are designed to assess specific areas of educational need and not merely to provide a general intelligence quotient.

(d) Are reflective of the person's aptitude or achievement or whatever other factors the test purports to measure rather than reflecting the person's impaired sensory, manual, or speaking skills, unless this is what the test is intended to measure.

(e) Are selected and administered so as not to be socially or culturally discriminatory.

(4) When evaluating a person suspected of having a specific learning disability, at least one team member other than the child's regular teacher shall observe the child's academic performance in the regular classroom setting. In the case of a child of less than school age or out of school, a team member shall observe the child in an environment appropriate for a child of that age.

(5) The multidisciplinary evaluation team evaluating a person suspected of having a specific learning disability shall complete a

written report which shall include, at a minimum, all of the following:

- (a) A recommendation of eligibility and the basis for making this recommendation.
 - (b) The relevant behavior noted during the observation of the child and the relationship of that behavior to the child's academic functioning.
 - (c) The educationally relevant medical findings, if any.
 - (d) Whether there is a severe discrepancy between achievement and ability which is not correctable without special education and related services.
 - (e) The determination of the team concerning the effects of environmental, cultural, or economic disadvantage.
 - (f) Each team member shall certify in writing whether the report reflects his or her conclusion. If it does not reflect his or her conclusion, the team member shall submit a separate statement presenting his or her conclusions.
- (6) When evaluating a person suspected of being emotionally impaired, the multidisciplinary team report shall include documentation of all of the following:
- (a) The person's performance in the educational setting and in other settings, such as adaptive behavior within the broader community.
 - (b) The systematic observation of the behaviors of primary concern which interfere with educational and social needs.
 - (c) The intervention strategies used to improve these behaviors and the length of time these strategies were utilized.
 - (d) Relevant medical information, if any.
- (7) For visually impaired students who have a visual acuity of 20/200 or less after routine refractive correction, or who have a peripheral field of vision restricted to not more than 20 degrees, an evaluation by an orientation and mobility specialist shall be conducted. The orientation and mobility specialist shall also include in the report a set of recommended procedures to be used by a mobility specialist or a teacher of the visually impaired in conducting orientation and mobility training activities.
- (8) Tests and other evaluation materials shall be provided and shall be administered in the student's native language, unless it is clearly unnecessary to do so. When evaluation in English is not feasible, the public agency shall do all of the following:
- (a) Give first consideration to evaluative personnel who are competent in English and in the native language and culture of the student.
 - (b) When needing an interpreter, contract with a bilingual/bicultural psychologist trainee, an intern currently

enrolled in a professional training program, or a person who is competent in English and in the native language and culture of the student.

(c) Provide interpreters for the deaf where appropriate.

Appendix E

Table of Regressed IQ Scores

IQ and Achievement

	Correlation between IQ and achievement		
	(16)	(18)	(20)
	7(a)	6(b)	5(c)
130	121	118	115
129	120	117	115
128	120	117	114
127	119	116	114
126	118	116	113
<hr/>			
125	118	115	113
124	117	114	112
123	116	114	112
122	115	113	111
121	115	113	111
<hr/>			
120	114	112	110
119	113	111	110
118	113	111	109
117	112	110	109
116	111	110	108
<hr/>			
115	111	109	108
114	110	108	107
113	109	108	107
112	108	107	106
111	108	107	106
<hr/>			
110	107	106	105
109	106	105	105
108	106	105	104
107	105	104	104
106	104	104	103
105	104	103	103

Correlation between IQ and achievement

	(16)	(18)	(20)
	7(a)	6(b)	5(c)
104	103	102	102
103	102	102	102
102	101	101	101
101	101	101	101
<hr/>			
100	100	100	100
<hr/>			
99	99	99	100
98	99	99	99
97	98	98	99
96	97	98	98
95	97	97	98
<hr/>			
94	96	96	97
93	95	96	97
92	94	95	96
91	94	95	96
90	93	94	95
<hr/>			
89	92	93	95
88	92	93	94
87	91	92	94
86	90	92	93
85	90	91	93
<hr/>			
84	89	90	92
83	88	90	92
82	87	89	91
81	87	89	91
80	86	88	90
<hr/>			
79	85	87	90
78	85	87	89
77	84	86	89
76	83	86	88
75	83	85	88

Correlation between IQ and achievement

	(16)	(18)	(20)
	7(a)	6(b)	5(c)
74	82	84	87
73	81	84	87
72	80	83	86
71	80	83	86
70	79	82	85

(a) W-J Edg. Apt. cluster
W-J Math Apt. cluster
W-J Written Lang. Apt. cluster

(b) WISC-R VIQ & FSIQ
WAIS-R VIQ & FSIQ
WPPSI VIQ & FSIQ
Stanford-Binet

(c) WISC-R PIQ
WAIS-R PIQ
WPPSI PIQ
McCarthy GCI
TONI
K-ABC

FROM IQ and Achievement by G. L. Hessler, undated, Mount Clemens, MI: Macomb Intermediate School District.

Appendix F

School District Information

Kent County Special Education--Region II

School district	Number of students K-12 (1986-87)	SEV/M ^a 1986
A	2,000	89,632
B	2,700	59,526
C	4,918	109,597
D	2,256	80,671
E	5,810	89,340
F	2,031	47,780

^aState Equalized Value/Member is the amount of property taxes for that district per student used by the state of Michigan in determining state aid to education for that district. The higher the SEV/M the wealthier the district and the less, if any, state aid that district receives.

Appendix G

LD Teacher Response Form

LD TEACHER RESPONSE FORM

Student's Name: _____

(Detach and return the bottom portion)

Student Number: _____

In Your "expert opinion":

- | | | |
|---|-----|----|
| 1. Do you feel this student is LD? (Circle Yes or No) | Yes | No |
| 2. Do you feel this student has a discrepancy between ability and achievement? (Circle Yes or No) | Yes | No |

- | | Slight | Moderate | Severe | Very Severe |
|---|--------|----------|--------|-------------|
| 3. In what area/areas and how severe do you feel any discrepancies are? | | | | |
| a. Reading | 1 | 2 | 3 | 4 |
| b. Math | 1 | 2 | 3 | 4 |
| c. Written Language | 1 | 2 | 3 | 4 |
| d. Oral Expression | 1 | 2 | 3 | 4 |
| e. Listening Comprehension | 1 | 2 | 3 | 4 |

Appendix H

LD Teacher Demographic Data Form

LD TEACHER DEMOGRAPHIC DATA

1. What is the highest degree you hold?

Bachelors _____

Masters _____

Specialist _____

Doctorate _____

2. In what areas of Special Education are you certified?

	<u>Temporary</u>	<u>Permanent</u>
LD Teacher	_____	_____
LD Teacher Consultant	_____	_____
EMI Teacher	_____	_____
EMI Teacher Consultant	_____	_____
EI Teacher	_____	_____
EI Teacher Consultant	_____	_____
Speech and Language	_____	_____
Other (specify) _____	_____	_____

3. How long have you taught LD students?
_____ years (including 1986-87)4. How long have you taught in Special Education?
_____ years (including 1986-87)5. How long have you taught in your present program?
_____ years (including 1986-187)

6. Please feel free to add any comments here.

Please send me a summary of the results when the study is completed.

Name: _____

Address: _____

a

Appendix I

Letter to Parents

CAROL TULLY UHLMAN, M.A., ED.S.
SCHOOL PSYCHOLOGIST
Caledonia Community Schools
203 E. Main Street
Caledonia, MI 49316
Phone: 868-7562

Dear

I am a school psychologist and a doctoral student at Western Michigan University in the process of completing my dissertation. My dissertation is in the area of Learning Disabilities and ability-achievement discrepancy.

Your child, _____, has been selected as a possible subject for the study. Being a subject involves granting me access to specific special education records, gathering information from his/her LD teacher, and if necessary, the administration of the reading, mathematics, and written language subtests of the Woodcock-Johnson Psycho-Educational Battery, Part 2. If administration of the test is necessary, administration will take approximately 30 minutes, will take place at your or the school's convenience, and you will be given a copy of the results.

Confidentiality will be maintained. Once the necessary information is gathered it will be coded and all identifying information on your child removed.

Participation is voluntary. Neither participation nor refusal to participate will affect your child's educational program; however, information on your child can make a difference to my study. Please review the enclosed forms. If you agree to allow your child to be a subject, please check the appropriate box on the Permission to Participate form, initial the items noted on the Release of Confidential Information form, sign and date both forms, and return them to me in the enclosed stamped self-addressed envelope. If you do not wish to allow your child to participate please check the appropriate box on the Permission to Participate form and return it to me in the enclosed, stamped self-addressed envelope as soon as possible.

If you would like a summary of the results when the study is completed, please fill in your name and address on the bottom on the Permission to Participate form. The study is expected to be completed in early spring, 1987. If you have any questions, please feel free to contact me now or any time at 868-7562. I appreciate your help in this study. Thank you.

Sincerely,

Carol Tully Uhlman

Appendix J

Permission to Participate Form

PERMISSION TO PARTICIPATE

Student's Name: _____

Birthdate: _____

Grade: _____

I give permission for my child, _____, to participate in Carol Uhlman's study of Learning Disabilities and ability-achievement discrepancy. I understand participation means:

1. access to specific special education records: IEP form, MET form, LD teacher's report, Teacher Consultant's report, and School Psychologist's report.
2. permission for my child's LD teacher to complete a brief questionnaire about my child.
3. permission to administer the reading, math, and written language subtests of the Woodcock-Johnson Psychoeducational Battery part 2 if my child has not previously had this test.

I do not give permission for my child, _____, to participate in Carol Uhlman's study of Learning Disabilities and ability-achievement discrepancy.

Parent signature _____

Date _____

I would like a summary of the results when the study is completed.

Name: _____

Address: _____

Appendix K

Release of Confidential Information Form

RELEASE OF CONFIDENTIAL INFORMATION AND RECORDS

Please Send To:

Name Carol Uhman Position School PsychologistSchool District CaledoniaAddress 203 Main StreetCity Caledonia State MI Zip 49316

* * * * *

I hereby authorize the release of information regarding:

_____ (student), _____ (birth date)

from _____ (school/agency/institution) to the
above named person.

I understand the information is for the following purpose: _____

Doctoral dissertation research

I have initialed below the information which may be released:

MET FormsMET Assessment & Diagnostic Summary for L.D.Psychological Report (Test Scores)Teacher Consultant Report (Test Scores)Teachers Reports (Test Scores)I understand this authorization may be withdrawn by me at any time without
prejudice; withdrawal of this authorization will not affect any information
already released. If no express withdrawal is issued, this authorization
will expire on _____ (12 months from today's date).

Signature _____ Date _____

Relation to student (check one): Parent Legal Guardian Self (student 18 years of age or older)

Witness _____

AGENCY USE ONLY:

Released by: _____ Date _____

White:Releasing Agency; Canary:Requesting School; Green:Parent/Guardian/Self

10/82

Appendix L

Letter to Learning Disability Teacher

CAROL TULLY UHLMAN, M.A., ED.S.
SCHOOL PSYCHOLOGIST
Caledonia Community Schools
203 E. Main Street
Caledonia, MI 49316
Phone: 868-7562

Dear

I am a doctoral student at Western Michigan University in the process of completing my dissertation which is in the area of Learning Disabilities and ability-achievement discrepancy. I am requesting your assistance in this endeavor.

I would appreciate it if you would complete the enclosed response forms on students in your program who have been selected for the study and return the forms to me in the enclosed stamped self-addressed envelope as soon as possible. Enclosed is a signed copy of a parental permission form for each student allowing you to release this information to me. Confidentiality of your responses will be maintained. I will be the only person to know your name, the student's name, and your responses regarding your students. Remove the top part of each response form prior to returning it to me. The information will be identified only by student number for the remainder of the study. In addition, please complete the brief demographic data form. Confidentiality will also be maintained with this form. The information on both you and your students is essential for this study. Your expert opinion is valued and will contribute to the validity of this study.

If you would like a summary of the results when the study is completed please complete the section at the bottom of the demographic form and return it with your response forms. If you have any questions now or in the future, please feel free to call me at 868-7562 or Dick VanderVeen at 676-8933. I appreciate your help in completion of this study. Thank you.

Sincerely,

Carol Tully Uhlman

Appendix M

Data Organization Form

DATA ORGANIZATION FORM

SUBJECT # _____

WISC-R: Full Scale _____

Regressed _____

W-J (age-based ss) :

Reading _____
Math _____
Written Language _____Difference Score (W-J
ss - WISC-R regressed):Reading _____
Math _____
Written Language _____Hessier: Severe Discrepancy
(20+ points difference)
(1=yes, 0=no)Reading _____
Math _____
Written Language _____Met: Severe Discrepancy
(1=yes, 0=no)Reading _____
Math _____
Written Language _____
Oral Expression _____
Listening Comprehension _____Teacher: (1=yes, 0=no) Learning Disabled _____
(1=yes, 0=no) Severe Discrepancy _____Area of discrepancy (actual score): Reading _____
Math _____
Written Language _____
Oral Expression _____
Listening Comprehension _____

Appendix N

**Table Showing Parental Permission Forms
Returned by School District**

Parental Permission Forms Returned by School District

District	Number			
	Sent	Returned	Yes	No
A	4	4	4	0
B	26	13	9	4
C	18	10	7	3
D	10	8	4	4
E	18	7	6	1
F	0	0	0	0
Total	76	42	30	12

District	Percent			
	Of those returned			
A	4	100	100	0
B	26	50	69	31
C	18	56	70	30
D	10	80	50	50
E	18	39	86	14
F	0	0	0	0
Total	76	55	72	28

Appendix 0

**Descriptive Information on Students Who Were Not
Included in the Study by School District**

Descriptive Information on Subjects Who Were Not
Included in the Study by School District

School district	Sex		Age			Grade		FTE ^a		
	<u>n</u>	M	Fe	9	10	11	4	5	Range	Average
A	0	0	0	0	0	0	0	0	0	0
B	13	10	3	2	5	6	7	9	0.10-1.00	0.71
C	8	7	1	1	4	3	3	5	0.16-0.89	0.41
D	2	2	0	0	1	1	2	0	0.20-0.40	0.30
E	11	8	3	2	6	3	6	5	0.50-1.00	0.73
Total	34	27	7	5	17	12	18	16	0.10-1.00	0.62

^aFull time equivalency spent in special education (1.00 = full time).

Appendix P

**Descriptive Information on Composition of
Multidisciplinary Evaluation Teams (MET)**

Descriptive Information on Composition of
Multidisciplinary Evaluation Teams (MET)

Professional	<u>n</u>	No. of METs one professional from group served on	No. of METs each professional served on
School psychologist	8	24	1-5
Regular education teacher	12	14	1-2
Learning disability teacher	10	14	1-2
Learning disability teacher consultant	4	7	1-3
School social worker	3	4	1-2
Speech-language pathologist	2	3	1-2
Emotionally impaired teacher	1	1	1
Principal	2	2	1
Chapter I reading teacher	1	1	1

Note. Total number of METs = 27.

Appendix Q

**Tables Showing Descriptive Information on Data Recorded on
the "Data Information Form" for Hessler's Procedure,
the MET, and LD Teachers' Determination of Severe
Discrepancy Between Ability and Achievement**

Descriptive Data From the Results of the Application
of Hessler's Procedure as Recorded on the
- "Data Organization Form"

Academic area	<u>n</u>	Frequency		Percent	
		Yes	No	Yes	No
Reading	26	11	15	42	58
Mathematics	26	6	20	23	77
Written language	26	4	22	15	85

Descriptive Data From Information Obtained From the MET
Reports as Recorded on the "Data Organization Form"

Academic area	<u>n</u>	Frequency		Percent	
		Yes	No	Yes	No
Reading	27	22	5	81	19
Mathematics	27	8	19	30	70
Written language	27	17	10	63	37
Oral expression	27	3	24	11	89
Listening comprehension	27	7	20	26	74

Descriptive Data From Responses on the "LD Teacher Response Form" as Reported on the "Data Organization Form"

Question	n	Frequency		Percent	
		Yes	No	Yes	No
1. (Learning disabled)	22	20	2	91	9
2. (Severe discrepancy	22	20	2	91	9

Question	Academic area	n	Frequency				Mean	SD
			Slight 1	Moderate 2	Severe 3	Very severe 4		
3a	Reading	20	6	4	8	2	2.40	0.99
3b	Mathematics	16	6	4	4	3	2.13	1.09
3c	Written language	19	2	7	7	3	2.58	0.90
3d	Oral expression	14	8	3	2	1	1.71	0.99
3e	Listening comprehension	14	5	7	1	1	1.86	0.87

Note. A subject may have a discrepancy in more than one academic area.

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