1999

Comparison Between Professional Judgment Of The Child Study Team And Regression Analysis In Identification Of Perceptually Impaired Students

Linda R. Weber
Seton Hall University

Recommended Citation

Weber, Linda R., "Comparison Between Professional Judgment Of The Child Study Team And Regression Analysis In Identification Of Perceptually Impaired Students" (1999). *Seton Hall University Dissertations and Theses (ETDs)*. 336.
https://scholarship.shu.edu/dissertations/336

COMPARISON BETWEEN PROFESSIONAL JUDGMENT OF THE CHILD STUDY
TEAM AND REGRESSION ANALYSIS IN IDENTIFICATION OF PERCEPTUALLY
IMPAIRED STUDENTS

BY

LINDA R. WEBER

Dissertation Committee

Martin Finkelstein, Ph.D., Mentor
Anthony J. Colella, Ph.D.
Russell J. Kormann, Ph.D.
Harry Galinsky, Ed.D.

Submitted in partial fulfillment of the requirements for the Degree of Doctor of Education
Seton Hall University

1999

ABSTRACT

COMPARISON BETWEEN PROFESSIONAL JUDGMENT OF THE CHILD STUDY TEAM AND REGRESSION ANALYSIS IN IDENTIFICATION OF PERCEPTUALLY IMPAIRED STUDENTS

The purpose of this study is to apply an accepted statistical formula to data already collected on children who have been classified by a variety of methods as "learning disabled" (Perceptually Impaired) by their respective Child Study Teams. Results of this study indicated that the CST overidentified students as eligible for classification as Perceptually Impaired 43.7% of the time at the initial evaluation. These participants were found eligible by the Child Study Team to receive special education services but were not statistically eligible when a regression formula was applied to the student's aptitude and achievement scores obtained on the Wechsler Intelligence Scale for Children-III (1995) and the Woodcock Johnson Psycho-Educational Battery (1990) respectively. Scores were obtained during the period of January 1, 1997 through December 1, 1997.

This study was conducted in a small, affluent borough of the northwestern section of the County of Bergen in New Jersey. The district contains two elementary schools for students in kindergarten through eighth grades. The total population of students classified during the study was 113. Of that total 50% ($N = 54$) were classified Perceptually Impaired. Sixty three percent were male ($N = 34$) and 37% were female ($N = 20$) elementary and middle school level students. Racially, the participants were comprised of 98% White ($N = 53$) and 2% Asian or Pacific Islander ($N = 1$).

Results of this study will provide evidence that the application of a regression formula to the aptitude and achievement scores of students already classified as learning disabled resulted in fewer numbers of students eligible for classification.

Limitations of this study included that it was conducted in a relatively small, affluent, homogeneous community. Generalization of the results presented may have limited applicability to other communities.

ACKNOWLEDGMENTS

ii

DEDICATION

To Esther, Richard, Jay, Zach and Nicole for without their enduring love this work would never have happened.

TABLE OF CONTENTS

I   INTRODUCTION

II   REVIEW OF THE LITERATURE

III   RESEARCH METHODOLOGY

IV   RESULTS

V   DISCUSSION

LIST OF TABLES

LIST OF FIGURES

Chapter I

INTRODUCTION

Background of the Study

Within our schools, "learning disabled" (LD) continues to be the most frequently diagnosed and rapidly growing handicapping condition of all the special education categories. Concern about the inordinate increase in the proportion of students labeled learning disabled has led to scrutiny of the concept, definition, and identification and measurement procedures that lead to classification. Approximately 5% of all public school students are classified as having a learning disability (Lyon, 1996). "The existence of the LD category as a distinct and separate category... has been socially accepted, politically mandated and regulated, clinically sensed, and educationally endorsed " (Wood, 1991, p. 291), despite the difficulties encountered in determining which characteristics exemplify this category.

The ability to discriminate learning disabled students from low-achievers or slow learners who are ineligible for special education services is a particular concern. Districts' motivations for distinguishing LD students from low achievers have been questioned, because achievement test scores of handicapped students are not figured into the average scores of the district or school (Wood, 1991). Overidentification may provide districts with elevated achievement profiles that glorify their reputations but do not accurately reflect the student population.

The medley of methods and formulas used for eligibility of LD consideration contributes to differing rates of identification, which result in a lack of consistency from state to state in the percentage deemed eligible for services (Wood, 1991).

LD is not a single disorder, but includes disabilities in any of seven areas related to reading, language, and mathematics. Since the inclusion of learning disabilities as a new disability in 1976-77, the number of students served under this category has grown by 170 percent (U.S. Department of Education, 1992).

The definition of a specific learning disability and more specifically, the method for determining what constitutes a learning disability has been a controversial issue since the early 1800s (Wiederholt, 1974). Various theories associated with learning disabilities proliferated during the 1950s and 1960s, but they proved to be more academic than practical (Reynolds, 1981). The Federal Government officially acknowledged the LD category in the Children with Learning Disabilities Act, 1975, Public Law 94-142. However, it was not until the Education of All Handicapped Children Act and its subsequent regulations, issued in 1977, that learning disabilities was recognized as a matter of law. The law defined the term, mandated services and directed federal monies for reimbursement to both public and private schools that provided services in accordance with the law (Reynolds, 1992; Hallahan, 1992).

Figure 1 depicts an historical review of the federal law.

Figure 1

Historical Review of Federal Law

Education for All Handicapped Children Act of 1975- Public Law 94-142	Definition of Learning Disabled first appeared; Referred to significant discrepancy; Amended numerous times prior to 1997
Public Law 94-142 (1976)	Amended PL 94-142 to mandate a Free and Appropriate Public Education (FAPE) for all handicapped children in public schools
Public Law 99-457	Created Part H to provide funds for early intervention services for infants and toddlers with disabilities
Public Law 101-476 (1990)	Renamed the Education for All Handicapped Children Act of 1975 to the Individuals and Disabilities Education Act (IDEA)
Public Law 103-382 (1994)	Discipline criteria were established for students with disabilities

A committee was designated by Congress to formulate a definition and criteria for learning disabilities. This committee, with input from researchers, educators, and parents from across the country, drafted the Federal Code that was published in the Federal Register on December 29, 1977. The Federal Code (1977) stated that in order to be eligible for the classification of "learning disabled", (by an appropriate multi-disciplinary team including the child's regular teacher) the following conditions must be met: (a) a severe discrepancy exists between ability and achievement; (b) a severe achievement problem exists in one or more of seven areas relating to communication skills and mathematical abilities; and (c) the discrepancy is not the result of other known handicapping conditions or of environmental, cultural, or economic disadvantages (Public Law 94-142 Regulations).

Unfortunately, the publication of these federal regulations did not resolve the confusion about what constitutes a learning disability nor did it solve the ongoing dispute regarding what criteria and standards should be used to determine whether a student is eligible for the classification of learning disabled. Consequently, the criteria for classifying students is continually under scrutiny by local districts who seek to provide services to those students who are "truly" learning disabled while avoiding over-identification and inappropriate LD placements. Such placements drain limited resources from other programs and students.

According to Chalfant (1985) the emphasis on academic failure in the Federal Code definition has proven to complicate, rather than clarify, the identification of students with learning disabilities. In fact, Reynolds (1985) observed that by employing the various measurement models used by other states, "...an astute diagnostician can qualify between

50% and 80% of a random sample of the population as having a learning disability that requires special education services" (p. 454).

Results from a study comparing state compliance from 1985 to 1990 (Mercer, King-Sears & Mercer, 1990) indicate that fewer states are now using the 1977 federal definition of learning disabilities. However, inclusion of the seven components (a) oral expression, (b) listening comprehension, (c) written expression, (d) basic reading skill, (e) reading comprehension, (f) mathematical calculation or (g) mathematical reasoning of the federal definition and criteria have remained relatively unchanged. The federal definition states that it is a:

> "disorder in one 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" (PL 94-142 Regulations).

The concept of learning disabilities embedded in federal law focuses on the notion of a discrepancy between a child's academic achievement and his or her apparent capacity and opportunity to learn. The researchers further report that the issue of discrepancy is frequently cited in states criteria (86%) but the term is rarely found in definitions (27%).

Numerous differences exist in the way the states are operationally defining their identification procedures. One of the difficulties encountered when LD definitions are operationalized is failure to distinguish between low achieving students and students who have a LD (Algozzine & Ysseldyke, 1986). Pre-referral interventions, adequate assessment instruments and discrepancy models which use standard score and regression formulas are being recommended by most of the state Departments of Education in an

attempt to more accurately identify LD students. Mercer et al. (1985) reported that 38 states employ discrepancy formulas.

The State of New Jersey is in the process of amending the Administrative Code to include the 1977 version of the Federal Code regulations. Both the State of New Jersey and the Federal Government have failed to define learning disabilities operationally. Consequently, this has left the criterion for classification of learning disabilities (referred to as Perceptual Impairment according to New Jersey code) to the interpretation of individual child study teams and to the ultimate decision of administrative judges in due process cases.

The issue of identification is of particular concern because students with a learning disability have become the largest-growing segment of the special education population. The prevalence of LD identification has increased dramatically in the past 20 years (Lyon, 1996). Since the implementation of PL 94-142 (1975, The Education for All Handicapped Children Act), the number of children with learning disabilities who receive special educational services has increased from 782,095 (1977) to nearly 2 million (1989) a 152% increase over a 13-year period (U.S. Department of Education, 1990). Prior to the 1983-1984 school year, the mean increase in LD was approximately 14% per year. However, after the initial large increase, the number of children identified as having LD has stabilized and, since 1983-84, the average increase has been only 2.5% per year.

Figure 2 represents the "Percentage of Children Identified as Manifesting the Most Common Disabilities in the Years 1977 through 1993."

Figure 2

<u>Percentage of Children Identified as Manifesting the Most Common Disabilities in the</u>

<u>Years 1997 through 1993</u>
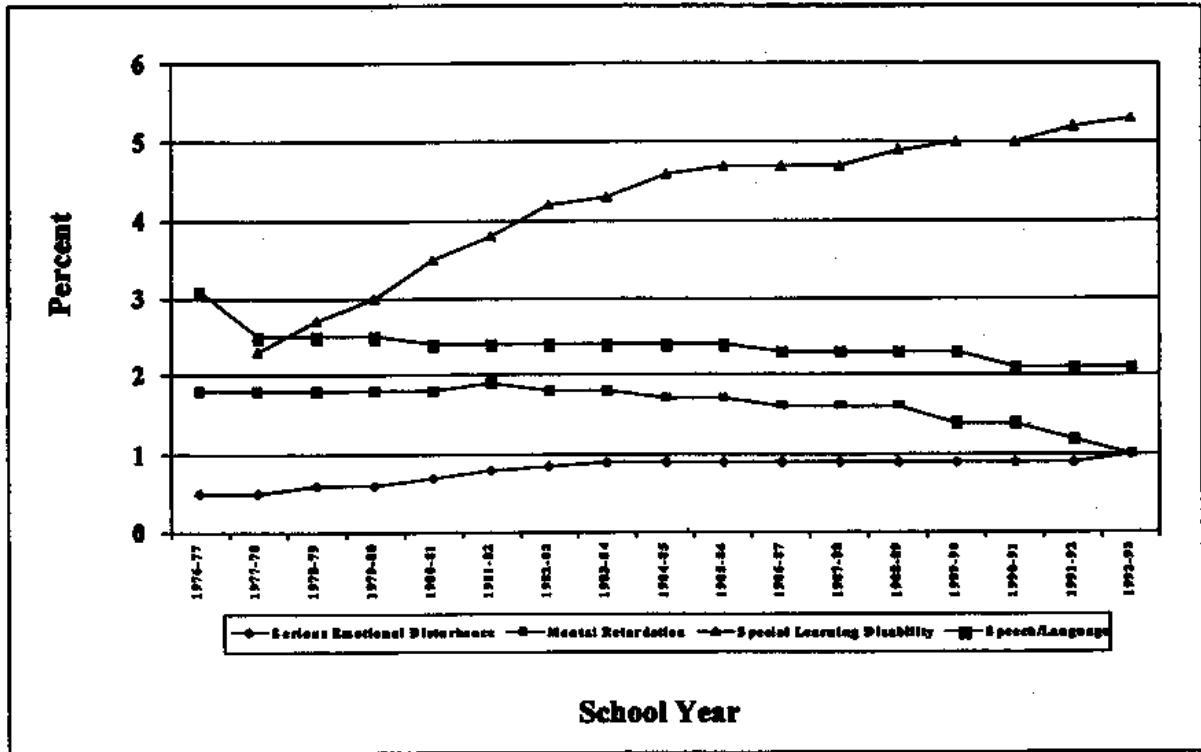
Increases in the number of children identified as LD have shown a great deal of variability among the states. For example, between 1976-77 and 1988-89, the number of children identified as LD in Mississippi increased by 863%, in Indiana by 611%, and in Alabama by 497% (U.S. Department of Education, 1990). In other states, the increases were less dramatic (e.g., Iowa, 32%; Maryland, 46%; and Utah, 33%). Explanations have been sought for the 152% increase in the number of children identified as LD since the passage of PL 94-142, for both the variability among the states and for the much lower increases since 1983-84. One explanation for the initial increase is that low achieving children may be incorrectly identified as LD (Frankenberger & Fronzaglio, 1991). There may also be social acceptance of the LD classification and a lack of alternative programs for children with problems in regular education.

Consequences of continuing to classify students as "Perceptually Impaired" who do not meet eligibility criteria, can have a far reaching impact on a district economically, legally, and even morally. The number of students identified as having a specific learning disability has grown steadily, and more than any other disability, since the passage of Part B of the Individuals with Disabilities Education Act (IDEA) (Fourteenth Annual Report 1992). Identification criteria have been focused upon as a means to do the following: (a) reduce the numbers of students classified and placed as learning disabled, thus decreasing the cost of their education; and (b) increase the accuracy and specificity of identifying students with learning disabilities (Forness, 1985; Mather & Healey, 1990).

Additionally, there are now many private agencies that specialize in diagnosing, remediating, or counseling students with learning disabilities. Learning disability is a growth industry. The number of children classified LD has grown tremendously,

prompting new policies intended to halt misclassifications. There are estimates that within the next few years the number of children that a district will be permitted to classify as learning-disabled will be restricted to 2% of the total number of students who are classified. Thus, it will become imperative for districts to develop objective, consistent criteria for detecting the student who is genuinely learning disabled.

There seems to be ongoing definitional problems in the field of learning disabilities. The federal definition of learning disabilities is generally regarded as being vague and too subjective. States nationwide continue to struggle with various means of determining "severe discrepancy", as the term continues to be left to interpretation. State Departments of Education continue to revise their definitions and their eligibility criteria. In a survey conducted by Frankenberger and Fronzaglio (1991), 40% of the states' guidelines were either rewritten, revised, or both between 1988 and 1990. An additional 15% of the states indicated that their guidelines for LD would be revised in the near future. Fifty-one percent of the states cited the federal definition mandated by PL 94-142 (1975) as their definition of LD. The remaining 49% of the states had definitions that varied from that definition.

According to Reynolds (1985a) the use of different measures to define "severe discrepancy" has resulted in the large disparity in the proportion of children with learning disabilities among and within states. Fourteen (29%) of the states (Alabama, Georgia, Hawaii, Indiana, Iowa, Kentucky, Nebraska, New Mexico, Ohio, Pennsylvania, Texas, Utah, Washington, and Wisconsin) and also the District of Columbia required that children diagnosed as LD have IQ scores in the average range (Frankenberger & Fronzaglio, 1991). Eight of the states, however, did not define "average." Six of the states (Alabama,

Iowa, Kentucky, Nebraska, Ohio, and Wisconsin) and also the District of Columbia

specified that IQ cutoff scores for LD placement be above the range of mental retardation,

however the particular IQ cutoffs varied among states. Of the 48 states and Washington,

DC, 11 (23%) did not recommend a discrepancy method. Of the remaining states, 20

(54%) recommended the standard score method. Eight (22%) of the states recommended

the regressed standard score procedure (refer to definitions). A regression formula was

recommended by seven (19%) additional states. The remaining states recommended

either the expectancy formula or deviation from grade (refer to definitions). New York

recommended a 50% discrepancy but did not specify the method to determine the LD

definition.

By 1988, while the national average of students labeled learning disabled was 43%

of those in special education, the range among the 50 states was from 30% to 67%, and in

30 large cities the range was from 0% to 73% (Tenth Annual Report, 1988). Despite a

common federal definition, the probability of being classified learning disabled varies by a

factor of 6 across states, 3 to 4 by gender, and 5 or more across ethnicity (Reynolds,

1992). Although most states use some form of discrepancy model to identify learning

disabilities, New Jersey has not mandated the use of a statistical formula since adoption of

PL 94-142 (1975). The New Jersey Administrative Code did not revise its definition of

learning disabilities (Perceptual Impairment) until July 1992 when the Code was updated

according to the citation in the Federal Register. Since the New Jersey Code revision,

surveys indicate that most individual child study teams have not developed specific

uniform criteria. The New Jersey Department of Education conducted public hearings

around the state regarding proposed changes to its Administrative Code. Part of the

Code's revision deals specifically with the identification of students who are learning disabled via the use of a statistical formula to determine the existence of a significant discrepancy between ability and achievement.

In the State of New Jersey special education services were mandated by Chapter 28 of the New Jersey Administrative Code, Title 6, subchapter 6:28-3.1 – 3.9 until July 6, 1998. This subchapter covered identification, referral, evaluation, and determination of eligibility for special education services. Specific criteria for determining whether a student was entitled to be classified and a definition of each of the twelve categories of classification were detailed in this subchapter.

Purpose of the Study

The purpose of this study is to apply an accepted statistical formula to data already collected on children who have been classified by a variety of methods as "learning disabled" (Perceptually Impaired) by their respective Child Study Teams. The goal of this study is to determine the validity of the classification using the aforementioned methods. Will one method identify more students as having a severe discrepancy than the other has? Will one method systematically favor different ability groups? How will the results of the statistical formula compare with the professional judgement of the Child Study Team?

Investigation into the way in which students with learning disabilities are classified is important because there is currently no standardization within and/or between school districts in the criteria used to classify students. Evidence should exist that the learning disabilities are primarily attributable to a deficit within the student's learning system and not a result of inadequate instruction.

Results of applying a statistical formula to the aptitude and achievement scores of students who have been classified as Perceptually Impaired will be compared to the professional judgement of the Child Study Team to determine the accuracy of their resolution. Are low achievers being reclassified, and if so, what effect does this misclassification have on the student as well as the school district? Lyon (1996) contends that by the time a child has experienced at least a few years of school failure their self-esteem and motivation have diminished. School districts have appropriated both fiscal and personnel resources in order to accommodate the students in special education programs. However, if there is a misclassification of students who are low achievers, and not eligible for classification in special education, the economic and personnel resources of school districts can be otherwise directed to make the necessary accommodations in the regular education program.

Central Hypothesis

Child Study Team evaluations are overly dependent on teacher assessment and tend to over-identify low achievers. Regular education teachers pressure Child Study Team members to classify students who are low achievers because they are resistant to modifying their teaching to adapt for diversity within their classroom. Utilization of discrepancy formula analysis will effectively screen out low achievers who should not be classified and demonstrate their over-representation in the special education population.

Misclassification of students who do not demonstrate a significant discrepancy between aptitude and achievement has far reaching consequences. Economic effects for the district can impact on decisions made regarding educational programming for the regular student population. Appropriating monies to special education for students who

are not eligible to receive such services immediately impacts supplies, equipment, materials, and staffing. Teachers, who are inflexible in their approach to educating their students, are allowed to continue old habits as low achievers are removed from their classes and placed in special education. Social-emotional issues for misclassified students such as the stigma of being assigned to the "special education" classes evoke feelings of low self-esteem, and parents may wrestle with feelings regarding having a child who is identified as educationally disabled.

This study will determine whether a degree of congruence exists between Child Study Team judgment and discrepancy analysis. Is there greater or lesser congruence over time? Is the discrepancy analysis more stable than a Child Study Team analysis? Does participation in special education programming improve the standardized scores of students who are identified as low achievers and justify the original classification?

Hypothesis 1: No significant relationship will be found between the Child Study Team evaluations and discrepancy evaluations to determine eligibility for classification as perceptually impaired at $time_1$ (t_1) and $time_2$ (t_2).

Hypothesis 2: Scores on standardized group achievement tests will indicate little improvement for low achieving students misclassified as perceptually impaired when compared to low achievers who were not so classified.

Hypothesis 3: The self-esteem of low achieving students receiving special education services is lower than the self-esteem of non-classified low achievers as measured by a standardized self-esteem inventory.

Hypothesis 4: For low achieving students who were classified as perceptually impaired but not eligible for special education services, there will be a significant

discrepancy between the services they were provided compared to the services provided to those students who were eligible for classification according to the regression analysis at $time_1$ and $time_2$.

Significance of Proposed Study

The results obtained from this study will be beneficial in determining whether the use of a statistical formula would have contributed to a decrease in the number of students classified as Perceptually Impaired, a position currently held by the New Jersey Department of Special Education. Such findings would be of importance to the process of identifying and classifying students as learning disabled and may have significance for teachers in the regular education programs. Misclassification of students who are low achievers as in need of special education services may have an effect on both the self-esteem and academic performance of the students. In addition, identifying students as eligible for special education services when, in fact, they do not meet the mandated criteria may drain school districts of fiscal and personnel resources that could be used to provide appropriate services to low achieving students within mainstream classes. Modification and accommodation to the existing curriculum will have to be made so those students who may simply be low achievers are able to learn along with students who are average and above average. The implications for the general education program and budget may be great if the number of students removed from regular education begins to decrease. More fiscal resources may become available for the general education population, which will provide administrators with the resources needed to add supplementary aids and services directly into classrooms for the benefit of all students.

Limitations

This study was completed in a relatively small, affluent, homogeneous community

which lacked ethnic diversity. As a result of the size of the overall school population, the

total number of participants eligible to cooperate in this research was also small.

Therefore, generalization of the results presented in this study may have limited

applicability to other communities.

Definition of Terms

Compliance: to be operating within the federal regulations, within the confines of

the law.

Coopersmith Self-Esteem Inventory: an individually administered self-esteem

inventory designed to measure evaluative attitudes toward the self in social, academic,

family, and personal areas of experience.

Deviation-from-grade-level: the simplest method of determining a discrepancy

between aptitude and achievement. The aptitude/achievement discrepancy is the point at

which a student's achievement falls below current grade placement by some specified

amount.

Expectancy methods: based on determining a discrepancy between ability and

achievement. Ability and achievement scores are converted to age or grade equivalents

and evaluated by an expectancy formula.

Grade equivalents: grade score assigned to a mean raw score of a group during

norming process.

Group achievement tests: tests administered to a group of students to measure

academic gains.

IDEA: Individuals With Disabilities Education Act, passed in 1990 to give new name to PL 94-142.

Individual achievement tests: tests administered to individual students to measure academic progress.

Multidisciplinary team: a team of professionals from various fields who participate in comprehensive student evaluations and make decisions about special education eligibility and placement.

Overidentification: describes the phenomenon of identifying students who seem to be eligible for special education services but who are actually not disabled.

Public Law 94-142: the Education for All Handicapped Children Act of 1975; guarantees the right to a free and appropriate education in the least restrictive environment; renamed IDEA.

Regression analysis: a statistical method that enables examiners to specify the achievement test score predicted for a given IQ score. Regression methods use a predication equation that considers the magnitude of the correlation between IQ and achievement.

Specific learning disability: a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, that manifests itself in the imperfect ability to listen, speak, read, write, spell or do mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not

include learning problems that are primarily the result of visual, hearing, or motor disabilities; mental retardation; or environmental, cultural, or economic disadvantage.

Standard scores: scores calculated during norming process of a test; follow normal distribution theory. Comparisons can be made with a common metric (the z or t scores) on standardized IQ and achievement tests.

Wechsler Intelligence Scale for Children-III: (WISC-III) an individually administered test of aptitude which yields three scores, the Verbal, Performance and Full Scale IQ's.

Woodcock-Johnson Test of Psycho-Educational Abilities-Revised: an individually administered comprehensive academic achievement.

Chapter II

REVIEW OF THE LITERATURE

Introduction

The goal of this study is to determine the validity of the classification of students as LD by conventional methods. To do so, this study will apply an accepted statistical formula to data already collected on children who have been classified by a variety of methods as "learning disabled" (Perceptually Impaired) by their respective Child Study Teams.

Historical Overview in the Learning Disabilities Field

The study of learning disabilities was initiated in response to two specific needs. The first was to understand individual differences among children and adults who displayed specific deficits in spoken or written language while maintaining integrity in general intellectual functioning. Second, was the desire to provide services to these students, who were not being adequately served by the general educational system. Overall, the field of learning disabilities emerged primarily from a social and educational need and currently remains a diagnostic practice that is more rooted in clinical practice, law, and policy than in science (Lyon, 1996). Advocates for children with learning disabilities have successfully negotiated a special education category as a means of educational protection at the same time that the schools have seen an increase in the identification of LD.

The definition of a specific learning disability and more generally, the method for determining what constitutes a learning disability has been an unsettled topic since the early 1800s (Wiederholt, 1974). The first identification of what has now been termed "learning disabilities" was made in England during the last decade of the nineteenth century when it was recorded that bright children were unable to read, write, or spell.

Physicians studied the unexpected pattern of general strengths and specific weaknesses in learning during the early twentieth century, thus giving the field its historical biomedical orientation. Doctors noted that children with learning disabilities were similar to adults and children with focal brain damage in that specific impairments in some areas of learning could occur without diminishing strengths in general cognition.

During the 1920s Samuel Orton, an American psychiatrist and neurologist, made significant contributions to the field when he studied reading-related disorders, which he called "strephosymbolia." Various theories associated with learning disabilities proliferated during the 1950s and 1960s, but they proved to be more academic than practical (Reynolds, 1981).

Although the clinical work conducted during the first half of the twentieth century recognized the existence of learning disabilities, such information had little influence on public school policies until the mid-1960s. At this time, behavioral scientists, educators, and parents expressed concern that some children had learning handicaps that were not being served effectively in they general educational programs. At the same time, these children were not eligible for special education services because their characteristics did not correspond to any recognized categories of disability. This disenfranchisement stimulated an advocacy movement to provide special educational services to students with learning

disabilities, leading many states to establish a special education category for LD during the late 1960s.

Some experts in this area believe that the field of learning disabilities began when Kirk (1962) proposed the term learning disabilities (LD). During the 1960s, the term "learning disabilities" was used in place of approximately 100 previous terms. Prior to 1963, LD could be found occasionally as a term in the educational literature, and these descriptions served as a foundation for the formal LD concept. In April 1963, a growing organization of parents of children with specific learning disabilities gathered to form the Association for Children with Learning Disabilities. Original advisory board members were William Cruickshank, Raymond Barsch, Ross Beall, Marianne Frostig, William Gellman, Newell Kephart, Laura Lehtinen, and Helmer Mykelbust (Kavale, Forness, & Bender, 1987). At a meeting of this organization Samuel Kirk, chairman of the conference, introduced the term, learning disabilities (Kirk & Kirk, 1983) but, as yet, criteria and procedures for classification of LD had not been determined.

Definitions of Learning Disabilities

A stable definition of learning disabilities, which would be acceptable to a broad constituency, was needed. S.A. Kirk (1962) provided one of the first formal definitions:

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

Although Kirk's definition provided the framework within which LD was viewed, it needed further refinement. At one conference, Gallagher (as cited in Kavale 1995, p. 59) suggested the term "developmental imbalances" for

"children who reveal a developmental disparity in psychological processes related to education of such a degree (often four years or more) as to require the instructional programming of developmental tasks appropriate to the nature and level of the deviant developmental process."

The term was suggested to foster a more educationally oriented concept that would reflect a behavioral emphasis. Much discussion followed Gallagher's presentation, but no consensus was forthcoming. Reviewing the conference, Cruickshank and Hallahan (1973) concluded that discussions about definitions were still worthwhile:

All told, the results of this discussion on terminology and definition were both promising and discouraging. While the general consensus, especially among educators, pointed to the need for an educationally relevant definition, no such definition was adopted. Nor has any consistent terminology been agreed upon to date…"Learning disabled" is probably the most popular term; but it still is far from being unanimously accepted, since many think it contains numerous possibilities for severe misunderstanding and error. (p.71)

The Institute for Advanced Study (Kass & Myklebust, 1969, as cited in Kavale 1995)) was also interested in developing an educationally focused definition and proposed that:

Learning disability refers to one or more significant deficits in essential

learning processes requiring special education techniques for remediation.

Children with a learning disability generally demonstrate a discrepancy

between expected and actual achievement in one or more areas, such as

spoken, read or written language, mathematics, and spatial orientation.

The learning disability referred to be not primarily the result of sensory,

motor, intellectual, or emotional handicap, or lack of opportunity to learn

(p. 60).

This definition reflected two earlier ideas about how to provide an educational

focus for the definition of LD. The Association for Children with Learning Disabilities

(ACLD) was concerned with omitting reference to etiology and stated that:

A child with learning disabilities is one with adequate mental ability,

sensory processes, and emotional stability who has a limited number of

specific deficits in perceptual, integrative, or expressive processes which

severely impair learning efficiency. This includes children who have central

nervous system dysfunction that is expressed primarily in impaired learning

efficiency (Kavale, 1995, p. 60).

Bateman (1965) introduced the emphasis on academic underachievement and

discrepancy:

Children who have learning disorders are those who manifest an

educationally significant discrepancy between their estimated intellectual

potential and actual level of performance related to basic disorders in the

learning process, which may or may not be accompanied by demonstrable

central nervous system dysfunction, and which are not secondary to

generalized mental retardation, educational or cultural deprivation, severe

emotional disturbance, or sensory loss. (p. 220)

To bring order to the proliferation of LD definitions being proposed, the National

Advisory Committee on Handicapped Children (NAHCH, 1968), which was headed by

S.A. Kirk, proposed the following definition:

Children with special (specific) learning disabilities exhibit a disorder in one

or more of the basic psychological processes involved in understanding or

in using spoken or written language. These may be manifested in disorders

of listening, thinking, talking, reading, writing, spelling, or arithmetic.

They include conditions that have been referred to as perceptual handicaps,

brain injury, minimal brain dysfunction, dyslexia, developmental aphasia,

etc. They do not include learning problems that are due primarily to visual,

hearing, or motor handicaps, to mental retardation, to emotional

disturbance, or to environmental disadvantage. (Kavale & Forness, 1995,

p. 34)

The NACHC definition was important because it provided the foundation for the

1969 passage of Public Law 91-230 (The Children with Specific Learning Disabilities Act)

which amended Title VI of the Elementary and Secondary Education Act. It was in this

act that the federal government acknowledged the category of learning disabilities. The

definition failed, however, to provide a clear enough delineation of LD's parameters for

educational classification. McIntosh and Dunn (1973), for example, found a number of problems with the NACHC definition:

1. Bateman's (1965) discrepancy idea was not incorporated.

2. The definition specified no level of severity for qualification as LD.

3. The phrase one or more in describing process disturbances is at variance with the modifier specifically applied to the term LD.

4. The variety of conditions included precludes the establishment of any type of LD syndrome marked by a group of common characteristics.

5. The conditions associated with LD are themselves not defined; they are provided only as examples, creating an inherently vague situation.

6. The reliance on exclusion as a primary definitional parameter denies the possibility that students classified under some other designation may also have LD.

7. The vagueness of the definition prevents the generation of consistent prevalence figures.

Although not satisfactory as a specific definition of LD, the NACHC definition did fulfill administrative needs related to funding, program development, and keeping areas of special education mutually exclusive. Once formalized at the federal level, the LD field experienced rapid growth. However, it was not until the Department of Education recognized the need to establish a system that would allow states and local education districts to determine whether students qualified for special help that the segment of Public Law 94-142, subsection 620 of section 5, Part B was established. The Education of All Handicapped Children Act, as it was titled, was enacted in 1975. Central to this landmark piece of legislation mandating free and appropriate public education, and due process,

were definitions of various handicapping conditions. The laws also mandated that the Commissioner of Education shall, no later than one year after the effective date of this subsection, prescribe:

> Regulations which establish criteria for determining whether a particular disorder or condition may be considered a specific learning disability for purposes of designating children with LD; regulations which establish and describe diagnostic procedures which shall be used in determining whether a particular child has a disorder or condition which places such a child in the category of children with LD; and regulations which establish monitoring procedures which will be used to determine if State educational agencies, local educational agencies, and intermediate units are complying with the criteria established under clause (A) and clause (B) (PL 94-142, 1975).

The assignment to fulfill this congressional mandate was designated to Frank King, a trained psychologist and seasoned bureaucrat, who was a State Plan Officer in the Division of Assistance to States in the Bureau of Education for the Handicapped, Office of Education, United States Department of Health, Education and Welfare. The ultimate goal of this mandate was to establish a system, which could identify children who were eligible for special education services under the sections of PL. 94-142 that deal with specific learning disabilities. Dr. King had been given the immense task of defining and devising uniform procedures for the identification of a condition that had no single agreed upon terminology, treatment, or remediation. According to Dr. King, the Congressional mandate "specified that we would provide information that was beyond science at this stage" (Roa, Gluckin & Kripe, 1979, p. 8).

The U.S. Congress had attempted to define terms in PL 94-142, referring to a specific learning disability as "a disorder in one 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." Recognizing that learning disorders can be traced to many causes, Congress added that the term "specific learning disability" did not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps, or mental retardation or of environmental, cultural or economic disadvantage.

This extremely broad definition raised more questions than it answered. With the range of disabilities also referred to as specific learning disabilities, including perceptual handicaps, brain injuries, cerebral dysfunction, developmental aphasia, dyscalculia, dysgraphia, dysphonetic, and dyseidetic varieties, it became clear to Frank King that children could not be diagnosed as having a specific learning disability primarily on the basis of what a condition is not (Roa et al., 1979).

At this point, King concluded that his major problem was that there was no consistent definition of learning disabilities across the country, within states or even among communities. He found that although many theories had been proposed and instructional programs developed as a result of these theories, little research had been done regarding their validity. Many of these theories, it was discovered, were more based upon opinion than research.

King consulted with groups such as the Council for Exceptional Children (CEC), the Association for Children with Learning Disabilities (ACLD), and the Orton Society, with educational consultants from 34 states, with professionals in the field, and with parents. Available literature was studied and a draft of the proposed regulations was developed and distributed for review. The recurrent theme of draft feedback was there was very little agreement. There was no general consensus as to the criteria necessary for determining LD except for the notion that all children with LD appear to achieve at a rate considerably below that which might be expected when intelligence, age and prior experience are considered. The pivotal dimension in defining LD was a "major discrepancy between expected achievement and ability that was not the result of other known and generally accepted handicapping conditions or circumstances" (U.S. Office of Education, 1976, p. 52404). A discrepancy was presumed to exist when a student was achieving at or below 50% of his or her expected achievement.

Very early in the history of remedial education, attempts were made to quantify a child's achievement relative to the child's potential for achievement in hopes of establishing a method of formal assessment of "academic retardation" (Hallahan & Kaufman, 1976). A typical formula was that of H.R. Myklebust:

$$\frac{\text{Mental Age} + \text{Life Age} + \text{Grade Age}}{3} = \text{Expectancy Age}$$

Mental age was derived from an intelligence test, life age was an indication of the child's psychological maturity based on chronological age, and grade age indicated the child's school experience. Myklebust's assumption was that the ratio of the child's actual achievement to expectancy should be at or above 90. Anything less than 90 was indicative

of a learning disability (Hallahan & Kaufman, 1976). Myklebust's formula was just one step along the path to special education's passion for formally quantifying learning disabilities.

The following formula was used for determining a severe discrepancy level (SDL); a grade equivalent based on the interrelationship among intelligence, chronological age (CA) and prior educational experience:

$$SDL = CA [IQ + 300 + 0.17] - 2.5$$

Danielson and Bauer (1978) questioned the appropriateness of a formula-based approach, asking: (a) Is the formula effective? (b) What would be the impact of the formula? and (c) Can the procedure be implemented?. An empirical analysis of the formula suggested a negative response to the first question, which then limited the possibilities for positive responses to the remaining questions. In addition, when reaction from the field was solicited, the formula received overwhelmingly negative evaluations. The controversy surrounding the formula-based classification led the USOE to drop the formula.

With the rejection of the discrepancy formula, the revised federal rules suggested that LD classification be based on a severe discrepancy between capacity and achievement:

> (1) The child does not achieve commensurate with his or her age and
> ability when provided with appropriate educational experiences, and (2) the
> child has a severe discrepancy between achievement and intellectual ability
> in one or more of seven areas relating to communication skills and
> mathematical abilities (U.S. Department of Education, 1976, p. 65083).

Evaluation procedures were to be conducted by interdisciplinary teams that included the child's regular teacher (or a qualified substitute), and at least one individual certified to conduct an individual diagnostic examination. The student was to be evaluated individually for discrepancies in: "(a) oral expression, (b) listening comprehension, (c) written expression, (d) basic reading skill, (e) reading comprehension, (f) mathematical calculation, or (g) mathematical reasoning" (U.S. Department of Education, 1976, p. 65083). Furthermore, the federal guidelines included observation as an important procedure:

1. At least one team member other than the child's regular teacher shall observe the child's academic performance in the regular classroom setting.

2. In the case of a child 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.

The Office of Education published these regulations in the Federal Registry on November 29, 1976, and allowed three months for public comment, which was more than double the time normally allowed because of the controversial nature of this legislation. There was strong support for this discrepancy model, however, considerable opposition centered on the quantification of the discrepancy, specifically the 50% requirement. Of primary concern was the formula, which was included in the regulation, which was intended to illustrate how the disparity could be measured. A major objection was that the standard of measurement would vary depending on the particular test(s) used. There was also concern expressed regarding the statistical validity of comparing intelligence and achievement and that quantifying the discrepancy would mean reducing children to mere

numbers. Numerous professionals in the field felt that many of the defects in the proposed procedures were not just technical flaws but that there were conceptual and methodological flaws as well (Roa et al., 1979).

The final form of PL. 94-142 regulations regarding specific learning disabilities was printed in the Federal Register on December 29, 1977. It recognized learning disabilities as a matter of law, defining the term, mandating services, and directing federal monies for reimbursement to schools, both public and private, that provided services in accordance with the law (Reynolds, 1992; Hallahan, 1992). The revised regulations stated that in order to be eligible for classification of learning disabled:

> It must be established (by an appropriate multidisciplinary team including the child's regular teacher), (a) that a severe discrepancy exists between ability and achievement; (b) that there is a severe achievement problem in one or more of seven areas relating to communication skill and mathematical abilities; and (c) that the discrepancy is not the result of other known handicapping conditions or of environmental, cultural, or economic disadvantages (Federal Register, 1977, p. 65082).

As Dr. King's project concluded, he observed:

> The problem is, as it has been all along, that we just can't define learning disabilities in terms that are discrete enough to separate each child, in terms of the degree of disability, and in some instances, even in terms of the type of disability that's involved. We don't know as much about learning as we need to know, so we know less about the disabilities in learning (Roa et al., 1979, p.11).

Passage of PL 94-142

Since the inception of the term "learning disability" by the federal government, controversy has constantly plagued it because the federal regulations did not resolve the confusion surrounding the vagueness of its definition. Nor did it solve the ongoing dispute regarding what criterion and standards should be used to determine whether a student is eligible for the classification of "learning disabled." The debate has focused on the practical problems and operational criteria for identification practices (Algozzine & Ysseldyke, 1983). According to Chalfant (1985) the emphasis on academic failure in the Federal Code definition has proven to complicate, rather than clarify, the identification of students with learning disabilities. According to Reynolds (1985a), by employing the various measurement models used by some states, "an astute diagnostician can qualify between 50% and 80% of a random sample of the population as having a learning disability that requires special education services" (p. 454).

This law mandated school boards in the United States to provide appropriate education to all children, and carried with it an unstated promise that school boards would know how to reach all children. This included not only children who appear to resist learning, but also those children whose attributes make some form of learning exceeding difficult. In order to believe that education is capable of providing broad-based remediation, the perception of learning disabilities was altered from that of a multifaceted disability affecting several areas of development to an academic disability. The consequent expectation was that, on receipt of appropriate academic remediation, the learning disabled student would no longer have academic deficits. After passage of this act the number of students identified as learning disabled soared. Clarizio and Phillips (1986b)

stated that learning disabilities have now become the prevalent handicap of school-age children, and Clarizio and Phillips (1986) have estimated that almost one million students are identified as learning disabled.

Since the inclusion of learning disabilities as a new disability in 1976-77, the number of students served under this category has grown by 170%. The relative proportion of these students, as a function of the total number of children served in special education, increased from 24.9% in 1976-77 to 50.5% in 1990-91, exceeding any other disability (U.S. Department of Education, 1992). Numerous researchers (Frankenberger & Harper, 1987; Ysseldyke, Algozzine & Epps, 1983) assert that the figures represent an over-identification of students classified as learning disabled. Given these facts, the criteria for diagnosis and the means by which they are operationalized are continually under scrutiny by local districts who seek to provide services to those students who are "truly" learning disabled while avoiding over identification and inappropriate learning disability placements. By providing special education services to students who are not truly learning disabled drains limited resources from other programs and students.

A heated debate continues amongst professionals about whether special education is needed for some groups of children who seem to show characteristics of a learning disability, and if so, what type of help is appropriate. These groups include students who (a) are at the low-average end of the intelligence scale; (b) are highly intelligent; or (c) come from linguistic, cultural, social, or economic backgrounds that differ significantly from their peers.

When a student with a low-average intellectual level experiences academic difficulties, some professionals may feel that the lower intelligence is the cause of the

problem. Others may believe that the student could do better academically or make passing grades if not for the learning disability.

A student with a high-average or superior intellectual level may maintain grade level performance in elementary school, but develop academic problems in higher grades. Some professionals feel baffled because if a child does not show early academic problems, it seems unlikely that a learning disability would be the reason for later problems. Other professionals suggest that a capable student may develop sufficient compensations in the early school years to make acceptable grades, but become unable to manage when faced with taking notes, longer reading assignments, foreign language requirements, and similar demands in secondary and post secondary schools.

When establishing criteria from which a diagnosis of learning disability is made, most states (86%) have included the existence of a severe discrepancy between achievement and intellectual ability in one or more specified academic areas as a necessary, but not as an exclusive condition, for determining a student to be learning disabled (Mercer, King-Sears, Mercer, 1990). Yet, there still exists a debate regarding which is the best choice of models for determining a marked discrepancy between ability and achievement (Braden, 1985; Reynolds, 1985b) and the general usefulness of the concept of severe discrepancies in diagnostic practices (Council for Learning Disabilities, Board of Trustees, 1987). Figure 3 represents "Ability/Achievement Procedures Employed by States in 1981-1982 and 1985-1986".

Figure 3

Ability/Achievement Discrepancy Procedures Employed by States in 1981-1982,

1985-1986[a], and 1989-90

Deviation from grade level	Expectancy formula	Standard score comparison	Regression analysis
1981-1982 Georgia Minnesota South Dakota Utah	New York Wisconsin	Colorado Florida Iowa[b] Louisiana Nevada New Mexico Ohio Tennessee Texas Vermont	Iowa[b]
1985-1986 Iowa[b] Nevada[b] Oregon Utah[b]	Alabama Arkansas Idaho[b] Kentucky Mississippi Nevada[b] New Mexico New York Pennsylvania Utah[b] Wisconsin Wyoming	California Connecticut Florida Georgia Idaho[b] Iowa[b] Kansas[b] Louisiana Missouri North Carolina Ohio Texas	Iowa[b] Kansas[b] Minnesota Montana Vermont Washington
1989-1990 Hawaii DC[b]	Wisconsin DC[a] Idaho Nevada	Alabama Arizona California Connecticut Florida Georgia Kansas Kentucky[a] Louisiana Maine Massachusetts Mississippi Nebraska New Mexico North Carolina North Dakota Ohio Oklahoma Rhode Island[a] Tennessee Texas	Kansas[a] Kentucky[a] Minnesota Missouri Montana Rhode Island[a] Wyoming

[a]Frankenberger and Harper (1987)
[b]States that specified more than one type procedure.

Results from a study comparing state compliance from 1985 to 1990 (Mercer, King-Sears, Mercer, 1990) indicate that fewer states are now using the 1977 federal definition of learning disabilities although inclusion of the seven components of the federal definition and criteria have remained relatively unchanged. The issue of discrepancy is frequently cited in states' criteria (86%), however the term is rarely found in definitions. There are numerous differences in the way that states are operationalizing their identification procedures. Pre-referral interventions, adequate assessment instruments and discrepancy models which use standard score and regression formulas are being recommended by most state departments of education in an attempt to more accurately identify learning disabled students.

Ninety-four percent of the states include discrepancy as a necessary condition for LD eligibility (Mercer, Hughes & Mercer, 1985). Yet there still exists a debate regarding which is the best choice of discrepancy model for determining a marked discrepancy between ability and achievement (Braden, 1987; Reynolds, 1985) and the usefulness of the concept of severe discrepancies in diagnostic practices (Council for Learning Disabilities, Board of Trustees, 1987).

Results of a study conducted by Mercer, Jordan, Allsop, and Mercer (1996) found that 21 states (42%) used standard scores from assessment tests to determine discrepancy (e.g., instead of grade-equivalent scores). Twenty-seven states (54%) indicated that they used standard deviation in their LD criteria, ranging from 1 to 2 deviations, to determine discrepancy. Regression formulas applied to test scores were used in 16 states (32%). One state (2%) recommended using verbal-versus performance-score comparisons on the Wechsler Intelligence Scale for Children-Revised (WISC-R) or the more current Wechsler

Intelligence Scale for Children-III (WISC-III). Two states (4%) suggested in their criteria

that a discrepancy of between 40% to 50% or more between aptitude and achievement be

used; one state (2%) recommended this procedure in its definition and three states (6%)

recommended the use of grade-level discrepancy.

The State of New Jersey has recently amended their Administrative Code to

include the 1977 version of the Federal Code regulations. In the proposed new code,

"The district shall adopt procedures that utilize a formula and criteria for determining a

severe discrepancy. Evaluation shall include assessment of current academic achievement

and intellectual ability" (Proposed New Jersey Administrative Code, 1997, p. 49). "The

Comparison of Percentages of Operationalization Procedures" is represented in Figure 4.

Figure 4

Comparison of Percentages of Operationalization Procedures

Procedures	Mercer et al. (1990) of 45 agencies		Current Data of 50 agencies		Trend
	Criteria and/or definition	Criteria Only	Criteria and/or definition	Criteria Only	
Standard scores	18 (40%)	18 (40%)	21 (42%)	21 (42%)	Constant
Standard deviation	23 (51%)	23 (51%)	27 (54%)	27 (54%)	Constant
Regression formula WISC-R (now WISC-III)	13 (29%)	13 (29%)	16 (32%)	16 (32%)	Constant
Verbal v. performance	1 (02%)	1 (02%)	1 (02%)	1 (02%)	Constant
40%-50% or more discrepancy	2 (04%)	2 (04%)	3 (06%)	3 (06%)	Constant
Grade-level discrepancy	11 (24%)	10 (22%)	16 (32%)	16 (32%)	Increase

Note: More than 5% increase in either column comparison is reported as an increase.
More than 5% decrease in either column comparison is reported as a decrease.
Less than 5% change in either column comparison is reported as a constant
Source: (1996) Learning Disability Quarterly, 19 (4), p. 217

Some states, such as Arizona, Nevada, Oregon, and Virginia, have left the operationalization procedures for determination of a significant discrepancy to the judgment of individual school districts whereas other states emphasize that the methods for identifying a discrepancy are only guidelines. They leave the final decision regarding identification and placement to the discretion of the multidisciplinary team.

Current Practice in New Jersey

Accurate definition of terms used in the field of learning disabilities continues to be problematic for the following reasons: (a) the Federal definition of learning disabilities is poorly understood and is generally regarded as being vague and too subjective, (b) states continue to struggle with various means of determining severe discrepancy, and (c) the term severe discrepancy continues to be left to interpretation. A review of the literature indicates that there is a wide variation on how states define severe discrepancy. According to Reynolds (1985), the use of different measures to define severe discrepancy has resulted in the large disparity in the proportion of children with learning disabilities among and within states.

The administration of special education by the New Jersey State Department of Education is governed by federal and state regulations. In New Jersey, a student who is eligible to receive special education services is classified according to one of the 17 categories provided in statute and regulations. According to the report entitled Special Education that was published by the New Jersey State Department of Education for the 1995-1996 school year, there were approximately 195,000 students ages 3-21 attending special education programs in a variety of settings during that time span. Data regarding trends in classification rates began being kept by the New Jersey State Department of

Education in 1977. Until 1991, there was a steady increase in the numbers and classification rates of students classified as eligible for special education based on either enrollment or the age 3-21 census. Since then, the state special education classification rate continued to increase, but more slowly. Figure 5 demonstrates the "Proportion of Public Pupils with Disabilities with Selected Classifications in New Jersey."

Figure 5

Proportion of Public Pupils in New Jersey With Disabilities With Selected Classifications
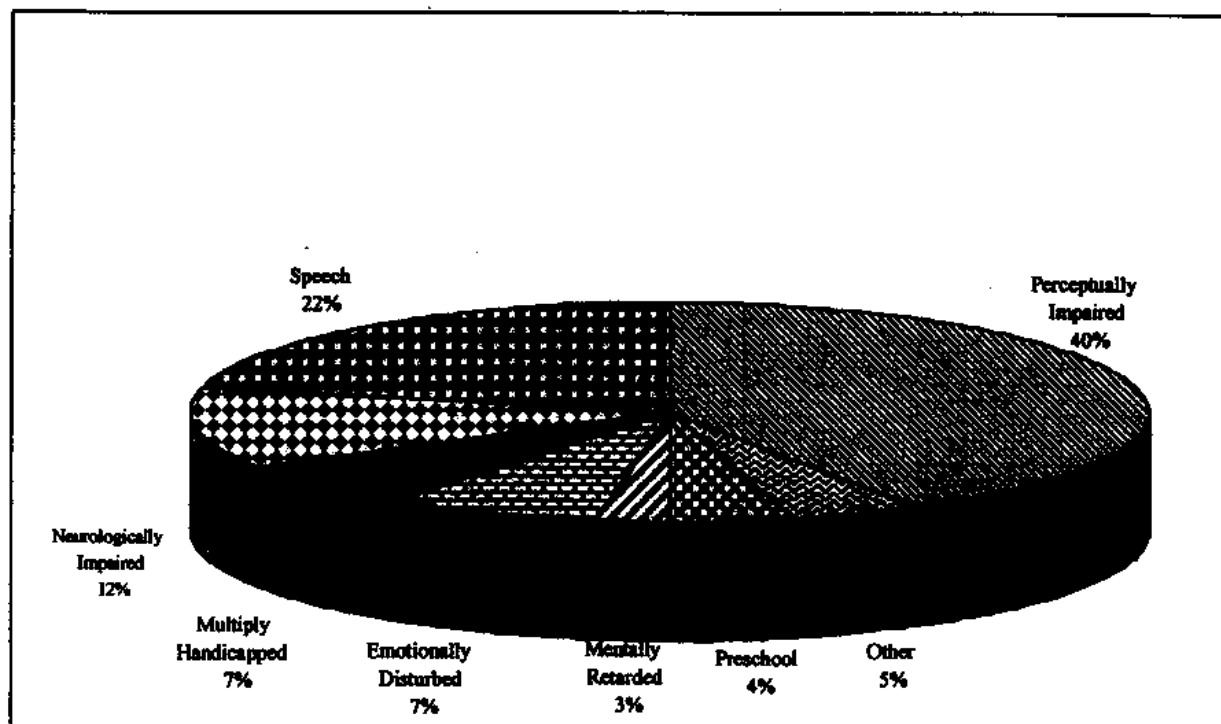
Source: Special Education Plan December 1, 1995

New Jersey has not enforced the Federal Code regarding significant discrepancy since the late 1970s, however, a few individual districts have chosen to adopt a discrepancy method of identifying such students. With the newly proposed New Jersey Administrative Code (N.J.A.C.), which is intended for implementation July 1, 1998, school districts will have to implement a statistical formula to determine significant discrepancy for learning disabled students. In the proposed revision to the Administrative Code in New Jersey, Chapter 14 of the New Jersey Administrative Code, Title 6A, subchapter, 3 will mandate special education services. This subchapter covers identification, referral, evaluation, and determination of eligibility for special education services. Specific criteria for determining whether a student is entitled to be classified and a definition of each of the twelve categories of classification are detailed in this subchapter. Original revisions in the New Jersey Administrative Code made in July 1992 put the state into compliance with the Federal regulations. A critical change, amended for the first time since the original adoption of the Code, which affects a large percentage of students with learning disabilities in the state, is the definition of Perceptual Impairment. New Jersey's original definition was: "Perceptually Impaired" means a specific learning disability manifested in a disorder in understanding and learning which affects the ability to listen, think, speak, write, spell and/or compute to the extent that special education is necessary for achievement in an educational program." The July, 1992 the N.J.A.C. Code revision version is as follows: "Perceptually Impaired" means a specific learning disability manifested by a severe discrepancy between the pupil's current achievement and intellectual ability in one or more of the following areas:

1. Basic reading skills

2. Reading comprehension

3. Oral expression

4. Listening expression

5. Mathematical computation

6. Mathematical reasoning

7. Written expression

Whereas New Jersey modified its definition and identifying criterion for learning disabilities, the state did not reconsider the educational label used to identify learning disabled students. The original criterion for determining eligibility for Perceptual Impairment allowed for liberal interpretation. Students were generally classified Perceptually Impaired (PI) based upon poor classroom performance coupled with documented perceptual deficits as demonstrated by observation and/or perceptual testing. This definition of "disorder" was not specific; therefore, a liberal interpretation was often made in order to provide special education services to students in need. The revised definition, which was more specific in terms of criterion, seemed to be more difficult to interpret as the operational definition of "severe discrepancy" was not clear. In the new 1998 definition, again "severe discrepancy" is not clearly delineated. Instead, the determination of exactly what constitutes a severe discrepancy is left up to the judgements of individual school districts. Child Study Teams will define their own criteria. The state continues to refer to learning disabilities as "Perceptual Impairment," however, this term seemed more appropriate when determination of learning disabilities was made by documentation of a deficit in perceptual processing. Nevertheless, Code revision has

eliminated the criterion for determining learning disability by means of perceptual deficit. New Jersey is one of a few states to use the term, "Perceptual Impairment." Terms used in other states include "learning disabilities," "Specific Learning Disabilities," "Neurologically Impaired," "Learning-Language Disabilities," or "Perceptual-Communication Disorder."

The number of children classified as learning disabled has increased more than 100% in the United States since federal legislation mandating special education first took effect (Kavale et al., 1987). One hypothesis for this phenomenon is that some experts feel that the learning disabilities label is more palatable to parents than other classification labels. Some children who were once labeled as mentally retarded are now called "learning disabled." Additionally, remedial programs are receiving less financial support from the federal government; therefore students who would normally be placed in remedial programs are now being classified to ensure service. Also, LD programs have expanded to cover pre-school and adolescents, thus increasing total numbers of children receiving services (Sattler, 1988).

The inadequacies of current classification practices extend beyond the conceptual problems of "learning disabled." Experts indicate that the instruments used to classify students are often inappropriate and are of questionable reliability and validity (Salvia & Ysseldyke, 1987; Sattler, 1988). Studies also reveal that test administrators and those who make placement decisions are often not knowledgeable enough to interpret results accurately (Gartner & Lipinsky, 1987; Ysseldyke, Thurlow, Graden, Wesson, Algozzine, & Deno, 1983). According to a study by Davis and Shepard (1983), when experienced evaluators studied the records of students classified as learning disabled and students who

were not classified learning disabled, they could not distinguish the difference. Attempts

to define learning disabilities have invoked such terms as discrepancy, achievement deficit,

scatter, and process deficit. Ysseldyke et al., (1983) noted that when identifying students

as learning disabled, there is little agreement among psychologists and educators as to how

to accurately measure these conceptual differences.

Lipsky and Gartner (1989) feel that the problem is not only the excessive numbers

of students classified as learning disabled; there are even more troubling issues as to the

accuracy of the label itself. Silver (1997) stated that if one were to evaluate 100 children

with this condition (learning disabilities) he or she might find 30 to 40 different profiles of

strengths and weaknesses. According to Ysseldyke, Thurlow, Christenson, & Weiss

(1987), more than 80% of the student population could be classified as learning disabled

by one or more definitions presently in use. Students identified as learning disabled can

not be shown to differ from other low achievers with regard to a wide variety of school-

related characteristics (Algozzine & Ysseldyke, 1983; Bartoli & Botel, 1988; Ysseldyke,

Thurlow, Christenson, & Weiss, 1987).

Severe Discrepancy: The Search for a Justifiable Formula

There is currently no universally accepted test, test battery, or standard for

identifying children with LD. While a discrepancy between intelligence quotient (IQ) and

achievement has been the accepted criterion for the identification of LD, there is

considerable variation in how the discrepancy is derived and quantified. Federal

regulations do not specify particular formulas or numerical values to assess discrepancy

objectively. The effect of this lack of specification on both clinical and research practices

is substantial. From the clinical viewpoint, a child can be identified as having a learning

disability in one school district but not in a neighboring district because of differences in the measure of discrepancy used. From a research perspective, different approaches to the discrepancy measurement lead to substantially different sample characteristics and different prevalence estimates, which undermine the ability to replicate and generalize findings.

For the individual child, use of the discrepancy standard promotes a wait-to-fail policy because a significant discrepancy between IQ and achievement generally can not be detected until about age eight or nine. Some districts may not identify children with learning disabilities until they are reading well below grade level, generally in about third or fourth grade (Lyon, 1996). By this time the child has already experienced at least a few years of school failure and quite possibly low self-esteem, diminished motivation, and inadequate acquisition of the academic material covered by their classmates during the previous few years.

The use of a severe discrepancy formula between ability and achievement to determine the need for special education has been criticized. Critics have referred to the use of a severe discrepancy as the means by which to reduce the incidence rates of learning disabilities, while creating a false sense of objectivity and precision amongst diagnosticians. The use of such a formula promotes neglect of other criteria for identification (Hammill, 1990; Chalfant, 1989; Algozzine & Ysseldyke, 1987; Council for Learning Disabilities, 1986). However, Reynolds (1990) recognized that when the rules and regulations for The Education of Handicapped Act (EHA) 1975, now known as the Individuals with Disabilities Education Act (IDEA), were being developed,

The only consensus regarding definition or characteristics of this thing

called learning disabilities (LD) was that it resulted in a major discrepancy

between what one would expect academically of LD children and the level

which they were actually achieving. (p. 573)

Mercer and his colleagues (1990) continued to find this consensus in their survey

of State Departments of Education stating, "It is accurate to say the states are currently in

agreement on the importance of the discrepancy component for identifying LD students"

(p. 151).

The method frequently used in the process of identification, the aptitude-

achievement discrepancy, involves the application of psychometric formulas to the

psychoeducational test results of potentially learning disabled children. The literature

revealed that there are critical variables that should be considered when determining the

formula to be used. First, from a practical viewpoint, the formula considered must be

relatively easy to administer and not too complex for the convenient use by practitioners.

Second, the number of years that a student has been enrolled in school should be a factor.

If chronological age is a procedural component, it should be noted that neither not all

children enter school at the same age nor do all students progress through the grades at

the same rate. Third, an acceptable procedure must take into account the gradual increase

in range and heterogeneity of obtained achievement scores as student's progress to the

upper grades. Fourth, the discrepancy achievement concept requires effective procedures

for systematically and consistently addressing the interrelationships between the student's

mental ability and their achievement at all ability levels. Additional variables that must be

considered are measurement error, regression toward the mean, a priori knowledge of the

approximate proportion of the student population which would be identified as discrepant

achievers and comparability of the norm groups (Cone & Wilson, 1981).

Discrepancy Models

The idea of discrepancy as the difference between expected and actual achievement

appears simple, but that simplicity is deceptive. The advantages and disadvantages of

each means of calculating discrepancy must be considered. A review of the discrepancy

models reveals four major, commonly used methods or types of formulas generally used in

the determination of discrepancies between achievement and ability (Algozzine, Forgnone,

Mercer, & Trifiletti, 1979; Berk, 1982; Dore-Boyce, Misner, & McGuire, 1975; Hanna,

Dyck, & Holen, 1979; Mellard, Cooley, Poggio, & Deshler, 1983; O'Donnell, 1980;

Warner, 1981; Cone and Wilson, 1981). These methods can be grouped into the

following categories:

1. Deviation from grade level

2. Expectancy formula

3. Simple-difference score

4. Regression analysis.

Since the passage of EHA, now IDEA, the U.S. Department of Education has

attempted to provide guidance in determining severe discrepancy by proposing various

formulas. Some of the earlier formulas included age and grade equivalents that were

ultimately rejected, primarily because of their mathematical inadequacies (Reynolds, 1985;

Wilson & Cone, 1984). Currently, standard-score comparison methods are generally

considered more accurate in defining discrepancies than age or grade scores, and more

states are mandating their use. Frankenberger and Harper (1987) and Mercer and his

colleagues (1990) found that most states were attempting to operationalize the discrepancy component as part of their criteria for identifying students with learning disabilities. They surveyed state ability-achievement discrepancy using expectancy formulas. These methods are based on determining a discrepancy between ability and achievement. Thus, ability and achievement scores are usually converted to age or grade equivalents and evaluated by an expectancy formula.

Deviation-from-grade-level. The deviation-from-grade-level method is the simplest, and defines discrepancy as the point where a student's achievement falls below current grade placement by some specified amount. This is usually one to two years if a fixed deviation is used; a graduated deviation may be used with older students, for whom greater achievement deficits are necessary.

On the surface, this methods appears to be objective, because it requires only a test of academic achievement. In its simplicity, however, it ignores ability. By considering only achievement deviation, and not for example, intelligence, the deviation-from-grade-level is likely to identify only slow learners, rather than students whose achievement is discrepant from their ability. It identifies low achievement, not the underachievement required for LD diagnosis. Therefore, it lacks the sophistication to make it useful for LD identification

This approach includes two variations: constant and graduated deviation. Constant deviation defines severe discrepancy as several years below grade placement (e.g., 2 years below current placement). Some states apply the constant deviation criterion in terms of current age instead of grade placement.

In graduated deviation, the degree of deviation between grade placement and achievement varies as a function current grade placement. The graduated deviation is based on the premise that the higher the grade placement, the more years the student must be behind (e.g., a 1-year discrepancy at second grade for an 8-year-old is more severe than a 1-year discrepancy at the 10th grade for a 16-year-old).

Chalfant (1985) noted that the procedures for determining deviation from grade-level are easily administrated, however they tend to overidentify slow learners and underidentify students with high intelligence scores. Reynolds (1985) stated that grade-level deviation is not an acceptable method for determining a severe discrepancy. Numerous problems exist regarding grade-level scores, including that grade equivalents may vary markedly from test to test and from subtest to subtest within the same battery (Berk, 1982)

According to Mauser (1981), a significant discrepancy exists when a child of a given age and ability achieves below the following age in one or more pre-academic or academic areas. He proposed the following:

Figure 6

Mauser's Proposed Discrepancy Chart

Grade Level of Student	Age of Student	Score below Ability
Preschool	3 to 4-11	9 months
K to 3	5 to 9-3	1 year
4 to 6	9-4 to 12-4	1.5 years
7 to 8	12-5 to 14-4	2 years
9 to 12	14-5 to 17-11	3 years

Expectancy. Expectancy methods are based on determining a discrepancy between ability and achievement. Thus, ability and achievement scores are usually converted to age or grade equivalents and evaluated by an expectancy formula. Expectancy methods include the concept of expected achievement predicted from IQ, Mental Age (MA), and/or Chronological Age (CA) and compared to actual achievement levels. These models attempted to predict a student's probable level of achievement, and compare it to actual functioning. There are several forms of the expectancy formula, the easiest being that proposed by Kaluger and Kolson (1969). Their formula, Learning Expectancy Level = Mental age − 5, assumes that the child is five years of age when he/she enters school and fails to address the actual numbers of years of schooling. The most frequently used is the Harris-Federal formula which is a modified version of a formula developed by Harris (1970) and proposed for use by the U.S. Office of Education in response to the identification mandates of PL 94-142. The Harris-Federal formula is:

Significant discrepancy = Chronological age $(IQ \div 300 + .17) − 2.5$ (Frankenberger & Harper, 1987).

Based upon a comparison of eight formulas, Forness, Sinclair, and Guthrie (1983) concluded that each yielded different results. The percentage of students identified as having learning disabilities ranged from 10.9% to 30% when the eight formulas were applied to a sample of students. Expectancy formula methods, however, do not consider the respective reliabilities of the tests and the discrepancy score that results.

Although an improvement over deviation-from-grade-level methods, expectancy formula methods were of limited usefulness because grade equivalent scores can be easily misinterpreted.

Standard-score difference.   The standard-score difference method also compares ability and achievement, but makes the comparison with a common metric (the z or t scores) on standardized IQ and achievement tests.   The z or t score is computed and the difference between these standards scores are used to determine whether a discrepancy exists.   With a uniform basis of comparison, simple subtraction can determine the presence of a discrepancy. This approach is among the most often used for LD classification (Kavale et al., 1995). If the intelligence and achievement measures are both standardized with a mean of 100 and standard deviation (SD) of 15, then LD eligibility can be demonstrated when there is a predetermined difference (usually 1 SD). The ease with which it can be used and its intuitive appeal make this method probably the most popular (Evans, 1992; Michigan Association of Learning Disabilities Educators, 1992). Authorities such as Berk (1984), Chalfant (1985), and Reynolds (1992) agree that standard or scaled scores possess the necessary psychometric properties for determining a severe discrepancy. In this method, all scores are converted to standard or scaled scores by scaling them to the same mean and standard deviation. As a result, all scores are expressed in terms of a common metric. A principal advantage of standard scores lies in the comparability of score interpretation across age (Reynolds, 1985).

The standard-score difference method has some inherent problems, however. One is the assumption that intelligence and achievement scores be identical, that an IQ of 120 should be associated with a reading z score of 120. This would only be true if IQ and achievement were perfectly correlated. Although the standard score difference method is considered more accurate and statistically sound than age or grade scores, it is criticized for not taking into account measurement error and the effects of regression toward the

mean. Regression toward the mean refers to the tendency of extreme scores on one measure to be less extreme on a second related measure and is the result of imperfect correlation between the two measures.

Because of the phenomenon of regression toward the mean, the student with an IQ of 120 would have an expected achievement score of 113, and one with an IQ of 85 would have an expected achievement level of 88. Thus, the standard-score difference approach using a fixed discrepancy (e.g., 1 SD) introduces a systematic bias that overstates the number of high-IQ underachievers and under-identifies low IQ underachievers (Reynolds, 1985). By not considering regression of IQ on intelligence, theory suggests that the standard score difference model will systematically overestimate the frequency of LD among those with above-average abilities (Reynolds, 1990; Wilson & Cone, 1984; Thorndike, 1963). Thus, the procedure could be viewed as discriminatory in that all persons do not have an equal chance of having a severe discrepancy.

Regression discrepancy. The most psychometrically defensible method for quantifying an aptitude-achievement discrepancy is the approach using regression methods. The multiple regression discrepancy approach is considered to be conceptually and statistically superior to other discrepancy methods, but it is among the least-used models. Regression methods use a prediction equation that considers the magnitude of the correlation between IQ and achievement. At each IQ level, a predicted (i.e., expected) achievement score is estimated; it is then compared to an actual achievement level. Regression methods take into account that when a dependent variable (e.g., academic achievement) is predicted from a highly correlated measure (e.g., IQ); the second measure will regress toward the mean over time. Regression analysis is a procedure that includes a

statistical correction for the tendency of scores to regress toward the mean. Thus, high or low scores tend to move toward the mean on subsequent testings, thereby introducing sources of error in measurement. As a result of this circumstance, the regression method requires a large ability-achievement score difference to define severe discrepancy (Schuerholz , Harris, Baumgardner, Reiss, Freund, Church, Mohr & Denkla, 1995).

Students are not expected to have achievement scores exactly matching their IQ. Such an expectation would exist only if the correlation between the two measures were perfect, or 1.00. Rather, expected achievement is defined as the mean achievement score of students with the same IQ. The mean achievement score can be determined mathematically by knowing the correlation between the IQ test and the particular achievement test used. In general, the correlation between intelligence and achievement tests commonly used in LD diagnosis range from .5 to .7.

Students with a LD are differentiated from slow learners through expected achievement predictions from IQ scores. Confidence intervals define the range of predicted achievement levels (Wood, 1991). A concern with regression models is to control for Type I and Type II errors. Type I errors occur when nonhandicapped students are identified as LD, and Type II errors result with students with a LD are not identified by the criteria.

Reynolds (1985) claimed that two conditions must be satisfied to establish a severe discrepancy between a student's two scores. First, the difference between the scores must be reliable enough for one to believe that it is real and not a result of measurement errors. Second, the difference must be great enough to be considered rare among students without learning disabilities.

The phenomenon of regression has been observed since Galton's time (1883, as cited in Kavale et al., 1995). Since Galton, it has been known that predicted performance on one test (e.g., reading) generally will not be equal to performance on the test from which the prediction is being made (McLeod, 1983).

Numerous investigators (Mercer et al., 1996) noted that regression analysis is weakened substantially when scores from tests with low reliability are used.

The initial step in regression methods is to establish values for a "significant discrepancy" between predicted and actual achievement. The value is obtained by the formula:

$$(y_i - \hat{y}) > 15\underline{z} \times \text{square root } (1-\underline{r}_{xy})$$

The standard deviation of IQ and achievement tests (assumed to be 15 when expressed as standard scores) multiplied by a specified z value (e.g., $\underline{z}$=1.96 for a 95% confidence level), and then multiplied by the square root of 1 minus the correlation between intelligence and achievement (approximately .50 - .65). This is a procedure most often recommended for calculating regressing discrepancy values (Cone & Wilson, 1981; Reynolds, 1985).

Without considering regression effects, predications about achievement may become distorted, especially with LD students, who are more likely than others to score at the extremes (especially on achievement tests).

The effect of the regression phenomenon can be illustrated by comparing it to the standard score difference model at several IQ levels. Using the regression approach and an IQ-achievement score model, students achieving a mean IQ of 120 would be expected

to attain a mean achievement score of .120. Using the regression approach and an IQ-achievement test correlation of .6, children with an IQ of 120 would be expected to attain a mean achievement score of 112. With these high IQ students, the standard score difference approach would contribute eight additional points toward a student's score on a severe discrepancy over the regression approach. Students with an IQ of 80 would be expected to obtain a mean achievement score of 80 using the standard score difference model, but an 88 using regression. In contrast to the high IQ students, the low IQ students would be awarded eight fewer points toward a severe discrepancy when regression is not used.

Two additional equations are required in using the regression method. The first calculates predicted achievement, $\hat{y}$. When both intelligence and achievement are expressed as standard scores ($\underline{M}$= 100; $\underline{SD}$ = 15), predicted achievement can be calculated from:

$$\hat{Y} = r_{xy} (IQ - 100) + 100 \quad \text{(Kavale et al., 1995)}$$

The second involved formulating a confidence interval (CI) around the predicted achievement score. The statistic needed for forming a CI is the standard error of estimate (SE) an index of error associated with the predicted score. The larger the $\underline{SE}$, the less accurate the prediction:

$$\underline{SE} = \underline{SD} \: \underline{x} \: \text{square root} \: (1 - r_{xy}^{2})$$

The $\underline{SE}$ is then added to and subtracted from $\hat{y}$, to form the CI:

$$CI = \underline{y} \pm \underline{z} \: (\underline{se})$$

where z is the confidence level desired, found in the normal curve table.   Using these formulas, the mechanics of a regression method can be illustrated as such: assume an IQ score of 109, an actual achievement score of 82, and a correlation (r_{xy}) between IQ and achievement of .58. The first step is to calculate predicted achievement, $y = r_{xy}$ (IQ – 100) + 100 + 105.22. Next, the SE is calculated using SD = 15, which is 12.22. The CI with a 90% confidence level (z = 1.65) will be 105.22 plus or minus 20.16, a range from 85.06 to 125.38. The actual achievement (y) score of 82 falls below the lower end of the CI, indicating a significant discrepancy. (Kavale et al., 1995). Calculating discrepancy using regression methods has some problems. The calculated regression equations may depend on the tests used.   Additionally, disadvantages involve the correlation between intelligence and achievement and the selection of z-score values. The correlation between IQ and achievement is neither exact nor stable, and is likely to show variation across ages, social classes, and LD populations.

The United States Department of Education, Special Education Programs Work Group on Measurement Issues in the Assessment of Learning Disabilities recommended that regression procedures be used to determine significant discrepancy (Reynolds, 1990). In fact, this group recommended six discrepancy criteria that should be considered in selecting a method for determining an achievement-potential discrepancy:

1. The use of standard scores should be employed when establishing a severe discrepancy level from standardized test measures.

2. When using standardized tests for comparison, the phenomenon of regression should be taken into account. For this procedure, only tests with reliabilities should be used.

where z is the confidence level desired, found in the normal curve table. Using these formulas, the mechanics of a regression method can be illustrated as such: assume an IQ score of 109, an actual achievement score of 82, and a correlation (r_{xy}) between IQ and achievement of .58. The first step is to calculate predicted achievement, $y = r_{xy}$ (IQ – 100) + 100 + 105.22. Next, the SE is calculated using SD = 15, which is 12.22. The CI with a 90% confidence level (z = 1.65) will be 105.22 plus or minus 20.16, a range from 85.06 to 125.38. The actual achievement (y) score of 82 falls below the lower end of the CI, indicating a significant discrepancy. (Kavale et al., 1995). Calculating discrepancy using regression methods has some problems. The calculated regression equations may depend on the tests used. Additionally, disadvantages involve the correlation between — intelligence and achievement and the selection of z-score values. The correlation between IQ and achievement is neither exact nor stable, and is likely to show variation across ages, social classes, and LD populations.

The United States Department of Education, Special Education Programs Work Group on Measurement Issues in the Assessment of Learning Disabilities recommended that regression procedures be used to determine significant discrepancy (Reynolds, 1990). In fact, this group recommended six discrepancy criteria that should be considered in selecting a method for determining an achievement-potential discrepancy:

1. The use of standard scores should be employed when establishing a severe discrepancy level from standardized test measures.

2. When using standardized tests for comparison, the phenomenon of regression should be taken into account. For this procedure, only tests with reliabilities should be used.

3. When using standardized measures, attention should be paid to the comparability of the school population with the norming sample.

4. Informal assessment procedures can represent an adequate and appropriate method of establishing a severe discrepancy. In the case of very young children or bilingual or bicultural children, informal assessment represents the only adequate method of establishing this criterion of eligibility.

5. The presence of a severe discrepancy between potential and achievement is only one of a number of criteria that should be used to establish eligibility for learning disability services.

6. Assessment and placement considerations for learning disabled children should be primarily an educational, not a psychometric, enterprise. Placement decisions should be based on assessments that are relevant to instruction.

Research suggests that there is a great overlap between comparisons based on regression procedures and those based on standard scores.

General criticisms are that discrepancy formulas assume that the tests used to evaluate the child measure independent functions, when actually reading and intelligence tests, to some extent, measure the same factors. The same processing difficulties that reduce achievement test scores may reduce intelligence test scores. Formulas disregard individual ability patterns and the variability that is inherent in growth and development. Formulas also tend to be used in a mechanical fashion. Another criticism is that diagnostic labeling is a skilled clinical decision-making activity, therefore, a formula that uses only two test scores can not substitute for skilled clinical judgement and a synthesis of all relevant information. Additionally, tests used to classify children must be based on reliable

and valid measuring instruments, yet different instruments yield different estimates of intelligence and achievement skills. Consequently, clinicians using the same discrepancy formula but different tests are likely to arrive at different classifications (Sattler, 1988).

Discrepancy formulas fail to identify those children with learning disabilities who show no discrepancy between achievement and intelligence test scores. Hence, they overlook children who demonstrate a LD (defined as a deficit in information processing despite average intellectual and sensory ability) that interferes with the overall development of both intellectual and achievement skills (Sattler, 1988).

In a position statement issued by the Board of Trustees of the Council for Learning Disabilities (1986), opposition to the use of discrepancy formulas to determine eligibility for learning disability services was presented. The Board of Trustees of the Council for Learning Disabilities took this position because:

1. Discrepancy formulas tend to focus on a single aspect of learning disabilities (e.g., reading, mathematics) to the exclusion of other types of learning disabilities.

2. Technically adequate and age-appropriate instruments are not currently available for all areas of performance, especially for preschool and adult populations.

3. Discrepancy formulas may contribute to inaccurate conclusions when based on assessment instruments that lack adequate reliability or validity.

4. Many learning disabled individuals' intelligence test scores are depressed so that the resulting difference between intelligence and achievement test scores may not be large enough to meet discrepancy criterion. Therefore, such individuals may be denied access to, or may be removed from, needed services.

5.   Many underachieving individuals obtain significant discrepancies between intelligence and achievement test scores for reasons other than the presence of a learning disability.

6.   The use of discrepancy formulas often creates a false sense of objectivity and precision among diagnosticians who feel that their decisions are statistically based when formulas are employed.

7.   In practice, discrepancy formulas are often used as the sole or primary criterion for determining legal eligibility for learning disability services.

8.   Although promoted as a procedure for increasing accuracy in decision-making, discrepancy formulas often represent a relatively simplistic attempt to reduce incidence rates of learning disabilities.

<u>Classification Procedures</u>

The process of classifying a child as learning-disabled typically begins when a teacher or a parent, or both, become dissatisfied with the child's performance in school. Testing is recommended.

All states have special education rules and regulations that specify eligibility criteria for special education services. The criteria differ considerably among states and within states, typically there is considerable variation in the extent to which local education agencies use the state criteria. Ysseldyke and Algozzine (1982) tried to identify the kind(s) of decisions made at special education team meetings by videotaping 32 meetings and carefully analyzing the contents. They reported that it was impossible to define the mechanisms used by the teams to make the decisions. In addition, at the conclusion of

meetings, the teams did not regularly state or formally write down the decisions they had reached.

States and school districts across the nation have different test requirements and diagnostic rules. In some states, children are classified as learning-disabled if they are reading a year or so below grade level. In other states, the classification is based on a sophisticated statistical measure of the discrepancy between the child's potential and achievement on standardized tests (Farnham- Diggory, 1992). Exclusion from referral to the multidisciplinary team on learning disabilities (but eligible for potential referral for other special assistance) are the students with the following primary handicapping factors and associated criteria:

1.   I.Q. equivalent of less than 80 (full scale) on the appropriate Wechsler scales.

2.   Vision: less than 20/50 in the better eye after correction (Snellen-E).

3.   Hearing: using the pure tone audiometer, any permanent loss greater than 40 decibels. Permanent implies a medical history or disease of the ear. This excludes a loss due to infection, allergies, or fluid build up.

4.   Emotional Disturbance: implies a chronic disability that is psychologically validated.

5.   Motor handicap: may be serviced when not the dominant disability.

6.   Environment, economic, and cultural: implies the child has not been exposed to learning experiences appropriate to the child's age and ability.

7.　　Medical history/current state of physical health: has/will prevent expected participation in an appropriate educational program for the learning disabled (Mauser, 1981).

Whatever the school rules, test data of various types are obtained. A conference is then convened, usually called a Child Study Team meeting, or an IEP meeting. IEP stands for Individualized Educational Program.

By the time a child is having classroom difficulties serious enough to be referred for testing, a stream of informal procedures will have also been set in motion. The teacher will typically discuss the child with other teachers, the principal, the school psychologist, the special education teacher, and often with parents. A referral to a school-based intervention program might be made. At this meeting committee members provide recommendations to the referring teacher regarding alternate instructional and/or behavioral interventions which might benefit the student. If a disability is suspected, the child might be identified for a child study team evaluation of their eligibility for special education.

The term assessment has been used synonymously with the term testing. However, from the standpoint of the learning disabled student, testing and assessment are not interchangeable terms. Assessment is a much more complex process that includes significantly more than the administration of a test to an individual. The nature of the population of individuals with learning disabilities assumes that many of the areas of difficulty do not show up on tests. In general, the purposes of assessment are as follows (Mauser, 1981):

1. To make screening decisions.

2. To group or classify the population.

3. To evaluate potential accomplishments.

4. To foster educational and vocational goals.

5. To plan and design appropriate programs of a remedial or compensatory

nature.

6. To measure and evaluate outcomes of instruction.

7. To certify the individual's present achievement status.

8. To serve as a data base for present and future research.

Assessment and decision making in school settings are supposed to be done by a multidisciplinary team, a requirement specified in Public Law 94-142. This requirement was written into law in order to limit unilateral decision-making. But who, specifically, makes these decisions, and exactly how are they made? Ysseldyke and Algozzine (1982) conducted a study at the University of Minnesota's Institute for Research on Learning Disabilities to investigate issues in the placement team's decision-making process. Through questionnaires, videotapes and interviews, special education directors were asked to describe the team decision-making process as it was carried out in their schools. Specifically, they were asked to identify the people who typically participate in team meetings, the major steps in the assessment and decision-making process, the factors thought to influence the process and its outcomes, and the problems experienced.

Although team make-up was relatively consistent across school districts, there was much variation in the actual assessment and decision-making sequence. Ysseldyke and Algozzine (1982) found that often placement decisions were made at the same meetings at

which many other kinds of decisions were made. In most instances it was apparent that the decisions were made before the actual meetings took place.

After conducting a number of other investigations into the assessment decision making process, Ysseldyke and Algozzine (1982) concluded the following:

1.   The most important decision that gets made in the entire assessment process is the decision by a regular classroom teacher to refer a student for assessment. According to their 1981 nationwide survey of Directors of Special Education, 3 to 5% of the school population was referred; 92% of the referred students were evaluated, and 73% were placed in special education classes.

2.   Very many non-handicapped students were being declared eligible for special education services.

3.   The identification of a student as handicapped depended on the criteria used. When commonly used definitions of learning disabilities were applied to normal students, over 75% could have been labeled LD. When they applied the same criteria to school identified LD students, about 25% could not be classified LD.

4.   Those who advocate "clinical judgement" in making eligibility decisions about students have to rethink their position. Given profiles of scores on psychometric measures, they found that psychologists and special education teachers were able to differentiate between low-achieving students and students labeled learning disabled with only 50% accuracy. Naïve judges, who had no more than an introductory course in education or psychology, evidenced a 75% success rate.

5.   Placement decisions made by teams of individuals have very little to do with the data collected on students. They were more a function of naturally occurring pupil characteristics than they were databased.

The special education team decision making process described in public school settings is at best inconsistent. In research conducted by Ysseldyke and Algozzine (1983) they found some instances of what would be considered "good practice." However, in more instances the process operated to verify problems first cited by teachers and team efforts were usually directed toward a "search for pathology". They concluded that "it appears that a process has been created (and currently is operating at high rates) as a rationale for the provision of services to a group of students failing in school" (p. 30).

During the assessment process the child study team will administer standardized tests, specific to their domain, to the student. By the time test scores are compiled, concerned school personnel may have largely decided how to handle the problem. The kinds of decision making that can have perhaps the most profound effects are whether students are eligible for special or remedial education services, can be classified as handicapped, and should be placed in special education programs. It may be advantageous to distinguish among these three decisions, although in practice it is nearly impossible to do so. Ysseldyke, Algozzine, and Thurlow (1980) reported that most teams make eligibility, classification, and placement decisions concurrently.

On paper, at least, eligibility, classification and placement decisions are made on the basis of assessment data. All states have special education rules and regulations that specify eligibility criteria for special education services.

These informal, behind- the-scenes classification procedures are not necessarily

bad, however, there are several implications of such considerations. First, an alarming

number of children are misclassified as learning disabled (Farnham-Diggory, 1992). Sylvia

Farnham- Diggory (1992) estimates that 80% of the children who are classified as

learning-disabled should not have been. Second, the rare, genuinely learning-disabled

children, perhaps five out of every thousand children, are often lost in the misclassified

crowd. The informal classification procedures used by school personnel, however well

meant, usually do not detect such children, especially if the children are well behaved in

class. Finally, misclassification of children has extensive economic implications. Once a

child has been classified as learning-disabled, additional money is sent to the school district

on the child's behalf. At present, it amounts to approximately seven thousand dollars per

learning-disabled child per year.

Additionally, there are now many private agencies that specialize in diagnosing,

remediating, or counseling students with learning disabilities. Learning disability is a

growth industry. The number of children classified LD has grown tremendously

prompting new policies intended to halt misclassifications. There are estimates that within

the next few years, the number of children that a district will be permitted to classify as

learning-disabled will be restricted to 2 percent of the total number of handicapped

students. Thus, it will become imperative for districts to develop objective, consistent

criteria for detecting the genuinely learning-disabled child.

Conceptual Models of Assessment

A variety of conceptual models of assessment that are appropriate to the

assessment process of learning disabled students have been organized (Mauser, 1981).

Included are the medical model, the social deviance model, the psycho-educational process model, the task analysis model, and the pluralistic model. Basic differences exist in terms of definitions, assumptions, techniques and procedures used in evaluation and measurement of the student.

The Medical Model. The medical model defines abnormality and symptomatology in terms of underlying biological pathology. Normalcy is the absence of symptomatology that has its origin physiologically. Measurement is deficit based on the pathological symptoms presented in terms of frequency and magnitude. Typical measures used include a variety of screening procedures including prenatal and postnatal developmental data, health histories, sensory analysis, and other measures assumed to be related to an organic pathology. Intervention and treatment systems will focus on the biological organism.

The Social Deviance (Ecological) Model. This model gets its roots from a sociology context. Normalcy is behavior that conforms to expectations of the other members of the group or environment. Abnormal behavior is the behavior that does not meet the group's expectations. The social deviance model is complex as it assumes multiple definitions of normalcy depending on the environment in which the individual is participating. Learning disabled students may be seen as handicapped in task specific situations related to functioning at home or school, but not within their community or peer group. Assessment strategies in the social deviance model focus on the assets and liabilities specific to the particular setting. The intervention-treatment system would focus on the modification of the specific environments to promote optimum development and adjustment of the student.

The Psycho-educational Process-Ability Model.   This model has many similarities to the previously discussed medical model, however with an additional educational component. Frequently referred to as the underlying ability or ability training model, this model attempts to identify the underlying or prerequisite abilities necessary for learning. The assumption is that if there is a deficiency in these underlying or prerequisite abilities, a learning problem or difficulty will result.

Task Analysis (Skill) Model.   The task analysis model, like the psycho-educational process model has been implemented primarily in educational settings. This model promotes assessment of academic skill development and accordingly designs differential teaching strategies to advance the student from present status to where the teacher believes the student should be performing. Students are not compared with each other so no distinction between normal and abnormal is made. Emphasis is on the content the student has mastered rather on any concept of deviation from the normal. This model is based on behavior that reduces expected tasks into component skills. The identified skills are then taught although alternative routes for achieving the end behavior may be taken. Measurement instruments are primarily criterion referenced and should indicate the extent to which the student demonstrates behavior necessary to successfully complete the task.

The Pluralistic Model.   The pluralistic model stresses overcoming the bias in assessment that is single culture dominant. It focuses on the philosophy that differences in test performances among racial and ethnic groups are due to test biases. True capabilities of the population are difficult to determine because of the scarcity of such instruments that would not penalize the individual for his/her ethnicity. The assessment process in this

model advocates that the student's learning potential and present status is a tenuous.

Assessment procedures are culture specific and include items based on cultural materials

with which the student is familiar. Another approach is to teach the child the relevant

skills after pre-testing and before post-testing and then measure the gains made based on

the teaching strategies. Figure 7 represents a "Comparison of the Medical and Social

System Models of Disabilities".

Figure 7

Comparison of Medical and Social System Models of Disabilities

Characteristic	Medical Model	Social System Model
Definition of problem	Biological anomaly	Discrepancies between expected and observed behavior in a specific context.
Focus of treatment	Focus on cause with purpose of cutting or compensating for underlying problem	Eliminate symptoms through direct educational or behavioral interventions
Initial Diagnosis	In preschool years by medical professionals	During school-age years by professionals in education or psychology
Incidence	Low (about 1% of school-age population)	High (about 9% of school-age population)
Prognosis	Life-long disabilities	Disabilities may be recognized officially only in school years.
Cultural context	Cross-cultural	Arguably, culturally specific
Comprehensiveness	Usually affects performance in most roles in most contexts	May affect one or a few roles in a few or multiple contexts

Source: Identification and Assessment of Students with Disabilities, Daniel J. Reschly (1996)

Types of Assessment Procedures

        A variety of procedures are available in the collection of information relative to the

assessment of learning disabled students. Each requires different levels of expertise and

competence on the part of the person utilizing the specific procedure. Included are:

        1. Observations

        2. Screening devices

        3. Check lists and rating scales

        4. Informal consultations

        5. Structured interviews

        6. Work sample analysis

        7. Task analysis

        8. Norm referenced tests

        9. Criterion referenced tests

        Observations. Observation refers to the study of the individual in learning, work

or social environments over a period of time. Both systematic and nonsystematic levels

of observation can be used. In a nonsystematic observation, the viewer basically makes

notations of the behaviors that appear to be important. In systematic observation, the

observer will target one or more specific behaviors. The behavior to be observed is

defined or operationalized and is then measured or counted in terms of frequency,

magnitude, and duration.

        Screening Devices. Screening devices refer to a variety of quick and easy surveys

of individual or group characteristics in a variety of areas. They can be quite efficient but

the accuracy of the estimate is often suspect.

Check Lists and Rating Scales.   Check lists and rating scales are also examples of quick, easy and efficient ways to collect information. They are administered in a semi-structured style, and are often used when other methods of obtaining data are not readily available.

Informal Consultation.   Informal consultation is the type of procedure where the observer or the team conducting the assessment discusses the variables assessed and the student or group being assessed with knowledgeable resources.

Structured Interviews.   This approach is used to gather information that is not readily obtainable by other methods. The major purposes of the structured interview is to gather information about the student's area of difficulty and determine what resources have previously collected data on the student.

Work Sample Analysis.   Work sample analysis is a procedure to analyze both the incorrect and correct responses by students on their written work. Analysis of the types and numbers of errors, patterns or errors as well as success is the basis of this procedure.

Task Analysis.   Task analysis is an assessment-related procedure that identifies the major component skills and appropriate sequence necessary to complete a task. This approach can be a logical extension of the previously discussed work sample procedure.

Norm Referenced Tests.   Norm referenced tests compare the student being tested to the performance of peers on the same instrument. All norm referenced tests are objective and have predetermined answers and standards for recording and scoring responses. The result expressed in norm referenced tests such as percentile scores, grade equivalent scores, and standard scores do not provide the educator with appropriate information for curriculum planning. Criterion referenced measures are often preferred.

Criterion Referenced Tests.   Criterion referenced tests compare the performance of the student being tested against the content of the material to be acquired or learned. The performance of peers is not a relevant factor in criterion referenced testing. The items included on criterion referenced measures are directly connected to instructional goals and objectives.

Who Influences IEP Committee Decisions?

There is no greater demand for professional excellence among educators than in their decision-making activities. What constitutes an appropriate education for a handicapped child is embedded in the six leading principles of PL 94-142: (a) zero reject, (b) nondiscriminatory evaluation, (c) individualized education programs, (d) least restrictive environment, (e) due process, and (f) parental participation.

The decision-making process involved when students are referred from "regular" education and are considered for placement in one of a number of "special" educational programs, or are retained in the regular classroom, progresses through a number of critical steps. They are made up of referral, appraisal, assessment, reappraisal, evaluation, and placement.

Most commonly the regular education teacher expresses concern about a student's academic abilities to a member of the child study team. This is regarded as a referral. From this point an appraisal is conducted to determine if the referral is warranted. If so, an assessment, and possibly placement into a "learning disabilities" program ensues. However, an educational decision can be made not to evaluate if the School Appraisal Team (or pre-intervention committee) determines, after completing an educational assessment, that further assessment is not necessary.

Personnel at individualized education program (IEP) meetings generally represent four points of view: parental, administrative, instructional, and diagnostic. There is evidence that IEP committee members make differential contributions and are afforded different degrees of status (Gilliam & Coleman, 1981). Results of a study conducted by Gilliam and Coleman indicate that for these four areas the roles of the participants and their expected functions were closely matched. That is, the psychologist was perceived to have the most influence in diagnosis; the special education teacher, in planning and implementation; the director, in placement; and the supervisor, in due process decisions. Parents were perceived as low in actual contribution and influence.

Their findings also indicated that there was a hierarchy of influence among IEP committee members, and that those roles attributed high status before the meetings were not necessarily those considered influential after the meetings. Those roles considered most influential (special education teacher, psychologist, director) may be so because they offer hard data in terms of test scores, diagnostic reports, and cumulative records. Therefore, they are able to contribute information based upon data where parents frequently have little hard date to contribute. Figure 8 represents the "Perceived Importance of the IEP Committee Members versus Actual Influence and Contribution".

Figure 8

Perceived Importance of IEP Committee Members versus Actual Influence

and Contribution

		Rank Order	
Role	Perceived Importance	Post-meeting Contribution	Actual Influence
Special Ed. Teachers	1	1	1
Psychologists	2	3	2
Directors	11	5	3
Supervisors	12	4	4
Special Ed. Consultations	5	2	5
Regular Ed. Teachers	4	7	6
Guidance Counselors	8	6	7
Social Workers	13	8	11
Parents	6	10	8
Principals	3	9	9
Reading teacher	7	12	10
Speech	9	*	*
Therapist	10	*	*
School nurse	15	*	*
Others	14	*	*

*This role was not rated frequently enough to be ranked. (Source: Who Influences IEP Committee Decisions? Gilliam & Coleman 1981).

Educators are faced with a major dilemma in their efforts to develop a defensible

set of procedures for identifying learning disabled students. Federal and state definitions

of this handicapping condition generally are not helpful. While definitions usually specify

that students must demonstrate a discrepancy between intellectual capability and

achievement (in a variety of areas), the magnitude of the discrepancy typically is not

specified. Epps, Ysseldyke, and Algozzine (as cited in Thurlow, Ysseldyke, & Casey,

1984) found more than 40 different suggested sets of criteria for identification of LD

student. Thurlow, Ysseldyke, & Casey distributed a survey to 127 LD teachers in January

1981 from 36 states, the District of Columbia, and Canada. The teachers were asked to

respond in narrative form to the question, "What is the criterion for a student to be

classified as learning disabled in your school district?" They were also asked to indicate

whether they agreed with the criterion.

Surveys from 100 teachers located in 36 states were returned. Although federal

regulations suggest some type of discrepancy between ability and achievement, the LD

teachers did not unanimously cite this criterion. Four basic categories of criteria were

reflected in their responses: (a) ability-achievement discrepancy, (b) achievement deficit,

(c) test scatter, and/or (d) processing disorder. Nearly 40% of the teachers' responses

(N=45) were overly general, such as "testing," "team decision," or "learning problems."

An "ability-achievement discrepancy" referred to a difference between a student's

ability level and the student's exhibited achievement level. This type of criterion for

identifying LD students was listed by 20 (27.4%) of those teachers whose responses could

be classified into one of the four basic criteria. An "achievement deficit" referred to a

difference between a student's actual grade and age and the grade or age level of the

student's achievement. An achievement-deficit criterion was noted by 14 (19.2%) of the teachers. "Test scatter" referred to the pattern or configuration formed by sub-test scores. This type of criterion was given by 2 (2.7%) of the respondents. A "processing-disorder" referred to difficulties in processing information. Three (4.1%) of the teachers listed criteria that referred only to processing disorders. The use of a single criterion accounted for 53.4% of the teachers' responses.

Not only did teacher's responses suggest little national consensus about a criterion for identifying learning disabilities, but also, even within states the criteria reportedly used by school districts varied greatly.

Exactly how should schools respond to the problem of the "definitional dilemma" encountered when attempting to set up meaningful criteria to identify students who have learning disabilities? LD students must be identified so those federal funds can be obtained. Some school districts have attempted to solve the definitional problem by concentrating on the educational progress of students, rather than on students' performance on norm-referenced tests (Thurlow, Ysseldyke, & Casey, 1984). Other school districts have chosen to ignore the problem until someone tells them exactly what to do. In the meantime, some students who are in need of special education services may be going without, and some students who would be better off not placed in special education are there.

Summary

The definition of learning disabilities included in Public Law 94-142 and the Individuals with Disabilities in Education Act is based on discrepancies between IQ and achievement test scores. Review of the literature revealed that the definition of a specific

learning disability, and more generally, the method for determining what constitutes a

learning disability has been an unsettled topic since the early 1800s. Federal code,

adopted in 1976, stated that in order to determine the presence of a learning disability a

major discrepancy must exist between expected achievement and ability that is not the

result of other known and generally accepted handicapping conditions or circumstances.

Early discrepancy formulas were rejected as being too broad and ineffective which left no

clear direction for the states on how to quantify the discrepancy between aptitude and

achievement. Consequently, most states (86%) have included the existence of a severe

discrepancy between intellectual ability and achievement in one or more specified

academic areas as a necessary, but not exclusive condition for determining a student to be

learning disabled. The debate continues, however, as to which is the best choice of

models for determining a marked discrepancy between ability and achievement.

Currently there is no universally accepted test, test battery, or standard for

identifying learning disabled children. There is considerable variation in how the

discrepancy between IQ and achievement is derived and quantified. Since federal

regulations do not specify particular formulas or numerical values to assess discrepancy

objectively, there is variability from one school district to the next, and even from one

child study team within a district to the next, on how to determine a significant

discrepancy. Of the four most commonly used methods or types of formulas generally

used in the determination of discrepancies between achievement and ability the most

psychometrically defensible method is the approach using regression methods. Regression

methods use a prediction equation that considers the magnitude of the correlation between

IQ and achievement. Students with a LD are differentiated from slow learners through expected achievement predictions from IQ scores.

There have been numerous criticisms of the discrepancy model, not the least of which comes from the Board of Trustees of the Council for Learning Disabilities wherein they stated that "discrepancy formulas tend to focus a single aspect of learning disabilities to the exclusion of other types of learning disabilities" (1986, p. 349).

Students with learning disabilities must be identified so those federal and state funds are directed to special education programs. However, without agreement on both the definition of what constitutes a learning disability and the best method to determine its existence, accurate identification of the "truly" learning disabled student may continue to be an issue at federal, state and local levels. The implications of misclassifying students can have far reaching effects for students in terms of self-esteem and motivation, and for school districts in terms of the allocation of its fiscal resources.

Chapter III

RESEARCH METHODOLOGY

Introduction

This study will apply an accepted statistical formula to data already collected on

children who were classified by a variety of methods as "learning disabled" by their

respective Child Study Teams. The study will seek to determine the validity of the

classification using the aforementioned methods. Will one method identify more students

as having a severe discrepancy than the other has? Will one method systematically favor

different ability groups? How will the results of the statistical formula compare with the

professional judgement of the Child Study Team?

Setting: The Focal District

The borough of Allendale, New Jersey, is located approximately 20 miles north-

northwest of New York City, and is in the northwestern section of the County of Bergen.

The Borough is primarily a residential community, which encompasses 3.13 square miles

of land. The 1994 estimated population of the Borough of Allendale was 6,076. In 1990,

approximately 21.64% of the population were between the ages of 5 and 19, and 4.59%

of the population was comprised of minorities.

There are two elementary schools in Allendale for students in kindergarten

through eighth grades. The lower primary school houses the pre-school handicapped

program through third grade, while the other school contains grades four through eight. Grades six, seven and eight follow a middle school model with departmentalization.

District Factor Grouping

In 1974, the Department of Education divided the state's school districts by socioeconomic status. Districts were arranged in ten groups, known as District Factor Groups (DFG), and designated DFG A through DFG J, A being the group with the lowest socioeconomic status and J the highest. The DFG is an index of socioeconomic status that is created using data for "indicators" available in the decennial U.S.Census. Socioeconomic status cannot be measured directly. Rather, the literature holds that it is a function of other measurable quantities (traditionally, the basic three are income, occupation and education.) (New Jersey Principals and Supervisors Association, 1998) Therefore, the DFG is a composite statistical index created using statistical procedures, a "model" of socioeconomic status, and input data for various socioeconomic traits.

The State Department of Education, using the 1990 U.S. Census data, conducted a detailed study and produced a new DFG base. The changes can be summarized as follows:

1. The existing index of educational attainment has been replaced with two variables: one measuring the percentage of adult residents who have not completed high school, the other measuring the percentage who attended college.

2. The existing percent urban measure has been replaced with one of population density.

3. The variable measuring household density was dropped.

4.   The break points between adjacent factor groups were determined on the basis of DFG scores. The old method used a ranking according to those scores to place an equal number of districts in each group.

5.   Eight District Factor Groups were created, instead of the existing 10. The groups are labeled as follows: A, B, CD, DE, FG, GH, I, and J. The Allendale School District is one of 105 affluent school districts assigned to the I District Factor Group.

DFG	DISTRICTS
A	35
B	78
CD	75
DE	100
FG	87
GH	78
I	105
J	15

Participants

The total population of classified students in the Allendale School District from January 1,1997 to December 1,1997, was 113. Of that total 50% (N = 54) were classified Perceptually Impaired. Sixty three percent were male (N = 34) and 37% were female (N =20) elementary and middle school level students. Racially, the participants were comprised of 98% White (N = 53), 0% American Indian or-Alaskan Native (N = 0), 2% Asian or Pacific Islander (N =1), 0% Black (N = 0), and 0% Hispanic (N = 0). Table 1 indicates the "gender and ethnicity profile" of the participants.

Table 1

<u>Gender and Ethnicity Profile</u>

<u>Gender</u>	<u>N</u>	<u>Percent</u>
Female	20	37
Male	34	63

<u>Racial Composition</u>

White	53	98
American Indian	0	0
Alaskan Native	0	0
Asian or Pacific Islander	1	2
Black	0	0
Hispanic	0	0

The students ranged in age from seven years to 14 years with a mean age of 10.5 years and a median age of 11 years. Table 2 presents the "Chronological Age, Mean, Median, and Standard Deviation". The grade range was from first to eighth with a mean grade level of 5 and a median grade level of 6.

Table 2

Chronological Age, Mean, Median and Standard Deviation

Age	Frequency	Percent	Cumulative Percent
7	3	6	6
8	6	12	18
9	8	15	33
10	10	19	52
11	7	13	65
12	11	21	86
13	6	12	98
14	3	6	104
Total	54	104	

Note. Mean= 10.57, Median= 10.5, Standard Deviation= 2.62

Table 3 illustrates the "Grade Mean, Median and Standard Deviation" of those

participants who were in grades two through eight.

Table 3

Grade Mean, Median and Standard Deviation

Grade	Frequency	Percent	Cumulative Percent
2	4	8	8
3	8	15	23
4	10	19	42
5	9	17	59
6	8	15	74
7	10	19	93
8	5	10	103

Note. Mean= 5.00, Median= 5.00, Standard Deviation = 2.71

In this study, the Child Study Team of the Allendale Schools for either an initial or a triennial review had evaluated all participants, and all participants were classified as Perceptually Impaired. The figures from which the population of students classified in the Allendale School District was derived were reported in the 1997 Special Education Plan, December 1, 1997. This report, mandated annually by the New Jersey Department of Education, provides the state with an accounting of the number of resident pupils receiving special education and related services. The data, required by federal and state regulations, describe the numbers of pupils served and the types of services they receive. The unduplicated count of resident pupil's with disabilities establishes the district's and state agency's entitlement to federal special education funds. In addition to the statistical data on pupils with disabilities, the annual Special Education Plan requires assurances that appropriate policies and procedures have been established and implemented by local school districts. By using this data an accurate accounting of classified students will be reported in this study.

The participants used in this study were students who were classified Perceptually Impaired by a New Jersey Child Study Team on or after January 1, 1997 through December 1, 1997. The students selected for this study were classified as part of an initial or triennial evaluation. Students who met the criterion of Perceptually Impaired were evaluated with the Wechsler Intelligence Scale for Children-III (1991) and the Woodcock-Johnson Psycho-Educational Battery (1990).

Hypotheses

Child Study Team evaluations are overly dependent on teacher assessment and tend to over-identify low achievers. Regular education teachers pressure Child Study

Team members to classify students who are low achievers because they are resistant to modifying their teaching to adapt for diversity within their classroom. Utilization of discrepancy formula analysis will effectively screen out low achievers who should not be classified and demonstrate their over-representation in the special education population.

Misclassification of students who do not demonstrate a significant discrepancy between aptitude and achievement has far reaching consequences. Economic effects for the district can impact on decisions made regarding educational programming for the regular student population. Appropriating monies to special education for students who are not eligible to receive such services immediately impacts supplies, equipment, materials, and staffing. Teachers, who are inflexible in their approach to educating their students, are allowed to continue old habits as low achievers are removed from their classes and placed in special education. Social-emotional issues for misclassified students such as the stigma of being assigned to the "special education" classes evoke feelings of low self-esteem, and parents may wrestle with feelings regarding having a child who is identified as educationally disabled.

This study will determine whether a degree of congruence exists between Child Study Team judgment and discrepancy analysis. Is there greater or lesser congruence over time? Is the discrepancy analysis more stable than a Child Study Team analysis? Does participation in special education programming improve the standardized scores of students who are identified as low achievers and justify the original classification?

Hypothesis 1. No significant relationship will be found between the Child Study Team evaluations and discrepancy evaluations to determine eligibility for classification as Perceptually Impaired at t_1 and t_2.

Hypothesis 2. Scores on standardized group achievement tests will indicate no significant improvement for low achieving students who are classified as Perceptually Impaired when compared with low achievers who were not so classified.

Hypothesis 3. The self-esteem of low achieving students receiving special education services will be significantly lower than the self-esteem of non-classified low achievers as measured by a standardized self-esteem inventory. Low achieving students who are misclassified as learning disabled have diminished self-esteem and motivation as a result of being placed in special education classes when, in fact, they were not eligible for such a placement.

Hypothesis 4. For low achieving students who were classified as Perceptually Impaired but not eligible for special education services, a significant discrepancy will exist between the services they were provided compared to the services provided to those students who were eligible for classification according to the regression analysis at t_1 and t_2.

Data Collection Procedures

According to federal law, all students classified as educationally handicapped and receiving special education and/or related services, must be evaluated by a Child Study Team. Students used in this study had been evaluated to determine eligibility for classification (t_1) or were re-evaluated within three years of the date of their previous classification (t_2). The results of this study will determine which of the students already classified by the Child Study Team, actually would have met the criteria of a significant discrepancy between their aptitude and achievement scores had a discrepancy formula been applied. The Allendale Child Study Team, which consists of the school

psychologist, learning disabilities teacher-consultant, and school social worker, are responsible for classification of all students enrolled in the special education program. Procedure for classification is for the team to convene prior to and after the evaluations of the student are complete in order to review all data collected. At that point a decision is made after scores obtained on the psychological and educational assessments are compared with classroom observations of the student and teacher input. Consideration is given to the individual abilities, talents and tolerance of the classroom teacher(s) when comparisons between aptitude and achievement scores of the student are reviewed. The professional judgment of the team is a compilation of test scores, classroom observations, a review of the student's academic records, and teacher input, and on occasion, parental pressure.

Scores on the Wechsler Intelligence Scale for Children-III (1995) and the Woodcock- Johnson Psychoeducational Battery- Revised (1990) of the participants were obtained through record review of prior testing. Utilizing the Standard Score Regression Comparison (SSRC) statistical program, published by WtL Publishing, North Little Rock, Arkansas (1995), a statistical formula was applied to the aptitude and achievement scores of students tested at the time of their initial referral (t_1) and, where appropriate at their triennial review (t_2). A comparison was made between the initial and triennial re-evaluation(s) of students who were determined eligible for special education to determine whether classification at their re-evaluation was justified. Analysis was made between each student's full scale IQ and (a) the standard score of their broad reading ability, (b) the standard score of their broad mathematical ability, and (c) the standard score of their broad written language ability. The measured difference between each student's

standard score full scale IQ and the standard score in each achievement area were evaluated to determine whether a statistically significant discrepancy existed. A comparison was made between test results and classification outcomes.

A comparison was made between the self-esteems of the classified low achieving students and those students who were low achievers but not classified. Low-achieving students who were not classified by the Child Study Team were identified by results of the California Achievement Test (CAT) which are administered annually in the spring. Low-achievers were identified as those students whose CAT scores were low enough to qualify them for the Basic Skills Instructional Program.

Instrumentation-Description of the Measures

The Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R) was Published in 1990 and is a wide range, comprehensive set of individually administered tests for measuring cognitive abilities, scholastic aptitudes, and achievement. Only the WJ-R Achievement Tests were used in this study. Norms include individuals from ages 2 to 90+. Nine tests are provided in a Standard Battery and nine additional tests comprise the Supplemental Battery of the WJ-R ACH. The internal consistency reliabilities are generally in the high .80s and low .90s for the individual tests and in the mid .90s for the test clusters.

The Woodcock- Johnson Psycho-Educational Battery-Revised (WJPEB-R) Tests of Achievement were used for both the initial and triennial evaluations. The achievement battery of the WJPEB-R measures three global areas: broad reading, broad mathematics and broad written language. The broad reading cluster tests letter-word identification and passage comprehension. Letter-word identification measures skill in identifying isolated

letters and words. Passage comprehension uses a modified cloze procedure to evaluate comprehension and vocabulary skills. (In the cloze procedure a word is omitted from a sentence that the subject must insert so that the sentence makes sense.) The broad mathematics cluster tests calculation and applied problems. Calculation uses a traditional format in which problems of varying difficulty are presented in the response booklet. Applied problems require solving and analyzing practical math problems. This sub-test requires decision-making regarding the most appropriate mathematical operation to use. The broad written language cluster tests dictation and writing samples. Dictation requires written responses to a variety of questions measuring spelling, punctuation, capitalization, etc. Writing samples requires writing sentences that are evaluated for quality of expression (Woodcock & Johnson, 1990). The standard score used in the WJPEB-R Achievement Test is based on a mean of 100 and a standard deviation of 15. This test was nationally standardized on 6,359 participants and the similarity of the sample to the 1980 census data was relatively close (1% to 5% difference). The sample ranged from 24 months to 95 years of age, including 705 preschoolers, 3,245 from the K-12 grade sample, 916 from the college/university sample and 1,493 from the adult non-school sample (Taylor, 1990 as cited in Woodcock, Johnson, 1990).

The Wechsler Intelligence Scale for Children-III was published in 1991 and is an individually administered intelligence test for children between the ages of 6 and 16. The WISC-III provides IQ's for the Verbal, Performance and Full Scales with a mean of 100 and a standard deviation of 15. The internal consistency reliabilities of the Verbal, Performance, and Full Scales are excellent (average of .94, .90. and .96 respectively).

As part of the diagnostic assessment, each student was tested using a psychometric device. The Wechsler Intelligence Scale for Children-III (WISC-III) (Wechsler, 1995) was used for all the psychological evaluations between January 1 and December 1, 1997. It consists of several sub-tests that measure different facets of intelligence. An individual's performance on these various measures is summarized in three composite scores, the Verbal IQ, the Performance IQ and the Full Scale IQ. The WISC-III was normed on a sample of 2,200 American children selected as representative of the population on the basis of the most recent U.S. Census. The standardized sample consisted of eleven different age groups, ranging from 6 years, 6 months to 16 years, 6 months, with 200 children in each group.

The School Form of the Coopersmith Self-Esteem Inventory was individually administered to both perceptually impaired and low achieving students whose parents gave written consent for their child to participate in the study. The Coopersmith Self-Esteem Inventory (SEI) (1990) can be used with student's aged eight through fifteen and consists of fifty-eight items. The self-esteem items yield a total score and, if desired, separate scores for four subscales: (a) General Self, (b) Social Self-Peers, (c) Home-Parents, and (d) School-Academic. The subscales allow for variances in perceptions of self-esteem in different areas of experience. A general assessment of high, medium, or low self-esteem can be obtained.

There are no exact criteria for high, medium, and low levels of self-esteem. For the SEI, high scores correspond to high self-esteem. In most studies the distributions of high self-esteem had been in the range of from 70 to 80 with a standard deviation of from 11 to 13 (Coopersmith, 1990).

Data Analysis Procedures

To complete this study the aptitude and achievement scores of students classified as Perceptually Impaired by the Allendale Child Study Team from January 1 through December 1, 1997 were utilized. A standard score regression comparison was applied to the scores achieved on the Wechsler Intelligence Scale for Children-III and the Woodcock- Johnson Psycho-Educational Battery-Revised to determine whether a significant discrepancy exists between the subject's aptitude and achievement. A Chi^2 analysis was applied to the results of the regression comparison to determine the presence of a difference between results obtained from the statistical formula and the professional judgment of the CST.

Permission was requested from the superintendent of the Allendale School District to use the data contained in the confidential records. No student's name or other identifying information was used or recorded for the purposes of this study. A number was assigned to the data collected on each subject in order to protect their anonymity.

The Coopersmith Inventory (1990) was used to compare the self-esteems of low-achieving students who were misclassified as Perceptually Impaired and low-achieving students who were not classified. Low achieving students were identified as those students who were eligible to participate in the Basic Skills Instructional Program (BSIP). Students in Allendale who fall below the 50th percentile on the California Achievement Tests in Reading, Writing, and/or Mathematics are eligible to receive support services through BSIP.

A t-score comparison was made between the CAT scores for both groups of students to determine whether the low-achieving classified student's scores on a

standardized group achievement test were significantly different from the scores on the CAT's of the non-classified low-achievers.

Permission from both building principals was obtained in order to review the student's CAT records that are housed in the main offices of each building. No student names or other identifying information was recorded for the purposes of this study. In addition, permission was obtained from parents of students to whom the Coopersmith Inventory was administered.

Five hundred and twenty five letters were sent to all parents/guardians of the children registered in the school housing 4th through 8th grade requesting permission for their child to take the Coopersmith Self Esteem Inventory. One hundred and twenty-seven (24%) consents for participation were returned. Nine (1.7%) of those consents did not give permission for the student to participate in the study. One hundred and eighteen students (22%) were asked to complete consent to voluntarily participate in the study. Classroom teachers administered the inventories and submitted the completed protocols to the school social worker for coding and scoring. The SEI protocols of the students classified as perceptually impaired ($n=8$) and the low-achievers ($n=9$) were segregated for the purpose of this study. A t-test was used to compare the classified and unclassified low achieving students on achievement test improvement.

Limitations

This study was conducted in a relatively small, affluent, homogeneous community which lacked ethnic diversity. The total number of participants was small because of the district size and the numbers of students who were classified as Perceptually Impaired, and

thus eligible to cooperate in this research. Consequently, any generalizations made as a

result of this research should be carefully considered.

Chapter IV

RESULTS

Introduction

Fifty-four students, who attend the Allendale Schools, were tested and found

eligible for classification as Perceptually Impaired by the Child Study Team. Allendale is

an affluent suburban community in northwest Bergen County. Data were collected on all

students who were classified as Perceptually Impaired from January 1, 1997 through

December 31, 1997. Data was also collected on 15 students who were referred for a

Child Study Team evaluation during that time, but who were not deemed eligible for

services according to the professional judgment of the Child Study Team.

All students studied had been administered the Wechsler Intelligence Scale for

Children-III as a measure of intellectual functioning and achievement tests from the

Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R) as measures of

achievement in the academic areas of Reading, Written Language, and Mathematics.

A total of 54 students classified as Perceptually Impaired who were in kindergarten

through eighth grade were included in this study. Their descriptive profile is included in

Table 4. Data were collected from student's initial evaluation (t_1) and, where applicable,

their triennial evaluation (t_2). Of the 54 students, 53 (98%) were white and 1 (2%) was

Asian at t_1. At t_2 20 (95%) of the students were white and 1(5%) was Asian. Males

(63%) outnumbered females (37%) at t_1. At t_2 62% of the participants were male and 38% were female. Overall cognitive functioning was in the average range, as indicated by a mean IQ of 103 at t_1 and 102 at t_2 on the individually administered intelligence test.

Most initial referrals were generated at the second grade level with a median age of 8 years. Tables 4 and 5 represent descriptive data from t_1 and t_2.

Table 4

Sample Description t₁ (n= 54)

Factor	Frequency	
	<u>N</u>	<u>%</u>
<u>Ethnicity</u>		
White	53	98
Asian	1	2
<u>Gender</u>		
Male	34	63
Female	20	37
<u>IQ</u> (M = 103.11, <u>SD</u> = 10.42)		
60-69		
70-79		
80-89	3	6
90-99	19	35
100-109	19	35
110-119	9	17
120-129	3	6
130-139	1	2

Table 5

Sample Description t_2 (n= 21)

Factor	Frequency	
	N	%
Ethnicity		
White	20	95
Asian	1	5
Gender		
Male	13	62
Female	8	38
IQ (M = 101.62, SD = 11.92)		
60-69		
70-79	2	9
80-89	1	5
90-99	5	24
100-109	9	43
110-119	3	14
120-129	1	5
130-139		

Analysis of Hypotheses

Hypothesis 1. No significant relationship will be found between the Child Study

Team evaluations and discrepancy evaluations to determine eligibility for classification as

perceptually impaired at t_1 and t_2.

Chi^2 analysis was used to analyze this hypothesis. A 2 X 2 Chi^2 (CST eligible/not

eligible by discrepancy eligible/not eligible) was conducted to determine if a relationship

exists between the child study team evaluations and the discrepancy evaluations. Since

one cell contained a frequency of less than 5, Yates correction was applied to reduce the

likelihood of an overestimate of the Chi^2 value (Downie and Heath, 1974, p. 196). The

results for t_1 are presented in Table 6. These results indicate a non-significant Chi^2, which

suggests that no significant relationship $\chi^2 (1, \underline{N} = 64) = 1.12, \underline{p} > .05$ exists between the

discrepancy and child study team approach to classifications as perceptually impaired at t_1.

For the 64 students evaluated, agreement was found on only 33 (51.6%) cases. The child

study team evaluated 28 participants as eligible that were not eligible with the discrepancy

approach, and the discrepancy approach identified 3 participants as eligible that were

ineligible according to child study team evaluations. As a result, we can conclude that the

2 methods of evaluation did not yield similar evaluation results at t_1.

The Chi^2 results for t_2 are presented in Table 7. Since fewer participants had t_2

data, this analysis was conducted on 21 participants. This resulted in a Chi^2 analysis that

contained a cell with an expected frequency of less than 2, and the Fisher exact method

was used to determine significance (Downie and Heath, 1974, p.198). These results

indicate a non-significant Chi^2, which suggests that no significant relationship

(χ^2 (1, $\underline{N}$= 21) =2.62, $\underline{p}$ >.05, Fisher's exact $\underline{p}$=.26) exists between the discrepancy and child study team approach to classifications as perceptually impaired at t_2 . For the 21 participants included in the analysis, agreement was found on only 11(52.4%) cases. The child study team evaluations identified 10 participants as eligible that were not so identified by the discrepancy approach. As a result, we can conclude that the 2 methods of evaluation do not yield similar results at t_2.

Table 6

Chi^2 Analysis of Discrepancy and Child Study Team Evaluations at t$_1$.

	Child Study Team	
	Eligible	Not Eligible
Eligible	26 (24.5)	3 (4.5)

Discrepancy

Not Eligible	28 (29.5)	7 (5.5)

Note. ( ) = Expected Frequencies
$\chi^2 = 1.12$, df =1, p =.28

Table 7

Chi^2 Analysis of Discrepancy and Child Study Team Evaluations at t$_2$.

	Child Study Team	
	Eligible	Not Eligible
Eligible	6 (4.6)	0 (1.4)

Discrepancy

Not Eligible	10 (11.4)	5 (3.6)

Note. ( ) = Expected Frequencies
χ^2 = 2.62, df = 1, p = .10, Fisher Exact p = .26

Hypothesis 2. Scores on standardized group achievement tests will indicate little

improvement for low achieving students misclassified as perceptually impaired when

compared to low achievers who were not so classified by the "true" (i.e., discrepancy

method.)

T-tests were used to analyze this hypothesis by comparing the mean improvement

scores for the classified and unclassified low achieving students on reading, math, and

language skills. To compute the improvement scores, the t_1 scores were subtracted from

the t_2 scores. Group means were calculated, and the groups were compared on mean

improvement. The results, presented in Table 8, indicate that the low achieving classified

and not classified participants showed no significant differences in mean improvement

scores for reading (t (11.98) =.57, p=.57), and for math (t (1) =.43, p=.67). A significant

difference was, however, found for language (t (1) =-2.03, p=.05). As a result, we can

conclude that no differences exist in achievement test score improvements for the

classified and unclassified participants on reading and math. However, significant

differences were found on language, and the mean improvement score of 3.10 for the

classified participants was significantly higher than the mean improvement score of

-11.47 for the unclassified participants.

Table 8

<u>T-Tests Comparing Classified and Unclassified Low Achieving Students on</u>

<u>Achievement Test Improvement</u>

| | | Classified | | | Unclassified | | | | |
Variable	N	Mean	S.D.	N	Mean	S.D.	T	df	Significance
Reading	10	.20	21.43	19	4.36	11.87	.57	11.98	.57
Math	10	3.60	24.82	19	6.78	15.51	.43	1	.67
Language	10	3.10	20.56	19	-11.47	17.12	-2.03	1	.05

Hypothesis 3. The self esteem of low achieving students receiving special

education services is lower than the self esteem of non-classified low achievers as

measured by a standardized self-esteem inventory.

T-tests were used to compare the self-esteem mean scores for low achieving

students receiving special education services and non-classified low achieving students.

The Coopersmith Self Esteem Inventory was used which included subscales on general,

social, home, and school as well as total self-esteem. The results, presented in Table 9

indicate that no significant differences were found between the classified and non-classified

participants on general (t (27) =.34, p >.05), on social (t (27) =1.09, p >.05), on home (t

(27) =.09, p >.05), on school (t (27) =.55, p>.05) or on total self esteem

(t (27) =.38, p>.05). As a result, we can conclude that no differences exist between

classified and non-classified low achieving students on self-esteem.

Table 9

<u>T-Tests Comparing Classified and Unclassified Low Achieving Participants on Self-</u>

<u>Esteem</u>

		Classified			Not Classified				
Variable	N	Mean	S.D.	N	Mean	S.D.	T	df	Significance
General	13	18.69	2.86	16	19.18	4.56	.34	27	.73
Social	13	6.38	1.38	16	5.68	1.92	1.09	27	.28
Home	13	6.00	1.73	16	6.06	1.98	.09	27	.93
School	13	5.69	2.05	16	6.06	1.56	.55	27	.58
Total	13	73.23	13.52	16	75.25	14.78	.38	27	.70

Hypothesis 4. For low achieving students who were classified as perceptually impaired but not eligible for special education services, a significant discrepancy will exist between the services they were provided compared to the services provided to those students who were eligible for classification according to the regression analysis at t_1 and t_2. This will show that the IEP's provided too much service to students who were not eligible for special education programming.

Chi^2 analysis was used to test this hypothesis. A 2 X 2 Chi^2 (eligible/not-eligible by service provided/not provided) was conducted on reading, math, and language to determine if a relationship exists between the discrepancy evaluations and the service provided.

The results for reading are presented in Table 10. These results indicate that a significant relationship does indeed exist between the discrepancy evaluation as eligible or ineligible and the services provided (χ^2 (1, $\underline{N}$= 54) = 8.61, p <.01). Sixteen participants identified as eligible received services and 20 participants evaluated as ineligible did not receive services. Overall, a match was found between the evaluation and service for 36 (66.7%) participants. However, it is important to note that service was provided to 15 participants that were not eligible, and service was not provided to 3 participants that were eligible.

Table 10

Chi² Analysis on Discrepancy Evaluation and Service Provided for Reading

		Reading	
		Provided	Not Provided
	Yes	16 (10.9)	3 (8.1)

Eligible

	No	15 (20.1)	20 (14.9)

Note. ( ) = Expected Frequencies

$\chi^2 = 8.61$, $\underline{df} = 1$, $\underline{p} = .003$

The results for math are presented in Table 11. These results indicate that no significant relationship exists between the discrepancy evaluation on math and the services provided (χ^2 (1, $\underline{N}$=54) =.42, $\underline{p}$ >.05). Service was provided for only 3 of the 12 eligible students. Also, service was provided for 7 participants who were ineligible. However, service was not provided for 35 participants that were evaluated as ineligible. Overall, a match was found between the evaluation and service for 38 (70.1%) participants.

Table 11

Chi^2 Analysis on Discrepancy Evaluation and Service Provided for Math

		Math	
		Provided	Not Provided
	Yes	3 (2.2)	9 (9.8)
Eligible			
	No	7 (7.8)	35 (34.2)

Note. ( ) = Expected Frequencies
$\chi^2 = .42$, df = 1, p = .51

The results for language are presented in Table 12. These results indicate that a significant relationship does exist between the discrepancy evaluation and the language services provided (χ^2 (1, $\underline{N}$= 54) =3.85, $\underline{p}$=.05). Service was provided for 9 of the 11 eligible participants, and service was not provided for 22 participants that were ineligible. However, language services were provided for 21 ineligible participants. Overall, a match was found between the evaluation and service for 31 (57.4%) participants.

Table 12

Chi^2 Analysis on Discrepancy Evaluation and Service Provided for Language

		Language	
		Provided	Not Provided
Eligible	Yes	9 (6.1)	2 (4.9)
	No	21 (23.9)	22 (19.1)

Note. ( ) = Expected Frequencies
$\chi^2 = 3.85$, df = 1, p = .05

Summary

Four hypotheses were tested in this study. Using a Chi^2 analysis on Hypothesis 1 no significant relationship existed between the discrepancy formula and the child study team approach to classifications as perceptually impaired at t_1. In this case the two methods of evaluation did not yield similar evaluation results at t_1. A Chi^2 analysis was completed on data collected for t_2. Results indicated that there was no significant relationship between the discrepancy and child study team approach to classifications as perceptually impaired at t_2. Again, the two methods of evaluation did not yield similar results.

For the second hypothesis, a t-test was used to analyze the data regarding the scores on standardized group achievement tests for low achieving students misclassified as perceptually impaired when compared to low achievers who were not so classified. Results indicated that there was no significant difference in the mean improvement scores for reading and mathematics for both groups. A significant difference was, however, found for language.

A t-test was also applied to the self-esteem scores of the low achieving students receiving special education services and to the self-esteem scores of non-classified low achievers. Results of hypothesis 3 indicate that there was no significant difference between the classified and non-classified participants on any of the four areas of the self-esteem assessment.

Chi^2 analysis was used to test hypothesis 4. Results indicated that a significant relationship did exist between the discrepancy evaluation as eligible or ineligible and the

special education services provided in the area of reading. In the area of mathematics the results indicated that there was no significant relationship between the discrepancy evaluation and the services provided. Results for language indicated that a significant relationship did exist between the discrepancy evaluation and the language services provided.

Chapter V

DISCUSSION

Introduction

The purpose of this study was to determine whether there would be congruence between Child Study Team (CST) decisions and a regression formula in the determination of eligibility for classification as Perceptually Impaired. Results of this study indicated that the CST overidentified students as eligible for classification as Perceptually Impaired 43.7% of the time ($n = 28$) at the initial evaluation (t_1). These participants were found eligible by the child study team to receive special education services but were not statistically eligible when a regression formula was applied to the student's aptitude and achievement scores on individually administered standardized test results. Clarizio and Phillips (1989) acknowledged that statistical formulas were more reliable than multidisciplinary team decisions however they also described statistical criteria as being "perceived as too simplistic and inflexible to meet the psychological, educational, political and practical complexities posed by individual cases" (p. 384). These results are in agreement with critics such as Hammill (1990), Chalfant (1989), Algozzine & Ysseldyke (1987) who contend that the use of a severe discrepancy may be a means by which to reduce the incidence rates of learning disabilities, while creating a false sense of objectivity and precision amongst diagnosticians.

McLeskey and Waldron (1991) believe that the goal of professionals involved in the identification of students with learning disabilities is to provide students who have the greatest needs from an instructional perspective with assistance, regardless of whether they meet arbitrary criteria. They have suggested that perhaps professionals have recognized that many students who have bona fide problems progressing in school, but who fail to meet stipulated criteria for the learning disability label, would not receive any supportive services unless they were labeled with a disability. Under these circumstances, a service motivation and not a scientific motivation may drive professionals.

Researchers and those writing and implementing statewide LD guidelines seek more precision in the identification of students with learning disabilities. However, administrators, teachers, school psychologists, and other professionals may be opting for a pragmatic type of imprecision that allows them the option of providing services to students whom they view as being most in need. Teachers may be more concerned with receiving assistance for students who place the greatest demands on his/her time for instruction because of learning and/or behavior problems, rather than discerning the students with "true" learning disabilities (McLeskey & Waldron, 1991).

Using regression analysis three students (4.7%) were not found eligible for classification as perceptually impaired by the CST; although results of the regression analysis found them to be eligible for services. This is below the percentage of false negatives (20%) reported by Clarizio and Phillips (1989). The lesser percentage found in this study might be attributable to the small sample size of students who were tested and

not found eligible ($n = 10$). No consistent pattern was discerned in the data regarding these participants in terms of the area of significant discrepancy, IQ score, age or gender.

Of the total number of participants there was agreement between the judgment of the CST and the results of the regression analysis in 33 (51.6%) of the referred cases.

Results of data analysis from the triennial evaluations (t_2) indicate that 47.6% ($n = 10$) of the participants were reclassified as perceptually impaired by the CST when, in fact, they were not so identified by the discrepancy approach. One might conclude from this statistic that once a student was classified as "Perceptually Impaired" by the child study team, the classification was continued even when he/she was not eligible to receive services. Halgren and Clarizio (1993, as cited in Overton, 1996) found that 38% of the students in special education were either reclassified or terminated from special education, indicating a need for more specific identification of the learning problems through referral and initial assessment. Ysseldyke and Thurlow (1983) advocated changing the focus of the referral process from referral-to-placement to referral-to-intervention to prevent the unnecessary evaluation, misdiagnosis and overidentification of students as needing special education.

A match of 11 participants (52.3%) was found between the judgment of the child study team and discrepancy analysis at t_2. There were no students identified as not eligible to receive services by the CST who were actually eligible according to discrepancy analysis.

Results of the data collected comparing the achievement test results of classified and non-classified low achieving students indicated that there was no significant difference

between the scores of low-achieving non-classified students and students who were classified in the areas of reading and math. A significant difference was, however, found for language and the students who were classified had a mean improvement score of 3.10 compared to the mean improvement score of -11.47 for the unclassified students. These results may be attributable to the fact that there is a heavy emphasis on written language in the resource center programs and classroom instruction includes the use of multisensory materials to promote language skills. Computers and word processing are an integral part of the resource center programs, which may facilitate the students' enthusiasm for the subject.

Reading and language arts is block scheduled for a 90 minute period daily in grades 4 and 5 compared to 45 minutes for all other participants. The resource center programs accentuate the importance of writing because it has been identified as an area of particular weakness for the students. Low-achieving students participate in the regular reading/language arts program where a second regular education teacher assists in the class as part of the Basic Skills Instructional Program. Modifications and accommodations to the traditional curriculum and traditional methods of teaching do not necessarily address the variety of learning styles in the class which may contribute to the weak performance of these students on standardized achievement tests.

In the middle school grades (6-8) reading/language arts consists of a 45-minute period. Most of the low-achieving students are placed in the class that has the support of the Basic Skills teacher although all students in the class are not low-achievers. While writing is a prevalent piece of the curriculum the lack of individual attention, alternate

methods of instruction and the lack of flexibility in the daily schedule may contribute to the weaker performance on standardized achievement testing.

No significant difference existed between the self-esteems of the students who were classified and the non-classified low achieving students. Researchers, such as G. Reid Lyon (1996), contend that for the individual child, use of the discrepancy standard will promote a wait-to-fail policy because a significant discrepancy between IQ and achievement generally can not be detected until about age eight or nine. By this time the child has already experienced at least a few years of school failure and probably has experienced the common attendant problems of low self-esteem, diminished motivation, and inadequate acquisition of the academic material covered by his classmates during previous school years. Students in this study did not bare out the assumption that there is a difference between those who received special education support services and those who did not. This may be attributed to the fact that the sample in this study was more similar than dissimilar. With 43.7% ($n = 28$) of the students evaluated at t_1 not eligible for special education services according to a discrepancy formula, they may have actually been low-achievers who were misclassified. Therefore, the comparison of the self-esteems of classified students with unclassified low-achieving students may have been looking at very similar groups of participants. Comparison of two more dissimilar groups, such as students who are classified and those in the Gifted and Talented Program might yield different results.

Results of an analysis of the services provided to students who were classified and eligible to receive special education services was compared to services provided to low-

achieving students who were misclassified as perceptually impaired. In the area of reading there was a match between the evaluation and service provided for 66.7% (n = 36) of the participants. Of note, however, is the data reflecting that 27.7% (n = 15) participants were provided with special education services in reading when they were not statistically eligible to do so. There were 3 students (5.55%) who were not provided with special education services in reading when they were statistically eligible. The overclassification of students may be due to the fact that the Allendale School District provides a non-differentiated reading program for students in the regular education program. Different published reading series are used at different grade levels, however each teacher at a specific grade level utilizes the same reading series. Little emphasis is placed on phonics and decoding in the lower primary grades.

In the early elementary grades the acknowledgement of different ability levels is recognized by separating students into ability groups, however the same materials and instructional strategies are employed without differentiating instruction to meet the needs of the varying levels. Students who are referred for special education evaluation and, ultimately classification in the lower primary grades are generally those who are unable to acquire the basic skills required for reading in the regular education classroom. Such difficulties may be the result of a paucity of alternate instructional materials and strategies. The lowest achieving students in each of the lower primary grades are provided with Basic Skills Instruction for thirty-minutes twice a week, which may be an insufficient amount of time to address their different learning styles and rates. Results of this study indicated that students who are classified at their initial evaluation are often re-classified at their triennial

Consequently, some students in the lower primary grades may have been deemed eligible by the professional judgment of the CST to receive special education services because of difficulties acquiring the basic skills required for reading. Once a student began receiving special education services they continued to participate in the resource center program after their triennial evaluation even when such services were not appropriate. Results of this study indicated that there was no statistical difference between the classified and low achieving non-classified students on group achievement tests in the area of reading. Quite possibly neither program has adequately addressed the needs of either group of students.

In the area of math, 12 participants (22.2%) were eligible to receive services, however only 5.5% ($n = 3$) were provided with such through their IEP's. Seven participants (12.9%) were provided with a special education mathematics program who were not eligible and 064.8% ($n = 35$) of the participants were not provided with math and were not statistically eligible. Overall, a match was found between the CST judgment and the discrepancy analysis for 70.1% ($n = 38$) of the participants in the area of math. The results of the statistical analysis indicate that the judgment of the child study team was in agreement with the discrepancy approach in its appraisal of those students who were not eligible and not in need of mathematics services. However, 16.6% ($n = 9$) participants were eligible for special education services in mathematics and were not provided with such. Seven participants (12.9%) received special education services in math, but were not eligible according to the discrepancy analysis. In fact, there were limited services available in the resource center programs in the area of math which resulted in those

students who were eligible for services being placed in the Basic Skills Instructional Program for math.

Results of the discrepancy evaluation and service provided for language indicate that 38.8% of the participants (n = 21) were not eligible for special education services yet they received it. Nine participants (16.6%) were eligible according to regression analysis and received resource center services for language; 3.7% (n = 2) participants were eligible and did not receive the services and 40.7% (n = 22) were not eligible and did not receive resource center services in language. In the Allendale Schools reading and language arts are treated as a block schedule both in regular and special education programs. Consequently, when a student is identified as eligible for and in need of resource center programming for reading they are also provided with resource center programming for language whether or not they are eligible.

According to Daniel J. Reschly (1996) the disability category assigned to students does not relate closely to the treatment decisions regarding individual goals, objectives, monitoring of interventions, or evaluating outcomes. He contends that there is evidence that the educational interventions provided to students in different disability categories are more alike than different. Reschly goes on to say that effective instructional programming should utilize the same principles and often the same procedures regardless of whether the student is classified as learning disabled or a slow learner.

Summary

Current federal and state regulations regarding the identification and classification of students as learning disabled requires the presence of a significant statistical discrepancy

between a student's aptitude and achievement scores on individually administered standardized tests. The principal identification criterion used for the determination of a learning disability is a severe discrepancy. While the State of New Jersey has mandated this criterion it has not proposed any particular method for determining its presence. Consequently, as school districts adopt the specific criteria and data analysis they will utilize to determine a significant discrepancy, disparity in the identification of students with a LD could possibly continue from one district to another. The state is allowing each district to establish its own criteria and statistical method of determining a LD which will perpetuate the phenomenon of a student being eligible for special education and related services in one community and not necessarily in another.

The severe discrepancy criterion rests on the assumption that the disability resides within the student, and those factors related to the student's teacher, class placement, school placement or method of instruction is not relevant to identification. Poplin (1988) and Heshusius (1989, as cited in McLeskey & Waldron, 1991) have questioned whether a "true" learning disability can exist, isolated from the context within which the student is identified. From a similar perspective, others have questioned whether a learning disability resides totally within the child (a medical view of disability), or whether other factors influence the manifestation of a learning disability, resulting in the social construction of a disability. Many studies limited their focus to the discrepancy criteria, failing to examine it as just one piece of the evaluation procedure. Interpretation of test criteria alone will not differentiate students with a learning disability from students who have not had continuity of instruction or who were unable to benefit from instruction for other reasons such as

frequent moves, poor motivation, or high absenteeism (Wood, 1991). Kavale (1987)
suggested that a severe discrepancy is necessary but not sufficient to identify a student
with a learning disability. Perhaps clinical judgment needs to play an important role in the
decision making process. A focus on formulas overlooks the complexity of decision
making, which must consider not only factors within the child, but factors outside the
child, such as learning environments, teaching practices and parent support, which
influence achievement. While it is recognized that many diagnostic dilemmas may be
faced by those using this complex process, they must at least begin with the most
statistically sound and fairest method for calculating a severe discrepancy and proceed
from there.

  As states attempt to identify students with learning disabilities, discussion needs to
continue in the professional community about the definition of learning disabilities, criteria
and the identification process. A greater reliance on severe discrepancies may be
mandated for a number of reasons. Utilizing a severe discrepancy formula may serve as a
gate-keeping measure against the growing number of students who are referred for LD
consideration. Allowing large numbers of students into LD programs without a severe
discrepancy might result in uncontrollable growth and undermine a school district's ability
to make even the broadest predictions about the amount of services needed. Another
reason for insistence on the presence of a severe discrepancy may be found in the need for
consistency. The concept of learning disabilities has come under fire by those who point
out that LD students look no different than other groups, such as slow learners or
unmotivated students. Care in meeting the present rules and criteria might not eliminate,

but could reduce the broad mix of students who have filled the ranks of the learning disabled, thereby adding validity and integrity to the diagnosis.

How consistent was the eligibility decision with the severe discrepancy criterion when the regression formula was applied to the data? Reasonably, we might assume that the comparisons made using data collected and considered by the child study team would produce accurate decisions regarding eligibility as learning disabled. After all, these were the data available to the CST at the time eligibility decisions were made. Changing the method by which eligibility would have been established for the purpose of this study meant applying a statistical formula to the data collected and considered by the CST. Thus, we would expect agreement between the eligibility decisions made by the CST and the severe discrepancy status when the regression formula was used because the same data were used in both approaches.

Interestingly, such assumptions did not prove to be true. Agreement was observed in just over one-half of the cases ($n = 33$) at t_1 and 52.3% ($n = 11$) of the cases at t_2. Using the regression formula, 5.5% ($n = 4$) of the participants found ineligible for services at t_1 and no participants at t_2 were misclassified as not eligible for special education services, yet regression analysis found them eligible. Compliance with the intent of the federal law, IDEA, would suggest that all handicapped children must be served. Thus, guarding against false negatives would be a primary concern. However, given the expanding population in recent years of students with a learning disability and the failure of special education to meet our expectations for positive treatment effects, administrators may question the wisdom of a zero reject approach. By utilizing the criteria of the

existence of a severe discrepancy may be a way of excluding students from special education and ultimately providing services to only the most handicapped.

Conclusions and Implications

The purpose of this research was to apply a recommended statistical model to determine a whether a severe discrepancy existed on data that was already collected on children referred for possible learning disability services. A comparison was made between the results of severe discrepancy criterion and the eligibility decision that was made by the professional judgment of the Child Study Team.

Evidence has been provided that the application of a regression formula to the aptitude and achievement scores of students already classified as learning disabled resulted in fewer numbers of students eligible for classification. If, in fact, Child Study Teams have been classifying low-achievers who would have otherwise not received any specialized help in the general education curriculum, reducing the numbers of students who are eligible for classification will impact on the general education curriculum and teachers. This being the case, administrators and teachers will have to redesign the regular education program to accommodate the needs of diverse learners who will remain in the regular program. Supplemental aids and strategies, alternate methods of delivering the curriculum and measuring mastery will have to be implemented, and differentiated instruction and materials will have to be available at all grade levels. In addition, the mindset of the State Department of Education will have to transform from one in which the quality of educational programs is determined via the outcome of state mandated tests to one in which different levels of ability are considered when measuring mastery of the

curriculum. Currently the effectiveness of instruction is determined by the scores obtained on statewide proficiency tests, which continues to pressure school administrators to want the lower achieving students placed in special education classes so that their scores are disaggregated from the regular education students.

This study was conducted in a relatively small, affluent, homogeneous community. Generalization of the results presented in this study may have limited applicability to other communities. Consideration should be given to replicating the study in a multi-ethnic community where the numbers of students classified as learning disabled is larger, and where opportunities for alternate methods of instruction that might be made available to students prior to referral for a complete child study team evaluation. Providing differentiated programs and methods of instruction may prove to be more beneficial to addressing the different learning styles of students than assigning them to special education programs which should be made available to those students who are "truly" learning disabled.

The small sample size makes statistical significance very difficult to achieve. The results of this study possibly underestimate the differences between the professional judgment of the Child Study Team and regression analysis. Replicating this study with a significantly larger sample size may yield results that could be generalized to the general population.

Limitations

This study was conducted in a relatively small, homogeneous community. Generalization of the results presented in this study may have limited applicability to other communities. Consideration should be given to:

1.   replicating the study in a multi-ethnic community where the numbers of students classified as learning disabled is larger;

2.   where opportunities for alternate methods of instruction are made available to students prior to referral for a complete child study team evaluation;

3.   where the provision of differentiated programs and methods of instruction can be implemented to determine whether they may prove more beneficial to addressing the needs of diverse learning styles of students rather than assigning them to special education programs.

The small sample size makes statistical significance difficult to achieve. The results of this study possibly underestimate the differences between the professional judgment of the Child Study Team and regression analysis. Replicating this study with a significantly larger sample may yield results that could be generalized to the general population.

References

Algozzine,B., Forgonne, C. Mercer, C. & Trifiletti, J. (1979). Toward defining discrepancies for specific learning disabilities: An analysis and alternatives, Learning Disability Quarterly. 2, 25-31.

Algozzine,B., & Ysseldyke, J.E. (1983). Learning disabilities as a susbset of school failure: The over-sophistication of a concept. Exceptional Children. 50, 242-246.

Algozzine, B., & Ysseldyke, J. (1987). Questioning discrepancies: Retaking the first step 20 years later. Learning Disability Quarterly. 10, 301-312

Algozzine, B., Ysseldyke, J.E., & Shinn, M. (1982). Identifying children with learning disabilities: When is a discrepancy severe? Journal of School Psychology. 20 (4), 299-305

Bartoli, J. & Botel, M. (1988). Reading/learning disability: An ecological approach. New York: Teachers College Press.

Bateman, B. D. (1965). An educator's view of a diagnostic approach to learning disorders. In J. Hellmuth (Ed.), Learning Disorders (Vol.1, 219-239). Seattle, WA: Special Child Publications.

Berk, R. A. (1982). Effectiveness of discrepancy score methods for screening children with learning disabilities. Learning Disabilities. 1 (2), 11-24.

Berk, R. A. (1984). An evaluation of procedures for computing an ability-achievement discrepancy score. Journal of Learning Disabilities. 17, 262-266.

Braden, J. P. (1987). A comparison of regression and standard score discrepancy methods for learning disabilities identification: Effects on racial representation. Journal of School Psychology. 25, 23-29.

Chalfant, J. C. (1985). Identifying learning disabled students: Guidelines for decision making. Burlington, VT: Regional Resource Center.

Chalfant, J. (1989). Diagnostic criteria for entry and exit from service: A national problem. In L. B. Silver (Ed.). The assessment of learning disabilities. Boston: College Hill Press.

Clarizio, H. & Phillips, S. (1986). Sex bias in the diagnosis of learning disabled students. Psychology in the Schools. 23, 44-52.

Clarizio, H. F., & Phillips, S.E. (1989). Defining severe discrepancy in the diagnosis of learning disabilities: A comparison of methods. Journal of School Psychology, 27, 383-391.

Cone, T. E., & Wilson, L. R. (1981). Quantifying a severe discrepancy: A critical analysis. Learning Disability Quarterly, 4, 359-371.

Coopersmith, S. (1990). Self-Esteem Inventories. Palo Alto, CA: Consulting Psychologists Press

Council for Learning Disabilities, Board of Trustees. (1986). The CLD Position Statement. Learning Disability Quarterly, 9, 245.

Council for Learning Disabilities, Board of Trustees. (1987). The CLD Position Statement. Journal of Learning Disabilities, 20, 349-350

Cruickshank, W. M., & Hallahan, D. P. (1973). Psychoeducational foundations of learning disabilities. Englewood Cliffs, NJ: Prentice- Hall.

Danielson, L. D., & Bauer, J. N. (1978). A formula-based classification of learning disabled children: An examination of the issues. Journal of Learning Disabilities, 11, 163-176.

Davis, W. A., & Shepard, L. A. (1983). Specialists' use of test and clinical judgement in the diagnosis of learning disabilities. Learning Disabilities Quarterly, 19, 128-138.

Dore-Boyce, K., Misner, M. & McGuire, L.D. (1975). Comparing reading expectancy formulas. The Reading Teacher, 29, 8-14.

Downey, N. M., Heath, R.-W. (1974). Basic Statistical Methods (4th ed.). New York: Harper & Rowe.

Evans, L. (1992). A comparison of the impact of regression and simple difference discrepancy models on identification rates. Journal of Learning Disabilities, 30, 17-20.

Farnham-Diggory, Sylvia (1992). The learning disabled child. Cambridge, MA: Harvard University Press

Federal Register. (1977). The Vocational Rehabilitation Act of 1973, 42 (86), 22676-22702.

Forness, S. R. (1985). Effects of public policy at the state level: California's impact on MR, LD, and ED categories. Remedial and Special Education, 6, 36-43.

Frankenberger, W., & Fronzaglio, K. (1991). A review of states' criteria for Identifying children with learning disabilities. Journal of Learning Disabilities, 24, 495-500.

Frankenberger, W. & Harper, J. (1987). States' criteria and procedures for identifying learning disabled children: A comparison of 1981/82 and 1986/86 guidelines. Journal of Learning Disabilities, 20 (2), 118-121.

Gartner, A., & Lipsky, D. K. (1987). Beyond special education: Toward a quality system for all students. Harvard Educational Review, 57, (4), 367-395.

Gilliam, J. E., & Coleman, M. C. (1981). Who Influences Committee Decisions? Exceptional Children, 47, (8), 642-644.

Hallahan, D. P. (1992). Some thoughts on why the prevalence of learning disabilities has increased. Journal of Learning Disabilities, 23, 74-84.

Hammill, D. (1990). On defining learning disabilities: An emerging consensus. Journal of Learning Disabilities, 23, 74-84.

Hanna, G. S., Dyck, N. J., & Holen, M. C. (1979). Objective analysis of achievement-aptitude discrepancies in LD classification. Learning Disability Quarterly, 2 (4), 32-38.

Harris, A. (1970). How to increase reading abilities (5th ed.). New York: David McKay.

Kaluger, G. & Kolson, C. (1969). Reading and learning disabilities. Ohio: Charles E. Merrill.

Kavale, K. A., Forness, S. R., & Bender, M. (1987). Handbook of learning disabilities. Boston: College-Hill Publication.

Kavale, K. A., Forness, S. R. (1995). The nature of learning disabilities: Critical elements of diagnosis and classification. Mahwah, NJ: Lawrence Erlbaum Associates.

Kirk, S. A. (1962). Educating exceptional children. Boston: Houghton Mifflin.

Kirk, S. A., Kirk, W. D. (1983). On defining learning disabilities. Journal of Learning Disabilities, 16, 20-21.

Lipsky, D. K., & Gartner, A. (1989). Beyond separate education: Quality education for all. Maryland: Paul H. Brookes Publishing Co.

Lyon, R.G. (1996). Learning disabilities. Special education for students with disabilities, 6 (1), 54-76.

McIntosh, D. K., & Dunn, L. M. (1973). Children with major specific learning disabilities. In L.M. Dunn (Ed.), Exceptional children in schools (2nd ed.) New York: Holt, Rinehart & Winston.

McLeod, John. (1983). Learning disability is for educators. Journal of Disabilities, 16 (1), 21-22.

McLeskey, J., & Waldron, N. L. (1991) Identifying students with learning disabilities: The effect of implementing statewide guidelines. Journal of Learning Disabilities, 24 (8), 501-506.

Mather, N., & Healey, W. C. (1990). Deposing aptitude-achievement discrepancy as the imperial criterion for learning disabilities. Learning Disabilities: A Multidisciplinary Journal, 1 (2), 40-46.

Mauser, A. J. (1981). Assessing the learning disabled: Selected instruments (3rd ed.). Novato, CA: Academic Therapy Publications.

Mellard, D., Cooley, S., Poggio, J., & Deschler, D. (1983). A comprehensive analysis of four discrepancy models. (Research Monographs No. 15). Lawrence, KS: University of Kansas Institute for Research in Learning Disabilities.

Mercer, C., Hughes, C., & Mercer, A. (1985). Learning disability definitions used by State Education Departments. Learning Disability Quarterly, 8, 45-55.

Mercer, C. D., King-Sears, P., & Mercer, A. (1990). Learning disabilities definitions and criteria used by state education departments. Learning Disability Quarterly, 13 (2), 141-152.

Mercer, C. D., Jordan L., Allsopp D. H., Mercer, A. R. (1996). Learning disabilities definitions and criteria used by state education departments. Learning Disability Quarterly, 19 (4), 201-221.

Michigan Association of Learning Disability Educators (1992). Guidelines for identification and evaluation of students with learning disabilities. Lansing, MI: Livingston Education Service Agency CSPD State Initiated Project.

National Advisory Committee on Handicapped Children (1968). First annual report, special education for handicapped children. Washington, D.C.: Department of Health, Education, and Welfare.

New Jersey Administrative Code. Title 6. Education. Chapter 28 Special Education. (1992)

New Jersey Administrative Code. Title 6A. Chapter 14. Special Education. (1998).

New Jersey State Department of Education Office of Special Education Programs. (1997). Special education: A statistical report for the 1995-96 school year. Volume 14.

New Jersey Principals and Supervisors Association. (1998). Jamesburg, NJ

O'Donnell, L.E. (1980). Intra-individual discrepancy in diagnosing Specific learning disabilities. Learning Disability Quarterly, 3, 10-18.

Overton, T. (1996). Assessment in special education: An applied approach. Upper Saddle River, NJ; Merrill.

Proposed Special Education New Jersey Administrative Code. (1997). Chapter 14, Title 6A.

Public Law 94-142. Education for All Handicapped Children Act of 1975. November 29, 1975.

Public 94-142 Regulations. Assistance to States for Education of Handicapped Children. Procedures for Evaluating Specific Learning Disabilities. Department of HEW, Office of Education, Federal Register, December 1977, 42, 65082-65985.

Reschly, Daniel J. (1996). Identification and Assessment of Students with Disabilities. Special Education for Students with Disabilities, 6 (1), 40-53.

Reynolds, C. (1981a). The neuropsychological basis of intelligence. In G. Hynd & J. Orbrzut (Eds.), Neuropsychological assessment of the school-aged child: Issues and procedures (pp.84-124). New York: Grune & Stratton.

Reynolds, C. (1981). The fallacy of "two years below grade level for age" as a diagnostic criterion for reading disorders. Journal of School Psychology, 19 (4), 350-358.

Reynolds, C. (1985a). Critical measurement issues in learning disabilities. Journal of Special Education, 18, 451-488.

Reynolds, C. (1985b). Measuring the aptitude-achievement discrepancy in learning disabilities diagnosis. Remedial and Special Education, 6, 37-55.

Reynolds, C. (1990). Conceptual and technical problems in learning disability diagnosis. In C. R. Reynolds & R. W. Kamphaus (Eds.), Handbook of psychological and educational assessment of children: Intelligence and achievement (pp. 571-592). New York:Guilford Press.

Reynolds, C. (1992). Two key components in the diagnosis of learning disabilities and the habilitation of learning. Learning Disability Quarterly, 15, 2-12.

Roa, L., Gluckin, N., & Kripke, B. (1979). Learning disabilities: An Overview of the theories, approaches and politics. New York: The Free Press.

Salvia, J. & Ysseldyke, J. E. (1987). Assessment in special and remedial education. Boston: Houghton Mifflin.

Sattler, J. (1988). Assessment of children's intelligence and special abilities. San Diego, CA: Author.

Schuerholz, L.J., Harris, E.J., Baumgardner, T.L., Reiss, A.L., Freund, L.S., Church, R.P., Mohr, J.L., Denkla, M.B. (1995). An analysis of two discrepancy-based models and a processing deficit approach in identifying learning disabilities. Journal of Learning Disabilities, 28, (1), 18-27.

Standard Score Regression Comparison 3.1 Windows Version (1995). N. Little Rock, AR.: WtL Publishing.

Tenth Annual Report To Congress on the Implementation of the Education of the Handicapped Act. (1988). Washington, DC; U.S. Department of Education.

Thorndike, R. (1963). The concepts of over-and under achievement. New York: Teachers College, Columbia University.

Thurlow, M. L., Ysseldyke, J. E., & Casey, A. (1984). Teacher's perceptions of criteria for identifying learning disabled students. Psychology in the Schools, 21, 349-355.

U.S. Department of Education (1976). Assistance to States Information. Bulletin #54. U.S. Department of Education, Washington, DC: Author. (121a.543 Written Report).

United States Department of Office of Education, Special Education Services, (1984). Identifying learning disabled students: Guidelines for decision making. Washington, D.C.: Author

U.S. Department of Education (1990). Twelfth annual report to Congress on the implementation of the Education of the Handicapped Act. Washington, D.C.: Author.

U.S. Department of Education. Fourteenth Annual Report to Congress on the Implementation of the Education of the Handicapped Act. (1992). Washington, D.C.: Author.

Wechsler, D. (1991). Wechsler Intelligence Scale for Children-Third Edition. San Antonio: The Psychological Corporation.

Wiederholt, J. L. (1974). Historical perspectives on the education of the learning disabled. In L. Mann & D.A. Sabation (Eds.), The second review of special education. Philadelphia: JSE Press.

Wilson, L., & Cone, T. (1984). The regression equation of determining academic discrepancy. Journal of School Psychology, 22, 95-110.

Wood, D. M. (1991). Discrepancy formulas and classification and Identification issues that affect diagnoses of learning disabilities. Psychology in the Schools, 28, 219-225.

Woodcock, R. W., & Johnson, M. B. (1990). Woodcock-Johnson Psycho-Educational Battery-Revised. Texas: DLM Teaching Resources.

Ysseldyke, J. E., & Algozzine, B. (1982). Critical issues in special and remedial education. Boston: Houghton Mifflin.

Ysseldyke, J., Algozzine, B., & Epps, S. (1983). A logical and empirical analysis of current practice in classifying students as handicapped. Exceptional Children, 50, 160-166.

Ysseldyke, J. E., & Algozzine, B. (1983). LD or not LD: That's not the question! Journal of Learning Disabilities, 16 (1), 29-31.

Ysseldyke, J., Thurlow, M., Graden, J., Wesson, C., Algozzine, B., & Deno, S. (1983). Generalizations from five years of research on assessment and decision-making: The University of Minnesota Institute. Exceptional Education Quarterly, 4, (1), 75-91.

Appendices

Appendix A

Introductory Letter to Superintendent

LINDA WEBER

April 5, 1998

J. Thomas Morton, Ed. D.
Superintendent
Allendale Schools
100 Brookside Avenue
Allendale, New Jersey 07401

Dear Dr. Morton:

I am a doctoral student at Seton Hall University, South Orange, New Jersey, and I am requesting permission to conduct my dissertation research using the records of students who are classified in both the Hillside and Brookside Schools. The focus of my study is to investigate whether there is congruence between the professional judgement of the Child Study Team and the use of a discrepancy formula in the classification of students as Perceptually Impaired. In addition, the consequence of classifying low achieving students as Perceptually Impaired will be examined to determine the effect of special education services. I plan to review the records of all students currently classified as Perceptually Impaired via the professional judgement of the Child Study Team in order to obtain their scores on their individually administered aptitude and achievement tests. Furthermore, I would like permission to review the results of the California Achievement Tests for both the low-achievers who were classified as Perceptually Impaired and the low-achievers who were not classified so that I can compare the results of these two groups of students.

As part of the research I will be administering the Coopersmith *Self-Esteem Inventory* to investigate whether there is a correlation between achievement and self-esteem. For this I will request permission from the parents of the students who will participate in the study.

I will not be recording any names of students. Rather, a coding procedure will be utilized so that I am able to maintain the confidentiality of the subjects. All data will be stored in a locked file cabinet in my home, and all records will be shredded at the conclusion of this research.

I look forward to hearing from you within the next week.

Sincerely,

Linda Weber

Appendix B

Introductory Letter to Principals

LINDA WEBER

April 5, 1998

Noreen Hajinlian
Principal
Brookside School
100 Brookside Avenue
Allendale, New Jersey 07401

Dear Ms. Hajinlian:

I am a doctoral student at Seton Hall University, South Orange, New Jersey, and I am requesting permission to conduct my dissertation research using the records of students who are classified in Brookside School. The focus of my study is to investigate whether there is congruence between the professional judgement of the Child Study Team and the use of a discrepancy formula in the classification of students as Perceptually Impaired. In addition, the consequence of classifying low achieving students as Perceptually Impaired will be examined to determine the effect of special education services. I plan to review the records of all students currently classified as Perceptually Impaired via the professional judgement of the Child Study Team in order to obtain their scores on their individually administered aptitude and achievement tests. Furthermore, I would like permission to review the results of the California Achievement Tests for both the low-achievers who were classified as Perceptually Impaired and the low-achievers who were not classified so that I can compare the results of these two groups of students.

As part of the research I will be administering the Coopersmith *Self-Esteem Inventory* to investigate whether there is a correlation between achievement and self-esteem. For this I will request permission from the parents of the students who will participate in the study.

I will not be recording any names of students. Rather, a coding procedure will be utilized so that I am able to maintain the confidentiality of the subjects. All data will be stored in a locked file cabinet in my home, and all records will be shredded at the conclusion of this research.

I look forward to hearing from you within the next week.

Sincerely,

Linda Weber

LINDA WEBER

April 5, 1998

James G. Hagy
Principal
Hillside School
100 Hillside Avenue
Allendale, New Jersey 07401

Dear Mr. Hagy:

I am a doctoral student at Seton Hall University, South Orange, New Jersey, and I am requesting permission to conduct my dissertation research using the records of students who are classified in Hillside School. The focus of my study is to investigate whether there is congruence between the professional judgement of the Child Study Team and the use of a discrepancy formula in the classification of students as Perceptually Impaired. In addition, the consequence of classifying low achieving students as Perceptually Impaired will be examined to determine the effect of special education services. I plan to review the records of all students currently classified as Perceptually Impaired via the professional judgement of the Child Study Team in order to obtain their scores on their individually administered aptitude and achievement tests. Furthermore, I would like permission to review the results of the California Achievement Tests for both the low-achievers who were classified as Perceptually Impaired and the low-achievers who were not classified so that I can compare the results of these two groups of students.

As part of the research I will be administering the Coopersmith *Self-Esteem Inventory* to investigate whether there is a correlation between achievement and self-esteem. For this I will request permission from the parents of the students who will participate in the study.

I will not be recording any names of students. Rather, a coding procedure will be utilized so that I am able to maintain the confidentiality of the subjects. All data will be stored in a locked file cabinet in my home, and all records will be shredded at the conclusion of this research.

I look forward to hearing from you within the next week.

Sincerely,

Linda Weber

Appendix C

Parent Letter

Dear Parent/Guardian:

Your child's class will have an opportunity, with your permission, to participate in an exciting research project, which will be conducted over the next several months. This research is taking place in school to learn more about how students' feel about their ability to learn and their academic achievement. The students will be asked to complete a short yes/no questionnaire, which will assist in gathering information about how they perceive themselves as learners.

Please find enclosed a Consent for Participation Form, which we respectfully request you review, sign and return to your child's teacher. This project will be explained to each student who is participating while in school. Students will also be asked to agree to participate by providing their written assent. There are no costs or any risk or harm to your child by participating.

We hope you will permit your child to be part of this important research project. If you have any questions, please feel free to call me.

Thank you for your cooperation.

Sincerely,

Linda Weber, Researcher

Appendix D

Informed Consent Form

CONSENT FOR PARTICIPATION IN RESEARCH PROJECT

I, _____, parent of _____ consent to his/her participation in the student perception of ability and academic achievement research study conducted by Linda Weber, doctoral student, Seton Hall University, School of Education and Human Services. The purpose of this research is to learn more about the attitude and perceptions students have of themselves as learners and their ability to learn.

This study will take place during the regular school day. As part of the research, your child will be asked to complete a brief yes/no questionnaire, which will take about 15 minutes to complete.

I understand that participation in all phases of this study is entirely voluntary, and refusal to participate will result in no loss of benefits to which my child is otherwise entitled or impact on my child's class standing. In addition, I understand I may withdraw from this study at any time, even if participation has started.

Experience with these procedures in the past indicates that the majority of children enjoy participation. We foresee no discomfort or risks. Names of all participants will be kept confidential. Assessments will be scored by the researcher and kept in locked storage. Aggregate results of assessments will be used for research purposes, but names of participants will not be divulged. In addition, a summary of results may be shared with school personnel. However, no breach of confidentiality will take place and data may only be shared in an aggregated manner.

Several benefits may result from the research. Your child's school and teacher may learn more about how students feel about their academic ability and their achievement in school. What we learn from this study will assist teachers and administrators in developing techniques to encourage improved student achievement.

This project has been reviewed and approved by the Seton Hall Unversity Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties, and rights. The Chairperson of the IRB may be reached through the Office of Grants and Research Services. The telephone number of the office is (973) 378-9809.

I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to allow my child to participate in this activity, realizing that I may withdraw without prejudice at any time.

Signature of Parent/Guardian: _____

Signature of Subject or Authorized Representative: _____

Date: _____

Appendix E

Agreement Form for Students

Student Agreement to Participate in Research Project

I, _____ agree to be part of a special

research project, which will take place in school. The purpose of this project is to help others

understand how I feel about my ability to learn and how it helps me learn more in school.

I understand that I will be given a short questionnaire, by the social worker, which

has yes or no answers. I know that there are no right or wrong answers. My choice will tell how

I feel about myself and the way I learn. I know that my answers will not be told to anyone.

I know that I can choose not to participate in this or that I can choose not to

continue in the project for any reason at all. I know that my parent/guardian has given their

permission for me to take part in this project. I can ask the social worker any other questions I

may have about this special research project at any time.

_____
Student's Signature