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The University of Kansas  
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*Emphasis on Adolescents and Young Adults*

A COMPARISON OF FIVE DISCREPANCY  
CRITERIA FOR DETERMINING LEARNING DISABILITIES  
IN SECONDARY SCHOOL POPULATIONS

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The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U. S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.)

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## COOPERATING AGENCIES

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in public school settings in both Kansas and Missouri. School districts in Kansas which have or currently are participating in various studies include: Unified School District USD 384, Blue Valley; USD 500, Kansas City, Kansas; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 233, Olathe; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission; USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Studies are also being conducted in several school districts in Missouri, including Center School District, Kansas City, Missouri; the New School for Human Education, Kansas City, Missouri; the Kansas City, Missouri School District; the Raytown, Missouri School District; and the School District of St. Joseph, St. Joseph, Missouri. Other participating districts include: Delta County, Colorado School District; Montrose County, Colorado School District; Elkhart Community Schools, Elkhart, Indiana; and Beaverton School District, Beaverton, Oregon. Many Child Service Demonstration Centers throughout the country have also contributed to our efforts.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project, and the Douglas, Johnson, Leavenworth, and Sedgwick County, Kansas Juvenile Courts. Other agencies which have participated in out-of-school studies are: Penn House and Achievement Place of Lawrence, Kansas; Kansas State Industrial Reformatory, Hutchinson, Kansas; the U. S. Military; and Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and support our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

## Abstract

Most operational definitions of learning disability include a criterion of discrepancy. That is, by definition the LD student must exhibit actual levels of achievement below expected achievement levels. Yet few published studies exist that describe the effects of applying specific discrepancy criteria to public school populations, especially when these students are adolescents. In the present study, two groups of students were identified in grades 7 through 12--a school-defined learning disabled group and a group of low-achieving students who were not receiving special education services. Five operational definitions of discrepancy were applied using test information obtained from the two groups. The purpose of the study was to determine the correspondence between the existing classification of the students and classifications based on each of the five discrepancy criteria. Two criteria were found to be the most consistent with current public school practice in selecting LD students. However, a substantial proportion of low-achieving students met these two LD criteria.

A COMPARISON OF FIVE DISCREPANCY CRITERIA  
FOR DETERMINING LD IN SECONDARY SCHOOL POPULATIONS

The specification of adequate operational criteria to be used in identifying learning disabled (LD) students remains an unreachd goal in the field of learning disabilities. There is, however, widespread agreement that a fundamental cornerstone of a definition of learning disabilities should be the concept of a measurable discrepancy between ability and achievement (Danielson & Bauer, 1978; Goodman & Mann, 1976).

The concept of such an ability/achievement discrepancy has its roots in the field of reading (Harris & Sipay, 1975). Within the field of learning disabilities, Bateman (1965) was an early advocate of the discrepancy concept. The concept remains fundamental to current federal regulations concerning identification of learning disabilities (U.S. Office of Education, 1977).

Critics of the various approaches to measuring discrepancies are numerous (e.g., Algozzine, Ysseldyke, & Shinn, 1980; Danielson & Bauer, 1978; Goodman & Mann, 1976; Hanna, Dyck, & Holen, 1979; O'Donnell, 1980), and the bases on which operational definitions of discrepancy are criticized include conceptual, ethical, and technical (measurement) difficulties. In spite of the abundance of critics and criticisms, there are few empirical studies of the application of various discrepancy formulas, especially when the population under consideration is limited to adolescents enrolled in secondary school programs.

During the past three years, the University of Kansas Institute for Research (IRLD) in Learning Disabilities has collected extensive data on a number of LD and nonhandicapped secondary school students. A central

purpose in the data collection was to allow the comparison of school identified LD youths with other low-achieving students having difficulty in school, but who were not being served in special education programs. The focus of this comparison was motivated by the belief that it is important to determine how to identify from among the larger pool of poorly achieving students a smaller group that should receive LD services.

In the present study, five discrepancy criteria were compared. They were chosen because they represent a variety of different approaches to the definition of discrepancy. Two of these criteria have specifically been proposed for use at the secondary level. The purpose of this study was to describe the relative efficiency of these criteria in correctly classifying existing groups of school-defined LD and low-achieving adolescents.

### Methodology

#### Subjects and Settings

Two groups of adolescents and their parents participated in this study. The adolescents included randomly selected LD students and low-achieving students in grades 7, 8, 9, 10, 11, and 12. LD students were those currently being served in programs for learning disabled students and validated by the IRLD Validation Team. Low-achieving (LA) students were students who had recently received one or more failing grades in required subjects, scored below the 33rd percentile on group administered achievement tests, and who were not receiving special educational services. Due to missing data, sample sizes vary slightly in the comparisons made in this study. Nevertheless, data were available for approximately 300 LD students and 320 low-achieving students. Students were drawn from three moderate-size school districts in northeast

Kansas and represented a broad cross-section of levels of socioeconomic status.

### Procedures

In the present study, low-achieving and LD students were compared in terms of the proportions of each group that qualified as learning disabled according to a number of discrepancy criteria. For each of the five discrepancy criteria to be discussed, ability was defined as estimated full-scale Wechsler IQ, based on the administration of the Vocabulary and Block Design subtests of the WISC-R or WAIS. Achievement was measured using the three achievement clusters from the Woodcock-Johnson Psycho-educational Battery: the Reading, Mathematics, and Written Language Clusters. Grade equivalence scores were used to evaluate the various criteria. For each of the five discrepancy criteria to be discussed, students were considered to be learning disabled if their achievement was sufficiently below expectation in any one of the three achievement areas. The five discrepancy criteria used were as follows.

U. S. Office of Education criterion. The first criterion was the formula proposed by the federal government in 1976 (U.S. Office of Education). The government's purpose in devising the formula was to clarify the meaning of "severe" discrepancy by setting the level of discrepancy to be equivalent to about one half of the student's expected achievement level. The formula was as follows:

$$SLD = (CA \times (IQ/300 + .17)) - 2.5$$

Any actual achievement grade equivalent falling below the SLD value resulted in an LD classification for purposes of the present study.

Myklebust criterion. The second discrepancy criterion considered in the present study was a modification of the Myklebust (1968) criterion for learning disabilities. Myklebust recommended that two "learning

quotients" be computed, one based on Performance IQ and one based on Verbal IQ. In the present study, only the estimated full-scale IQ was used. In Myklebust's formulation, the learning quotient is equal to achievement age (AA) divided by expectancy age (EA), where:

$$EA = \frac{\text{Mental Age} + \text{Chronological Age} + \text{Grade Age}}$$

3

$$AA = \text{Achievement Grade Equivalent} + 5.2$$

Myklebust recommended using a learning quotient of .89 or below as a basis for classifying a child as learning disabled. This criterion was used as the cut-off in the present study.

HALF criterion. The third discrepancy criterion used was called the HALF criterion. Here, if a student's grade equivalent score was at or below one-half of their actual grade placement, that student qualified as learning disabled. This criterion was included to determine what the consequence would be of eliminating entirely the use of an IQ score in the determination of a significant discrepancy.

Wiederholt criterion. The fourth discrepancy criterion is one proposed by Wiederholt (1975) for adolescents. Wiederholt suggested that a distinction be made between a learning disability and a probable learning disability. LD adolescents were defined by Wiederholt as having academic achievement at or below the second grade level and a measured IQ of not less than 82 in addition to other exclusionary considerations. A student who meets these criteria but is achieving between second and third grade level was placed in a "probable LD" category by Wiederholt. Students who met the LD or "probable" LD conditions were classified as learning disabled in the present study.



Goodman and Mann criterion. Fifth, Goodman and Mann (1976) defined learning disability for adolescents in terms of "four diagnostic components: (1) identification of significant academic deficit, (2) determination of average mental ability, (3) determination of process disorder, and (4) determination of neurological dysfunction" (p. 16). Only the first two components were measured in the present study and thus only the first two could be operationalized for use in this discrepancy analysis. With respect to academic achievement, Goodman and Mann suggested that the student not be achieving above sixth grade level in basic school subjects. In addition, the student should exhibit a two-year difference between achievement and grade placement. Finally, a student should have an IQ score equal to or greater than 90. These criteria were adopted in the present study.

#### Results and Discussion

In the discussion that follows, a comparison is being made between actual school practices in the identification of secondary LD students and identifications that might have been made if the five discrepancy criteria drawn from various sources in the literature had been used. One can take a critical stance with respect to the school practices, the various criteria, or both. Also, the school districts involved may have subscribed to one of the criteria to some unknown extent. The purpose of this discussion, then, is not to make causal inferences, but rather to point up some of the limitations that potentially are present when one attempts to apply the various criteria. Of primary interest in the present study was the relative efficiency of each of the five criteria in discriminating between LD and low-achieving students. Of additional interest was the proportion of each group that met the various cut-off levels associated with LD classification.

In Table 1, the percentages of each group meeting the various criteria are presented. Also, the percent of the total sample that was correctly classified was computed for each of the five criteria. These percentages were as follows:

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Insert Tables 1 and 2 about here

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Two of the five criteria stood out as exhibiting the best over-all efficiency in correctly classifying LD and low-achieving students. These were the proposed federal formula and the HALF criteria. These criteria resulted in the correct classification of approximately 75% of the LD students. On the other hand, a substantial proportion of the low-achievers in our sample were classified as LD by these two criteria (40% and 45%).

Using Myklebust's learning quotient (with the discussed modification) virtually all of the students (both LD and low-achievers) were classified as learning disabled. On the face of it, this criterion appears to be too liberal. This is probably the result of selecting the cut-off at .89, which seems to represent very modest levels of underachievement.

Wiederholt's criterion, on the other hand, may be too conservative to represent current public school practice. Only 16% of the low-achievers were incorrectly classified as learning disabled using this criterion, whereas 61% of the LD sample were misclassified as low-achievers. This misclassification resulted because the bulk of students in both samples did not receive grade equivalent scores on the Woodcock-Johnson below 3.0. If one were interested in identifying students with extremely low levels of

basic skill achievement and thus limiting the LD population to a smaller, more severe group, the Wiederholt criterion likely would produce this result.

Finally, the Goodman and Mann criterion (partially implemented) classified low-achieving students (62% correct) relatively well, but was less effective in classifying school-defined LD students (52% correct). The major problem with the Goodman and Mann criterion as applied to LD students in the IRLD data base is the requirement of having an IQ of 90 or above. A substantial proportion of the LD students received estimated IQ scores below this level (Warner, Alley, Schumaker, Deshler, & Clark, 1980).

In summary, two criteria resulted in selections that were the most consistent with current public school practices with respect to the selection of LD students. These were the proposed federal formula and the HALF criterion. Yet, the application of these two criteria imply that there are a substantial number of low-achieving students who meet the discrepancy criteria, yet who are not being served. Further, if either one of those two criteria were applied systematically in a school district, it is unlikely that this could result in any substantial reduction in the proportion of students being served as learning disabled.

In the case of the proposed federal formula, the influence of a student's IQ score on the discrepancy is reduced by dividing that IQ by 300. In the case of the HALF criterion, the influence of IQ is eliminated altogether. Yet these two criteria discriminated LD and low-achieving students reasonably well. Given the numerous criticisms of aptitude-achievement discrepancy definitions and given the large number of lower ability students in public school LD programs, future research and discussion should be focused on the implications of formulating a definition of learning disabilities that is not based so heavily on measured intelligence.

### Reference Notes

1. For a more complete discussion of the methodology used in this study, see Schumaker, Warner, Deshler, and Alley, 1980.

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TABLE 1

Percentages of LD and Low Achieving Students Meeting Each of Five Criteria for Learning Disabilities

		Proposed Federal Formula Criterion				Half Criterion			
		Non LD	LD			Non LD	LD		
School Defined	Low Achievers	60%	40%	n=319	School Defined	Low Achievers	55%	45%	n=321
	LD	24%	76%	n=302		LD	23%	77%	n=305
Modified Myklebust Criterion									
		Non LD	LD			Non LD	LD		
				School Defined	Low Achievers	9%	91%	n=318	
					LD	1%	99%	n=299	
Wiederholt Criterion									
		Non LD	LD			Non LD	LD		
School Defined	Low Achievers	84%	16%	n=320	School Defined	Low Achievers	62%	38%	n=316
	LD	61%	39%	n=305		LD	48%	52%	n=304
Partial Goodman & Mann Criterion									

Table 2

Percentage of Total Sample Correctly  
Classified by the Five Criteria

<u>CRITERION</u>	<u>PERCENTAGE CORRECTLY CLASSIFIED</u>
Proposed Federal Formula	67%
HALF	66%
Myklebust	53%
Wiederholt	62%
Goodman and Mann	57%