

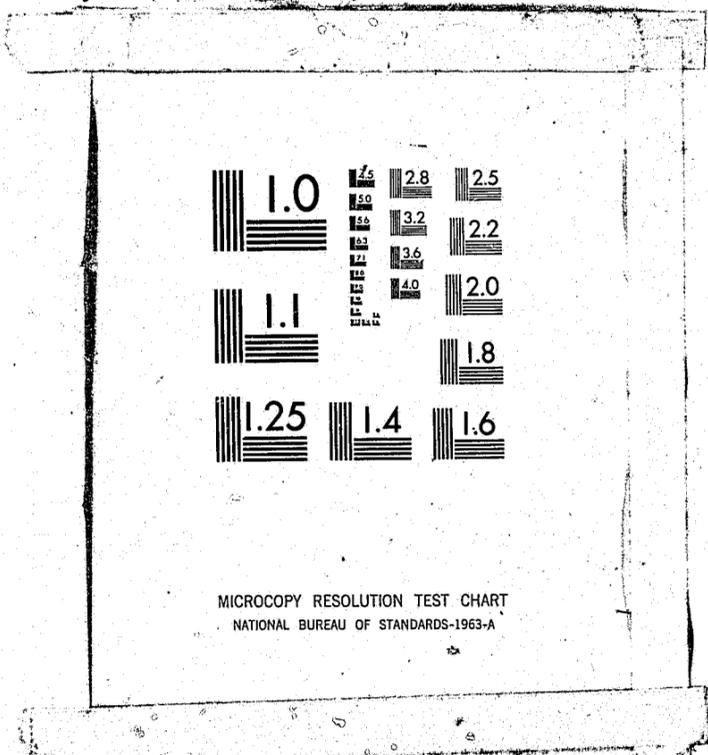
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United States Department of Justice
Washington, D. C. 20531

DATE FILMED

12/28/81

THE FREQUENCY OF LEARNING DISABILITY: A COMPARISON
BETWEEN JUVENILE DELINQUENT AND
SEVENTH GRADE SCHOOL POPULATIONS

U.S. Department of Justice
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Rochester School District #535 Special Education Department
in conjunction with
Learning Disabilities Research Project under LEAA Grant #1405601377
Rochester School District #535 Special Education Department

November 1, 1978

The design and implementation of this study was monitored by the Evaluation Subcommittee of the Community Corrections Advisory Board.

Lawrence Collins, Chairman

Isabel Huizenga, Member

Richard Portillo, Member

Harold Martin, M.D., Member

Fran Bradley, Member

Kenneth Offord, Member

This report was prepared by:

William Swanstrom

Caron Randle

Learning Disabilities Research Project Staff

William Swanstrom, Project Director

Caron Randle, Project Coordinator

Kyle Macrafc, Research Assistant

Susan Arnold, Learning Disabilities Specialist

Margaret Caulfield, Learning Disabilities Teacher assigned to Learning Disabilities Project

Sandra Soltis, Learning Disabilities Teacher assigned to Learning Disabilities Project

Robert Brintnall, Prevalence Study Coordinator

Sonja Trom, Student Intern

Rochester School District #535 Staff

Christopher Stapleton, Special Education Director

Jean Malizia, Learning Disabilities Coordinator

Norm Rasmussen, Ed.D., Psychologist

Robert Piper, Psychologist

Duane Peterson, Psychologist

Suzanne Tolman, Ph.D., Psychologist

Kathy Estry, Learning Disabilities Teacher

Brian Strei, Learning Disabilities Teacher

Jerry Cunningham, Learning Disabilities Teacher

Almira Hazama, Learning Disabilities Teacher

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INTRODUCTION

In January, 1977, the Law Enforcement Assistance Administration funded a three-year project in a tri-county area in southern Minnesota to study the problem of juvenile delinquency and learning disabilities. The primary purpose of this project was to determine the comparative rates of learning disabilities among juvenile delinquents and a general student population by following similar procedures. In order to implement this objective, Community Corrections in conjunction with the Rochester Public School District #535 conducted a prevalence study of learning disabilities among the seventh grade population. The results of this study are designed to increase understanding of the relationship between juvenile delinquency and learning disabilities.

PROBLEM STATEMENT

For over a quarter of a century, educators have been aware that certain individuals exhibit learning problems that do not appear to be caused by low intelligence or poor instruction. The term "learning disability" was coined in the early 1960's to describe such a condition. This condition has been defined to mean, generally, a demonstrated inability to perform a specific task normally found within the capability range of individuals of comparable mental capacity.¹

In recent years there has been increased interest in the learning problems of those youth who do not achieve in school, particularly those who become involved in the juvenile justice system. Clinical observations and case histories of many juvenile delinquents bear striking similarities to the observations of youth with learning disability.

Mausser reported several similar characteristics between juvenile delinquency and learning disability:

- 1) Most delinquents and children with learning disability tend to have difficulties in school beginning in the primary grades.
- 2) Both the learning disability and juvenile delinquent population evidence a negative self-concept and a low frustration tolerance.
- 3) Both delinquency and learning disability have been problems primarily associated with males.
- 4) The intelligence levels of children with learning disability and juvenile delinquents fall into the average range.

5) Juvenile delinquency and learning disability appear to have no single cause and no single cure, but are associated with a variety of etiological factors and a multitude of treatment strategies.²

Descriptive research regarding the frequency of learning disability among juvenile delinquent populations ranges between thirty-five percent (35%)³ and ninety percent (90%).⁴ Both Critchley and Bender found the percentage of learning disability among delinquents to be approximately seventy-five percent (75%).⁵ C. Poremba stated, "that fifty percent of juvenile delinquent youths referred to the Courts exhibited a specific learning disability."⁶

The Community Corrections Learning Disabilities Project, Rochester, Minnesota, has been screening juvenile delinquents for identification of possible learning disability for the past eighteen months. The preliminary results based on a juvenile delinquent sample from five Minnesota counties place the frequency of learning disability at 59.7%.⁷ This finding from the present study is consistent with other studies in confirming that a disproportionately high number of juvenile delinquents have learning disability.

By comparison, learning disability in the general population is reportedly lower, though learning disability expert consultants interviewed by the Law Enforcement Assistance Administration agreed that sound data on a representative sample of children had not been collected

as of 1975.⁸ The incidence of learning disability as estimated by the learning disability consultants is approximately five to ten percent (5% - 10%) of all children through age ten.⁹ Partly as a result of the Law Enforcement Assistance Administration's review of the literature which found no adequate epidemiological data which determined the number of United States children having learning disability, a national Research and Demonstration Project was funded. By testing and a school records review, the Association for Children with Learning Disabilities Research and Demonstration Project currently in progress in three metropolitan areas in the United States has found a sixteen percent (16%) rate of learning disability in non-delinquent school populations.¹⁰

Investigators have reported the frequency of learning disability among juvenile delinquent populations to be substantially higher than in the general school populations. Although a cause and effect relationship has not been established, it seems apparent that a strong relationship between learning disability and juvenile delinquency exists and is an obvious concern for the criminal justice system.

To date, the juvenile delinquent and general school populations have not been studied using the same criteria for diagnosis, identical testing instruments, and performed at approximately the same time. Clearly, there is a need to determine the prevalence of learning disability among the general school population in order that the rate of learning disability in the juvenile delinquent populations can be put in perspective.

PURPOSE OF PREVALENCE STUDY

The purpose of the prevalence study is to provide the necessary information to answer the following questions:

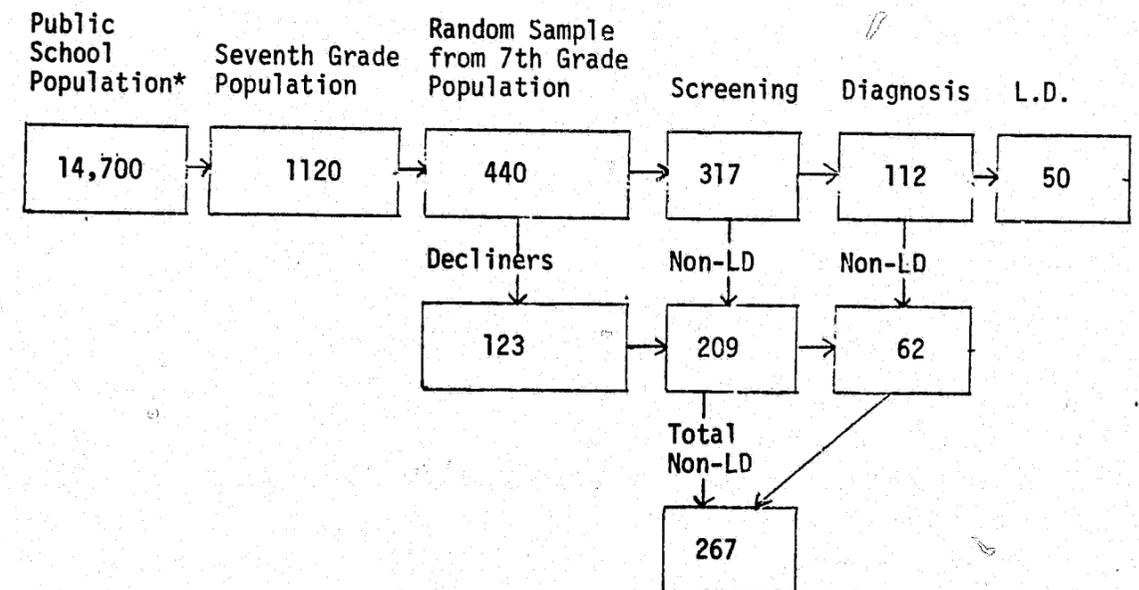
- 1) What is the prevalence of learning disability among the seventh grade school population of Rochester School District #535?
- 2) How does the prevalence of learning disability among the Rochester School District population compare with the rate of learning disability among the juvenile delinquent population?

METHODS

The study of a random sample from the seventh grade school population was conducted during the summer of 1978. Administrative responsibilities were carried out by the Community Corrections' Learning Disabilities staff, and the testing and diagnosis of the seventh grade students by certified school psychologists and school learning disabilities teachers, with input from the Community Corrections' Learning Disabilities staff.

The population under consideration was the seventh grade of the public schools of the city of Rochester. Public schools in Dodge and Fillmore Counties were considered unsuitable due to potential administrative and logistical problems.

Flowchart of Study



*1977-1978 School Year, Rochester School District #535

A. Sample

From a population of 1120 seventh grade students, a random sample of 317 students was selected. One hundred and eighty-three boys and one hundred and thirty-four girls participated in the study. The subjects ranged in age from twelve to fifteen. The average age for the learning disabled and non-learning disabled groups was approximately 12.9 years. Certain factors related to the time schedule and the various grade levels were considered in deciding on a statistically adequate and unbiased sample. Given the resources available for the study, it was unrealistic to attempt to test the entire grade of 1120 students in the two months available. Secondly, testing high school level students could alter the results because students may drop from school at sixteen. Exclusion of dropouts might produce a selected and biased sample rather than one which is representative of school age youth. Our concern was that dropouts may exhibit a high percentage of learning disability. Therefore, a seventh grade population was deemed the most appropriate group to study.

B. Decliners

From a random sample of 440 seventh graders, 123 or twenty-eight percent (28%) chose not to participate in the study. The following reasons were given regarding refusals:

	<u>Number</u>	<u>Percent</u>
Not Interested	67	55%
Child Refused	20	16%
Parent Refused	12	10%
Vacation	10	8%
Personal Reasons	6	5%
Job Interfered	5	4%
Moved	3	2%
	<u>123</u>	<u>100%</u>

Sixty boys and sixty-three girls were in this group. Examination of the special education department general roster revealed that fifteen or 12.3% of the declining group had received prior learning disability assistance. Out of the group of fifteen, there were twelve boys and three girls.

B. Testing

The testing entailed two steps and was conducted on two occasions:

- 1) Each youth was administered the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Wide Range Achievement Test (WRAT).
- 2) If a ten-point or greater discrepancy occurred between the full scale I.Q. and standard scores on the achievement test, an additional test was administered to the youth in the academic subject appearing suspect (in reading, Woodcock Reading Mastery; and in mathematics, Key Math Diagnostic Test).¹¹

Three hundred and seventeen students were screened using the WISC-R and WRAT. If a ten point or greater discrepancy between the full scale I.Q. score and standard scores on WRAT subtests occurred, the psychologists recommended further testing before making a diagnosis. Of these 317 students tested, 12 were administered the Woodcock Reading Mastery, 62 were administered the Key Math, and 38 students were administered both tests.

During the first week of testing, there was evidence that several students with superior I.Q. scores were being identified for further testing based on the ten point discrepancy. These students were achieving

at grade level or above, though not at their expected levels according to the ten point split. At this point, it was decided to review each record before further testing, and to classify students achieving commensurate with their grade level as non-learning disabled regardless of potential.

C. Diagnosis

The Federal and School District guidelines for the diagnosis of learning disabilities were adhered to in the juvenile delinquency and school groups.

The learning disabilities population was identified through three basic criteria:

- 1) Discrepancy Factor: Youth with learning disabilities show a discrepancy between expected and actual achievement in one or more areas such as spoken or written language, reading or mathematics.
- 2) Exclusion Factor: The learning disabled youth's disability is not primarily the result of mental retardation, sensory impairment, motor handicaps, emotional disturbance, or environmental disadvantage. Those students having a 75 or lower full scale I.Q. were classified in the non-learning disability group.
- 3) Deficit Factor: Learning disabled youth have a significant deficit in one or more essential learning processes, which often limits their ability to receive information, to understand or interpret it, and finally to express it in a meaningful way.

Definition of Learning Disabilities - Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or using spoken or written languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance or to environmental disadvantages.¹²

To a very large extent the study of the prevalence of learning disabilities is dependent upon how one chooses to operationally define learning disabilities. Presumably a change in the definition would change the prevalence rate. There is no universal definition of learning disabilities and as in any profession there are legitimate disagreements among experts regarding a particular concept. The operational definition of learning disabilities used in this study is subject to the legitimate disagreements of experts who may see the problem in a different manner. From a practical standpoint this definition rests between two extremes. The definition is not so severely restrictive that it would tend to exclude the mild and perhaps some of the moderate cases. Conversely it is not overly liberal where perhaps twice as many children could have been included. It is the judgement of the Project staff that the definition that was used constitutes an operational definition of learning disabilities that the majority of learning disability professionals would endorse.

Assessment of Severity - Those individuals diagnosed as having learning disability were assigned a mild, moderate or severe classification:

Mild - Deficits are primarily in one skill area. Mild learning disabled students may be one and one-half to two years deficient in academic achievement. Social and vocational needs and goals are not restricted by their learning process and self-concepts are not severely damaged.

Moderate - Learning deficits of the moderate learning disabled individuals cause them to be disabled in a specific area. These individuals are in need of specific prescribed remedial and/or compensatory techniques. Deficits may be in more than one area. Skill levels such as reading are three or more years below academic intellectual potential. Consequently, skill acquisition may be affected in a broad range of subject matter. Noticeable problems may emerge with frustration tolerance, impulsivity and social perception.

Severe - Severe learning disabled juveniles have multiple processing problems that appear global in nature, such that the youth are handicapped by their idiosyncratic learning patterns. Skill deficits are in critical language areas, auditory and cognitive processes, and may include all vehicles for learning and expressing information. Educational, vocational and social needs and goals are severely limited by the particular deficits of the severe learning disabled youth.

D. Procedures Pertinent to Juvenile Delinquent Group

The procedures outlined above were applied to the juvenile delinquent sample with minimal variations. Rather than randomly selected, all adjudicated youth, ages twelve to seventeen, and currently on probation

(1977 - 1978) in the three county (Dodge, Fillmore and Olmsted) area were screened for possible learning disabilities. A sample of probation cases from Nicollet and Blue Earth counties was also studied. Youth of both sexes, school enrollees and drop-outs were included. The youths were administered the complete series of tests regardless of the ten-point split between full scale I.Q. and standard scores on the achievement tests. Members of the Community Corrections' Learning Disabilities staff administered the tests and determined the diagnosis of this group. Testing of juvenile delinquents from Dodge, Fillmore and Olmsted counties will continue through December, 1978.

RESULTS

The results are presented in two sections. Tables illustrating the data pertaining to the general school population are provided in the first section. The second section provides data from the juvenile delinquent study with a comparison of the two groups.

A. General School Population

Table 1

Prevalence of Learning Disability In The Random Sample of Seventh Grade Students

	Learning Disability		Non-Learning Disability		Total Number
	Number	Percent*	Number	Percent	
TOTAL	50	15.8%	267	84.2%	317

* 95% confidence interval for prevalence of learning disability is 11.75% to 20.29%.

The prevalence of learning disability among the sample of seventh grade students was 15.8% (see Table 1). Fifty students were classified learning disabled from a group of 317. Based on the 15.8% rate of learning disability in the sample, we may project that if all 1120 students in the seventh grade during 1977 - 1978 had been evaluated, 177 students would have been classified as having learning disability (see Table 2). We can conclude with a high degree of confidence that this rate is not lower than 11.75% nor higher than 20.29%.

Table 2

Projected Number of Students Classified Learning Disabled In The Seventh Grade Population Based on 15.8% Prevalence Of Learning Disability

	Learning Disability		Non-Learning Disability		Total Number
	Number	Percent	Number	Percent	
Total	177	15.8%	943	84.2%	1120

Table 3

Prevalence of Learning Disability By Sex In The Random Sample From Seventh Grade School Population

	Learning Disability		Non-Learning Disability		Total Number
	Number	Percent	Number	Percent	
Boys	37	20%	146	80%	183
Girls	13	10%	121	90%	134
Total	50	15.8%	267	84.2%	317

Overall chi square = 5.67 (df = 1) p = .02.

Twenty percent of the boys in the sample of seventh grade students and ten percent of the girls met the criteria for learning disability. Learning disability occurred with significantly greater frequency in boys than in girls.

The Wechsler Intelligence Scale for Children-Revised (WISC-R)¹³ is an individually administered intelligence test that measures verbal and performance general abilities. The test is administered to children between six and one-half and sixteen and one-half years of age. The test consists of six subtests on the Verbal Scale and five subtests on the Performance Scale. Ten subtests are combined to produce the Full Scale Intelligence Quotient. The mean of the WISC-R is 100 and the standard deviation is fifteen. The digit span subtest was not used in establishing the intelligence quotient tables.

Table 4

WISC-R Scores of Learning and Non-Learning Disabled Subjects in Random Sample From Seventh Grade School Population

	Learning Disability (N = 50)			Non-Learning Disability (N = 267)		
	Mean	SD	Range	Mean	SD	Range
Verbal IQ	99.2	10.4	77-119	105.2	12.2	59-140
Performance IQ	105.9	10.5	91-135	108.1	12.7	75-142
Full Scale IQ	102.4	9.7	86-130	107.0	12.1	69-142

The average scores of youths with learning disability and youths classified non-learning disabled are presented for the Wechsler Intelligence Scale for Children-Revised (See Table 4). The mean Full Scale I.Q. scores of the learning disability and non-learning disability groups are in the average range of intelligence (I.Q. 90 - 109). No Full Scale I.Q. in the learning disability group was below 86.

The Wide Range Achievement Test¹⁴ is a screening device developed for diagnosis of reading, spelling and arithmetic disabilities in persons of all ages. The academic skills measured by the test are limited to single components of reading and arithmetic and, at times, do not render adequate information to be used as the sole instrument in diagnosing learning disabilities. For this reason, additional achievement tests in reading and arithmetic which assess the comprehensive aspects of the subjects were administered to certain youths in the study. (See page 7).

Table 5

Wide Range Achievement Test Scores In The Learning And Non-Learning Disability Groups Of The Random Sample From The Seventh Grade Population (Grade Levels)

	Learning Disability (N = 50)		Non-Learning Disability (N = 267)	
	Grade Mean	SD	Grade Mean	SD
Reading	7.0	1.4	9.3	2.0
Spelling	5.4	1.3	7.8	1.8
Arithmetic	5.6	1.3	7.7	1.9

Scores based on 1976 norms.

Mean results for the learning disability group and non-learning disability group on the subtests of the Wide Range Achievement Test are presented in Table 5. In all subject areas, the non-learning disability group scored approximately two grade levels higher than the learning disability group. The results were computed using the 7.9 grade level of the students participating in the study.

1. Reading - Based upon the mean or average test scores, the non-learning disability group performed approximately 1.4 years higher than the expected level of 7.9 years in reading. The Wide Range Achievement Test reading test is defined as recognizing and pronouncing words out of context; reading comprehension is not tested. The learning disabled group performed approximately one year behind their grade level in reading.

2. Arithmetic - The mean score of the non-learning disabled group in arithmetic was 7.7 years or approximately .2 years behind grade level. By comparison the learning disabled group was approximately 2.3 years on the average behind expectations in math. The arithmetic subtest on the Wide Range Achievement Test measures written computational skills, and does not measure arithmetic concepts.

3. Spelling - The non-learning disabled group scored approximately at expected grade level in spelling-7.8 years. The learning disabled group had an average score of 5.4 years or 2.5 years below grade level. The spelling test consisted of writing single words to dictation.

Table 6

Number of Learning Disabled Youth Classified By Severity, Type of Disability and Sex (N=50)

		<u>Severity</u>			Total LD
		Mild	Moderate	Severe	
Boys	Reading	1	4	2	7
	Math	8	5	1	14
	Both	2	8	6	16
Girls	Reading	2	1	0	3
	Math	6	3	0	9
	Both	0	1	0	1
Boys and Girls	Reading	3	5	2	10
	Math	14	8	1	23
	Both	2	9	6	17

As shown in Table 6, sixteen of the thirty-seven boys classified learning disabled had academic deficiencies in both reading and arithmetic. Fourteen boys had deficiencies solely in arithmetic, with eight of these falling into the mild area, five in the moderate and only one in the severe category. Seven boys had learning problems exclusively in reading.

Among the girls classified learning disabled nine of the thirteen had math deficiencies with six in the mild area and three in the moderate. Three girls had learning problems in reading and one had both reading and arithmetic deficiencies.

Table 6 shows that in the mild category, fourteen youths were classified learning disabled with mathematical learning problems, three had reading problems, and two had both reading and math. In the moderate category, eight youths were found to have math deficiencies, five had reading, and nine had both reading and math problems. In the severe category, one youth had math problems, two reading and six had both reading and math.

As illustrated in Table 6, ten of the fifty learning disabled youths had deficiencies in reading. It is interesting to note that twenty-three of the fifty learning disabled youths were diagnosed as having difficulties solely in arithmetic. One would not usually expect to find such a high proportion of learning disability in children in the arithmetic category. Seventeen of the fifty had deficiencies in both reading and arithmetic.

Table 7
Learning Disability Group By
Severity and Sex
(N=317)

	MILD		MODERATE		SEVERE		TOTAL-LD		NON-LD		TOTAL Number
	No.	% of Row Total	No.	% of Row Total	No.	% of Row Total	No.	% of Row Total	No.	% of Row Total	
Boys	11	6%	17	9%	9	5%	37	20%	146	80%	183
Girls	8	6%	5	4%	0	0%	13	10%	121	90%	134
Total	19	6%	22	7%	9	3%	50	15.8%	267	84.2%	317

Overall chi square = 11.05, (df = 3), p = .01.

Most learning disability experts agree that learning disability symptoms are found more frequently in males. Eight of the thirteen learning disabled girls were classified as having mild learning disabilities. No girls were assigned to the severe category. The majority of boys fell in the moderate classification of learning disability, with twenty-eight of the thirty-seven boys exhibiting moderate or severe deficiencies. When compared, the boys outnumber the girls at a rate of two to one in addition to having more severe deficits in learning (see Table 7).

Table 8

Number of Youths in Random Sample from Seventh Grade School Population Receiving Prior Learning Disability Assistance

	Learning Disability (N=50)				Non-Learning Disability (N=267)		
	MILD No. Col %	MODERATE No. Col %	SEVERE No. Col %	TOTAL No. Col %	Number	Column Percent	Total
Prior LD Assist. In Any Grade	6 32%	7 32%	7 78%	20 40%	16	6%	36
No Prior LD Assistance	13 68%	15 68%	2 22%	30 60%	251	94%	281
Total	19	22	9	50	267		317

Table 8 presents the number of youths classified learning disabled who have previously received tutoring in the Rochester School District or by private tutoring sources. Any youth who received tutoring in reading, spelling, or arithmetic in the public or parochial schools or in private tutoring centers during his school years was placed in the category designated prior learning disability assistance in any grade. As shown by the Table, seven out of nine students assigned the severe classification had prior learning disability assistance. Approximately one out of three in the mild and moderate categories had prior learning disability assistance.

Table 9

Number of Youths in Random Sample from Seventh Grade School Population Receiving Learning Disability Assistance in the Seventh Grade

	Learning Disability (N=50)				Non-Learning Disability (N=267)		
	MILD No. Col %	MODERATE No. Col %	SEVERE No. Col %	ALL-LD No. Col %	Number	Column Percent	Total
LD Assist. in Seventh Grade	4 21%	4 18%	5 56%	13 26%	6	2%	22
No LD Assist. in Seventh Grade	15 79%	18 82%	4 44%	37 74%	258	98%	292
Total	19	22	9	50 100%	264		314*

*Three students moved from the Rochester School District, and the school records could not be reviewed.

The above table indicates to what extent there had been learning disability assistance in the seventh grade. Table 9 indicates that five of the nine severe cases had learning disability assistance in the previous nine months, and roughly one in four in the mild and moderate groups.

Table 10

Number of Learning Disabled Youth Classified by Severity, Type of Disability and Prior Learning Disability Assistance (N=50)

Prior LD Assistance	Severity						Total LD		Total LD
	Mild		Moderate		Severe		Yes	No	
	Yes	No	Yes	No	Yes	No			
Reading	2	1	0	5	0	2	8	10	
Math	3	11*	1	7	1	5	18	23	
Both	1	1	6	3	6	13	4	17	
TOTAL LD	6	13	7	15	7	20	30	50	

* Two of eleven on waiting list.

As shown in Table 10, two youths in the mild category with reading deficits only received learning disability assistance at some time during their school years. Overall eight of the ten with reading deficits had not received learning disability assistance.

Of the twenty-three with math deficits only, five had received prior learning disability assistance. Two youths with mild math difficulties had been placed on a waiting list. Sixteen of the twenty-three youths with math deficiencies had not received learning disability assistance. Thirteen of the seventeen learning disabled seventh graders with both reading and math deficits had received prior learning disability assistance. All youths placed in the severe category with learning problems in both areas had received assistance. Four of the youths with mild or moderate difficulties in reading and arithmetic had not received learning disability assistance.

Table 11

Results Relative to Handedness in the Random Sample From the Seventh Grade School Population (N=317)

	Learning Disability		Non-Learning Disability		Total Number
	Number	Percent	Number	Percent	
Right	42	15%	233	85%	275
Left	8	21%	31	79%	39
Ambidextrous	0	0%	3	100%	3
Total	50	15.8%	267	84.2%	317

Overall chi square = 1.30, (df = 2), p > .10.

No difference (p > .10) was found between the groups relative to handedness. For the purpose of this study, handedness was defined as the hand preference of the youth in performing written exercises and other fine finger activities. This information was secured through an interview and by observation in the test setting. The dominant hand used for writing was unrelated to deficiencies in learning.

B. Juvenile Delinquent Population

The Dodge-Fillmore-Olmsted County Community Corrections Learning Disabilities Project has screened and diagnosed adjudicated delinquents in the three counties for identification of learning disability since May 1977.* In addition to screening 116 juvenile delinquents from Dodge-Fillmore-Olmsted Counties, this Project screened a random sample of twenty-eight juvenile delinquents from Blue Earth and Nicollet Counties (Mankato area) for a total of 144 subjects. (See Table 12.)** The combined percentage rate of learning disability among juvenile delinquents is 59.7%.***

Table 12

Frequency of Learning Disability Among Juvenile Delinquent Samples in Five Minnesota Counties

	Learning Disability		Non-Learning Disability		Total Number
	Number	Percent	Number	Percent	
Dodge-Fillmore-Olmsted-Blue Earth and Nicollet Counties	86	59.7%	58	40.3%	144

*Twenty-eight juvenile delinquents refused to participate in the study.

**During September, 1977, the Community Corrections Learning Disabilities Project in conjunction with the probation departments of Blue Earth and Nicollet Counties co-sponsored a frequency rate study of limited scope. Thirty juvenile delinquents were selected from a total of ninety-one (twenty-eight agreed to participate in the testing.) The data were used as a cross validation or comparison with the Dodge-Fillmore-Olmsted rates.

***Preliminary results, September, 1978.

The primary purpose of this study was to determine the extent to which the rate of learning disability among the juvenile delinquent population exceeded the learning disability prevalence rate for the general school population in Rochester School District #535 as reflected by the random sample of seventh graders. Table 13 indicates that the learning disability rate of 59.7% among juvenile delinquent populations is approximately four times greater than the prevalence of learning disability found in the general school population in Rochester.

Table 13

A Comparison of Prevalence of Learning Disabilities Between Juvenile Delinquent and Seventh Grade Samples

Sample	Total No.	Learning Disability		Non-Learning Disability	
		Number	Percent	Number	Percent
Seventh Grade	317	50	15.8%	267	84.2%
Juvenile Delinquent	144	86	59.7%	58	40.3%

Chi square = 91.96 (df = 1) p < .001

As shown in Table 12, the rate of learning disability among the juvenile delinquent combined samples is substantially and significantly higher than the learning disability rate in the random sample from the seventh grade school population.

DISCUSSION

This study provides an opportunity for Rochester School District #535 and Dodge-Fillmore-Olmsted Community Corrections to increase their understanding of the problem of learning disability. The cooperation and mutual support between the staff of both organizations demonstrated throughout the implementation of this difficult study exemplifies the commitment to youth with learning disability. Part of this commitment is a fundamental desire to increase our knowledge of the problem. The results obtained in this study raise as many questions as have been answered. The challenge for both organizations is to best utilize the results in improving the policymaking and programming so that the needs of youth are better served.

From an educational perspective, the testing and screening procedures followed current local and federal guidelines for the diagnosis of learning disability. The testing, screening and diagnosis were conducted by Rochester #535 staff with the coordination for the project provided by Community Corrections. The parents of the youth that were diagnosed learning disabled were informed of the test results. Informed consent and confidentiality procedures were strictly adhered to by the staff. The major finding for the school district is that an estimated 15.8 percent of all youths in the school system have learning disability. This estimate was based upon a twenty-eight percent (28%) random sample of seventh graders, and given this sample size, it can be stated with a high degree of confidence that the prevalence would fall within the range of twelve percent (12%) to twenty percent (20%) if the study were repeated in another random sample.

Twenty-eight percent (28%) of the sample declined to participate in the study for a variety of reasons such as vacations, personal reasons, parents' reluctance to insist upon child's participation, etc. The reasons given for declining to participate indicate that there is no single reason that would suggest an underlying pattern among this group. Because of the possibility that the prevalence rate of learning disability among this group may vary from the overall rate of 15.8%, it is important to consider whether there is information that would suggest an increase or decrease in this rate. At one extreme, if all of the decliners were learning disabled the overall rate would increase to 39.3%.* At the other extreme if none of the decliners were learning disabled the overall rate would be 11.4%.** It is unlikely that the learning disability prevalence rate among the decliners would approach either of these extremes. An examination of the school records of the decliners revealed that 12.3% or fifteen children had at some time in the past received services from the Special Education Department.

* Calculated as follows: $\frac{50 \text{ LD} + 123 \text{ Decliners}}{317 \text{ Studied} + 123 \text{ Decliners}} = \frac{173}{440} = 39.3\%$

** Calculated as follows: $\frac{50 \text{ LD}}{440 \text{ Total Group}} = 11.4\%$

This rate among the decliners when adjusted for the estimated proportion of children who were non-learning disabled and receiving services and for the estimated proportion of learning disabled children who had not received special educational assistance yields an overall prevalence estimate of 16.2% of learning disability among the decliners.***

This estimated rate among the decliners is slightly higher than the overall rate of 15.8% but within the confidence interval of 12% to 20%. It appears reasonable to argue that the learning disability prevalence rate among the decliners would not approach either of the extremes and that the effect of that rate upon the overall learning disability prevalence rate would not be outside the confidence interval.

*** A reexamination of Table 8 reveals that sixteen out of thirty-six or 44.4% of those children who had received special education services were non-learning disabled. Conversely thirty out of 281 or 10.7% of the children who had not received special educational assistance were learning disabled. Adjustment of the learning disability prevalence rate among the decliners using the above figures would yield a rate of 16.2% as follows:

- | | |
|--|--|
| Estimated
learning disability
prevalence rate
among decliners | a) number of decliners who
received special education
assistance who were not
learning disabled $44.4\% \times 15 = 6.7$ |
| | b) number of learning disabled
children who had not received special
education assistance $30 \div 281 = 10.7\% \times$
the number of decliners who had not
received special education assistance
($123 - 15 = 108$), so $10.7\% \times 108 = 11.6$ |
| | c) $\frac{15 - 6.7 + 11.6}{123} = 16.2\%$ |

From an educational policymaker's standpoint it is necessary to distinguish between severity levels of learning disability, types of learning disability problems (reading, arithmetic or both) and the provision of special educational assistance. The severe classification of learning disability in this study consists exclusively of boys, and seven out of nine in this group had problems in reading or reading and arithmetic. It is noteworthy that seven of the nine in the severe group had prior special educational assistance and that five out of nine had special educational assistance in the seventh grade. On the basis of this study, severe learning disability is associated exclusively with boys and two-thirds of the severe learning disabled boys have problems in both reading and arithmetic. This study made no attempt to examine the adequacy of that assistance, however on the surface it does appear that a very high percentage of the severe learning disabled children have received special educational assistance.

The moderate classification of learning disability in this study consisted of twenty-two children, seventeen boys and five girls. A breakdown for boys revealed that eight had both reading and arithmetic learning problems, four had problems exclusively in reading and five in arithmetic. A smaller percentage of boys was found to have moderate rather than severe deficits. Three of the girls had problems exclusively in arithmetic, with one in reading and one both reading and arithmetic problems. Overall, seven of the twenty-two youths placed in the moderate category had received prior special educational assistance and six of these were for problems in both reading and math.

The mild classification had two interesting features. Fourteen out of the nineteen boys and girls classified in the mild learning disability category had problems in arithmetic only, and eight out of the thirteen learning disabled girls fell in the mild category. A further breakdown revealed that six of the eight girls in the mild category had learning disability problems only in math.

Whether a child has received learning disability assistance is, not surprisingly, related to the number of learning disability problems. Thirteen of seventeen of the children who had problems in both reading and arithmetic had received prior learning disability assistance. Five of the twenty-three of the arithmetic only cases had received learning disability assistance and two of the ten reading only cases.

Based on the data in this analysis there appears to be a number of observations that merit noting:

- All the severe learning disability cases were boys.
- The majority of youths classified into the severe category have been provided special assistance at some time.
- Most of the children who have been given learning disability assistance have had problems in both reading and arithmetic.
- Learning disabled boys outnumber learning disabled girls at a rate of two to one.
- Learning disabled girls had mild to moderate learning problems.
- No association was found between learning disability and hand preference, as previous studies have suggested.

- The average reading score for the non-learning disabled group was approximately one and one-half years above grade level. The test administered did not measure reading comprehension.
- Spelling and arithmetic average scores for the non-learning disabled group were approximately at grade level, with arithmetic slightly lower.

From a corrections perspective, the results of this study are extremely important. Without assessing the prevalence of learning disabilities in the general school population using the same criteria for learning disability and similar diagnostic procedures, it would have been difficult to determine the significance of the learning disability prevalence rate among the juvenile delinquent population. The results of the prevalence study provide an important step in increasing our understanding of the relationship between learning disability and juvenile delinquency.

The overall rate of learning disability among juvenile delinquents is approximately four times greater than in the seventh grade sample and the rate of severe learning disabled youths is seven times greater. This evidence does not demonstrate that the learning disability caused delinquency. However, it does pose a compelling argument for education and corrections to increase efforts at understanding and treating the problem for this unique group of youth.

Improved understanding of the juvenile delinquent/learning disability connection required an appreciation of factors surrounding delinquency. By the time a child is an adjudicated delinquent, he has often passed an educational point of no-return. Teachers, principals, social workers, and learning disability specialists are all representatives of a system that has meant mostly failures and anxiety. At the age of sixteen, many of the delinquents drop out of school. The feelings against school are often so strong that the availability of a well-meaning learning disability specialist offering assistance for the learning problem is often met with an emphatic refusal. On the other hand, many delinquents, when they understand they are learning disabled, express relief to find out that there is a reason for their school failure other than low intelligence.

Educational variables for most juvenile delinquents are only a few of the many factors that affect their lives. There is, in fact, a perplexing array of familial, social, and cultural factors that must be dealt with along with an educational problem. Assuming that there may be a cause and effect relationship between learning disabilities and delinquency, an education or corrections professional is faced with a formidable task.

Experience on this Project has shown that educational remediation requires a flexible team approach. Learning disability teachers must be able to adapt their remediation efforts to the lives of the delinquents. They must be willing to go to places of employment, jails, work evenings and weekends in order to deliver the needed services. Corrections workers must share a concern for the problem and support the efforts of the remediation.

Even with the best efforts of teachers and probation officers, it is unlikely that more than half of the youth would ever agree to participate in a treatment program.

The results of this study clearly indicate that learning disabilities is an important area of concern for education and corrections. There are many youths who are non-delinquent in the general school population who apparently meet the criteria for learning disability. The juvenile delinquent population is obviously a group displaying a high proportion of learning disability. The special circumstances of this unique group require a candid appraisal of these educational needs and willingness on the part of educators to meet these needs in the special manner required. Finally, the question of whether school failure is a major causative factor in juvenile delinquency has not yet been answered. The challenge is to continue to increase our understanding of the learning disability problem in order to better meet the educational needs of all youth.

RECOMMENDATIONS

1. Finding the undetected and treating the untreated learning disability among all youth should be a high educational priority. The findings in this study can be used to examine existing learning disability screening procedures and to set priorities in the delivery of remediation services to those children most in need.
2. The need for remediation services for the juvenile delinquent group has been amply documented. Education and corrections should jointly develop a plan that would give a high priority on an ongoing basis to meet the needs of the learning disabled juvenile delinquents.
3. This study has raised many questions regarding the learning disability problem among youth. To the extent that there is a relationship between learning disability and juvenile delinquency, corrections should emphasize the importance of preventing educational failure among all youth.

NOTES

1. U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute for Juvenile Justice and Delinquency Prevention, The Link Between Learning Disabilities and Juvenile Delinquency: Current Theory and Knowledge, by Charles A. Murray, (Washington, D.C., Government Printing Office, 1977).
2. August J. Mauser, "Learning Disabilities and Delinquent Youth", Academic Therapy, Vol. IX, No. 6, Summer 1974, p. 343-44.
3. Lester Tarnopol, "Delinquency and Minimal Brain Dysfunction", Journal of Learning Disabilities, 3:(1970), p. 200-07.
4. R. Compton, "Learning Disabled Adolescent", Youth in Trouble, ed. Betty Lou Kratoville, Academic Therapy Publications, 1974, p. 50.
5. Samuel Bernstein and Joseph Rule, "Learning Disabilities and Learning Problems: Their Implications for the Juvenile Justice System", Juvenile Justice, November, 1976, p. 44.
6. Ibid, p. 44.
7. Dodge-Fillmore-Olmsted County Community Corrections Learning Disabilities Research Project Monthly Client Report, October, 1978.
8. U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute for Juvenile Justice and Delinquency Prevention, The Link Between Learning Disabilities and Juvenile Delinquency: Current Theory and Knowledge, by Charles A. Murray, (Washington, D.C., Government Printing Office, 1977), p. 17.
9. Ibid, p. 17.
10. "Update on ACLD Research and Demonstration Project", ACLD Newsbriefs, ed. Betty Lou Kratoville, No. 121, July/August, 1978.
11. J.R. Jastak and S.R. Jastak, "Wide Range Achievement Test", Revised Edition, Guidance Associates of Delaware, Inc., 1976.
12. Special Learning and Behavior Problems Program, Department of Special Education, School District #535, p. 3.
13. David Wechsler, "Wechsler Intelligence Scale for Children - Revised", The Psychological Corporation, 1974.
14. J.R. Jastak and S.R. Jastak, "Wide Range Achievement Test", Revised Edition, Guidance Associates of Delaware, Inc., 1976.

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