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ABSTRACT

Described is a program for the prevention of learning failure and its emotional and behavioral consequences initiated by the Learning Disorders Unit of the New York University Medical School with the cooperation of public schools in the lower East Side of New York City. This project involved the intensive individual examination of every child early in the first grade - psychiatrically, neurologically, psychologically, and educationally - to identify those children vulnerable to emotional decompensation and to learning failure. A program of appropriate intervention was designed for each child based upon stimulation of those specific areas of defect revealed by his perceptual and neurological profile. Results, extending over a 4-year period, show that these children can respond to an intervention approach. Surveys of the project schools revealed that at least one-third of all children in the first grades did not have the perceptual and neurological organization needed to learn to read. The pervasiveness of these problems highlights the need to provide early, school-based intervention to prevent learning failure and to interrupt the destructive influence of learning disability upon emotional development. (CS)

BEYOND CONSULTATION: A PROGRAM FOR PREVENTIVE PSYCHIATRY*

By Archie A. Silver, M.D., Rosa A. Hagin, Ph.D., Henrietta Kreeger, M.A., and Elizabeth Scully, M.A.**

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**Respectively, Clinical Professor of Psychiatry, Research Associate Professor of Psychology, Liaison Coordinator, and Research Associate. This program would not be possible without the resource room teachers Miss Ann Tortora, Miss Evelyn Zucker, Miss Millie Hanzig, and Miss Rose Gelbard, whose day-to-day work with children is largely responsible for any success the program attains.

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In 1969 a program for the prevention of learning failure and its emotional and behavioral consequences was initiated by the Learning Disorders Unit of New York University Medical School with the cooperation of parents, faculty, and administration of a public school in the lower East Side of New York City. This project involved, first, the intensive individual examination of every child early in the first grade--psychiatrically, neurologically, psychologically, and educationally--to identify those children vulnerable to emotional decompensation and to learning failure and secondly, to provide appropriate intervention for the vulnerable children.

This preventive program has been functioning in P.S. 116 since 1969. It has further been expanded into the first grades of three other public schools in the lower East Side, has been modified for use in the kindergarten grades, and has been extended to a Readiness Nursery for preschool children.

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This then is what we mean by Beyond Consultation. Its elements are: 1. Prevention, with surveys of entire kindergartens and first grades within the schools to detect potential learning failure and emotional decompensation; 2. Intervention, with provisions within each school of services for remediation of defects found in resource rooms manned cooperatively by our Unit and by Board of Education personnel trained in our methods as well as facilities for work with the emotional and social needs of children and parents; 3. Continued training and supervision by our Unit staff for teachers in the schools other than those directly involved in the program; 4. Diagnostic and treatment functions conducted primarily within the schools, reserving the Medical Center only for such study as cannot be performed within the schools.

Thus the program does not wait for referrals of children who have already failed; it detects those who are likely to fail and intervenes to correct their vulnerability.

Such a program did not spring into being fully-formed. It evolved from our long awareness (Silver, 1951) of learning failure as an important factor in the emotional problems of children referred to Bellevue Hospital Mental Hygiene Clinic. In 1950 we established one of the first clinic-based remedial education units as an integral part of a psychiatric clinic. A ten-year follow-up study of children treated in that Unit revealed the tenacious quality of perceptual defects found in children with reading disability (Silver and Hagin, 1960, 1964) and the difficulty in

teaching children with so-called soft neurological signs. A theoretical position was thus impressed upon us--namely, that correction of the perceptual defects found in these children must precede the teaching of reading. An experimental program confirmed the hypothesis that we could indeed correct perceptual defects by direct stimulation of these deficit areas, that those children responding to specific perceptual stimulation would improve in reading and in reading comprehension, and that, parenthetically, clear-cut cerebral dominance for language accompanied these changes (Silver, Hagin, and Hersh, 1967; Silver and Hagin, 1972 B). With this background in clinical study and educational experimentation, we initiated a program of consultation in the schools of the lower East Side of Manhattan. Here children already in difficulty were referred to us by the schools; the uniqueness of this program, however, was that we supervised the teaching of these children by their own teachers in their own schools, over the period of the academic year. With this procedure, approximately 90 teachers in the lower East Side were introduced to our approach, and while many are no longer teaching in our catchment area, those who remain form the nucleus of our present preventive programs, those programs Beyond Consultation; and it is they who work in the resource rooms established in each school.

This paper will describe the functioning of the preventive program, the detection of vulnerability, the modifications needed for application to other schools and age groups, and will indicate some of the educational results obtained.

Criteria for neurologic, psychiatric, and perceptual examinations and the findings of such examinations in children seen in the first two years of this project have been previously described (Silver and Hagin, 1972 A). Briefly, the findings suggest that children vulnerable to educational failure can be detected in the first grade by tests which are reliable and replicable and that children so detected can respond to specific educational intervention based upon stimulation of deficit perceptual areas. The essence of vulnerability lies in deviations in what we believe to be basic to the acquisition of language skills, perceptual and neurological organization which can deal effectively with problems of spatial orientation and temporal sequencing. These deviations are found in immaturity in visual discrimination, recall, figure-ground and visual-motor functioning (see also Silver and Hagin, 1970), auditory discrimination and sequencing, body image awareness of left and right, poor praxic ability, finger gnosis, and fine motor coordination all present in any combination. In addition, there is evidence suggesting that a dominant cerebral hemisphere for language has not yet been developed.

The neurological and perceptual examinations attempt to sample these functions. Perceptual examinations, for example, involved 12 variables: visual discrimination and recall of lamb chops and flag figures, visual figure-ground (marble board), visual motor (Bender-Gestalt), visual sequencing (Wechsler dolls), auditory discrimination, auditory sequencing, sentence recall (WPPSI sentences), rote sequences (days of the week), intermodal dicta-

tion and articulation. Cumulative frequency curves were drawn for each variable so that we could, for each variable, determine the percentile rank for each child in relation to his classmates. Figure I (Perceptual Profile) shows how the data are used to draw a perceptual profile for each child.

Neurological study includes not only classic neurological examination of muscle tone, power, and synergy, cranial nerves, reflexes, and gross sensory evaluation, but also evaluation of the so-called soft neurological signs: right-left discrimination, praxis, finger gnosis, postural responses, including the extension test, and autonomic stability. Here again the methods for each test were uniform and criteria were evolved for the entire first grade. A total evaluation of neurological impairment was also made (Silver and Hagin, 1972 A).

The psychiatric examination attempts to evaluate intrapsychic problems, developmental trends, and reality pressures at home and at school. This was done in individual interviews. Analysis and coding of results of these examinations revealed an evaluation of psychiatric impairment for each child and a profile of ego function for the entire first grade.

Using the criteria described above, we found that fully one third of the children in the first grade of P.S. 116 in 1969-1970 and in 1970-1971 were vulnerable to educational failure, and 12 percent of the total group already had symptoms of emotional decompensation.

To further validate these criteria, a discriminant function

analysis was applied to 18 variables related to prediction of vulnerability with reading ability as the criterion. Forty-four high scoring readers (> grade 1.3) on oral reading testing (WRAT) and forty-three low scoring readers (< grade .9) were identified from initial oral reading scores.

A significant discrimination was achieved by Wilks lambda criterion. Tables 1 and 2 show the results of the discriminant function analysis. With lambda = .125, F = 26.441, for 18 and 68 degrees of freedom, $p < .0001$. The Null hypothesis that the two groups had similar patterns on the diagnostic battery can, therefore, be rejected. The scaled vectors (Table 2) indicate that the largest contribution to group separation on the first discriminant function are: Intermodal Dictation, Auditory Discrimination, Rote Sequences (Days of the Week), Figure Background (Marble Board), WPPSI Sentences, Bender, Flag Test, Lamb Chops Matching. Since the first discriminant function accounts for 100 percent of the total discriminating power of the subtests, the importance of variables with even lower order loadings should be recognized.

Table 1 presents F tests for each of the variables. As in the discriminant function analysis, in the univariate analyses all variables except the extension test significantly discriminate the good from the poor readers. It may be that the narrow range within which sults on the extension were reported--namely, abnormal or normal--obscures its effect in this type of analysis. We are convinced of its clinical value in the overall neurological evaluation.

Each child deemed vulnerable to educational failure was taken into a program of intervention based upon stimulation of those specific areas of defect revealed by his specific perceptual and neurological profile (Figure II-Karl). The teaching sessions take place in a resource room in the child's own school, approximately three 20-minute sessions each week, in individual or small group work. For the remainder of his school day, the child remains in his own class. His classroom teacher is, of course, a vital part of his total program, and she is included in planning conferences and is offered supervision throughout the year in her work with the child. We emphasize the fact that we do not teach reading, but we believe we enhance neurophysiologic maturation so that the child becomes capable of learning to read. Intervention is offered to a child as long as he needs it, but most children remain in the program approximately two years.

As the program continues in each school (Table 3), the total number of children in the intervention groups ranges from 60 to 70. We have found that one teacher can serve approximately 30 children throughout the year with time for teaching, conferencing, and supervision.

The program at P.S. 116 became a model of the practical application of our theoretical position concerning prevention and intervention for children with potential learning disability. As such, we were invited to replicate the 116 prototype in other schools in our district. Extension of our program into additional schools, however, posed a number of problems: 1. Diagnostically, con-

straints of money, time, and personnel required that intensive multidisciplinary study be modified without sacrificing precision of detection; 2. Therapeutically, the educational aspects of the program had to be supported and manned by teachers employed by the Board of Education and trained in our methods of intervention; 3. Continued and sustained daily supervision would be supplied by our Unit.

Because, as indicated above, we had previously worked with the schools in our district in a consultation program involving not only intensive study of children with learning problems but also the supervision of their teachers as they worked with these children over the entire academic year, we had a nucleus of teachers trained in our perceptual stimulation methods. In three schools teachers who had participated in our consultation program were freed by their principals to work in our intensive projects; space within the schools was provided, and the faculty, administration, and parents' cooperation assured. Supervision did not present a great problem because our own supervising teachers had worked within the school district for at least four years as itinerant supervising teachers in our consultation program.

Our first task, then,was the modification of our intensive examinations to reach a larger number of children.

A principal components factor analysis of the perceptual and neurological battery enabled us to determine what common factors existed in the test scores and what proportion of the subtest variance was specific. The rotated factor loadings that emerged

appear in Table 4. These four factors accounted for 91.7 percent of the total variance.

Factor I appears to be a general visual factor with high loadings in visual matching, visual recall, and visual figure-ground. Factor II is interpreted as an auditory and verbal associative factor with high loadings in auditory discrimination, in the recall of verbally presented sentences, a rote auditory sequencing, and an intermodal auditory-graphic variable. Factor III appears to be a verbal factor with high loadings in auditory discrimination and articulation. Factor IV appears to be a neurological variable. The low loadings of the perceptual tests in this factor attest to the relative independence of this variable.

With these data as a background, the intensive perceptual battery was reduced to include one test each of visual matching, visual recall, visual motor function, auditory discrimination and rote sequencing, verbal expression, and auditory-graphic ability. This new battery, called Search (Figure III), now required 20 minutes per child for administration, in contrast to the 60 to 90 minutes required for the original perceptual study. The predictive power of this first grade Search battery was tested at P.S. 15, a comparison school used for program evaluation where no intervention services were offered. This school is located in the same school district and draws from ethnic and socioeconomic groups similar to the intervention project schools. The search battery was administered in the fall, and oral reading tests were administered in the spring of the first grade year to all of the

96 pupils enrolled. A cutoff score of 5 on the Search Battery correctly placed 42 of the 45 adequate readers (i.e., reading score at median or above) and 38 of the 45 inadequate readers (reading score below grade median). This yielded a chi square of 40.74, $p < .001$.

In 1972-1973 the Search Battery has been administered to 532 children in 12 different schools, either at the end of their kindergarten year or at the beginning of their first grade. It appears to have possibilities as an instrument for selecting potential poor readers. The children so identified are then subjected to more intensive study--neurologically, psychiatrically, and psychologically--to determine their individual needs and to plan specific teaching for them.

Educational Results

At this writing our program of detection and intervention has been functioning for almost four years in P.S. 116; it is in its second year at P.S. 61 and its first year at P.S. 188. Our original first graders of P.S. 116 (born in the year 1963) are now completing their fourth grade. Of the original intervention group of 34 children (29 taken into intervention in their first grade, 5 additional added in the second), three still require help.

Data are available in the progression of the reading skills of the intervention group, of their classmates, and of the reading scores of the class preceding them, a class in which our program was not functioning and which may, therefore, be considered

a control group. Initially in the fall of 1969 the oral reading scores of the vulnerable children on the WRAT clustered in the lowest segment of the class (Figure IV and Table 5). By spring of 1970 (Figure V), the distribution of oral reading scores for the intervention group resembled that of the non-intervention group, with a median of 1.[illegible] in the classroom group as contrasted with 1.3 for the intervention group, Q1 score of 1.2 for each. By the spring of 1971 (Figure VI) when the intervention class was in second grade, the reading scores of the intervention group were close to those of their non-intervention classmates, with a median of 2.3 for intervention, versus 3.0 for non-intervention, mean of 2.6 in intervention, 3.1 non-intervention, Q1 at 1.7 (intervention), 2.1 (non-intervention).

In the spring of 1971 too it was possible to compare the total second grade of 1971 with the previous class, in which our program was not offered. The general superiority of the second grade of 1971 to that of 1970 is seen in Table 5 (Oral Reading Scores 1969-1973, Children Born in 1963, P.S. 116), where median, mean, and first quartile cutoff point of the intervention class are superior to the scores of the control class.

Going on to the spring of 1972, with the intervention class now in third grade, those children selected as vulnerable are again keeping up with the advances of their non-vulnerable classmates, and more significantly, comparison with the control class now in fourth grade indicates that the intervention third grade earned reading scores equal to those children in fourth grade. In other

words, the class in which the program functioned appears to have been generally accelerated by one full grade in reading, and those children deemed vulnerable when they were in first grade have made comparable progress. In the spring of 1973, with the experimental group now in fourth grade, the pace of reading progress is still maintained in both intervention and non-intervention children. However, of the total class, approximately 100 children, 16 are still reading below fourth grade in the spring of 1973. Of these 16, eight were not in the school at the time of the original testing in 1969; one child was refused permission for testing by his family; three children were retained from the preceding class. Of the remaining four, two children were in the intervention group and are still in treatment, and two were in the original class in 1969 but were not taken into the intervention group.

While the group data are important in determining the effectiveness of the program in a school, studies of individual children are of importance clinically. The original 29 children were classified into three broad diagnostic categories. The first group, designated as developmental language lags, consisted of ten children. These all had specific perceptual deviations, including praxic immaturity and evidence that clear-cut cerebral dominance was not yet established. The second group, numbering 12 children, are labeled as "organic". These had all the deviations of the developmental language lag but had, in addition, deviations in one or more areas of classical neurological examination. The third broad grouping was called nonspecific develop-

mental immaturity. These children, numbering seven, were physically immature, with small head circumference and with immaturities in all areas of perception, cognition, and overall intellectual function.

Study of individuals in each of these groups (Figures X, XI and XII) indicates that improvement may be obtained in each group, even in children with initial IQ's between 60 and 70 on the WPPSI, the least dramatic improvement occurring, however, in those designated as general immaturity. In each group a spurt in reading scores occurred in the second year of intervention, suggesting that at least one year of specific perceptual training is needed to enhance maturation to the point where the child can benefit from classroom experiences. Once this has been attained, the child no longer comes to the resource room for training but can learn in his regular class. As seen in Table 5, this improvement is sustained in testing in the spring of fourth grade. It will be noticed that we have not hesitated to take children with low intellectual functioning as measured by standardized tests. Rosemary, with initial WPPSI IQ at 60 full scale (57 verbal, 86 performance), with symptoms of an associative and emissive language defect, went from 1.2 in first grade to 3.2 by the time she reached third grade. Marie, with full IQ of 70 (verbal 61, performance 81), went to grade 4.4 in reading as she completes fourth grade.

The progress of a hyperkinetic child, initially so restless and with such poorly sustained attention that his teacher questioned whether he ever could be taught, is illustrated by Karl.

At 5 years, 10 months Karl was a handsome, blonde, blue-eyed child, whose poor gross motor coordination, combined with continual choreoform movements made him appear disjointed and almost bizarre. He was extremely anxious, concerned with aggression, with fears of fire, of ghosts coming in to kill his parents. His thoughts were concrete, his expression circumstantial in a rapid-fire pattern difficult to follow and even to understand. His articulation was poor, and it was questionable whether he really understood many of the simple commands given him. In addition to his continuous choreoform motility, myoclonic-like muscle twitching, and synkinesis, his fine motor coordination was poor, muscle tone decreased with and nystagmus present on lateral gaze. Praxis and finger gnosis were extremely immature; he was totally confused in right-left orientation; there was evidence from the extension test that a dominant cerebral hemisphere was not attained. Although he scored at a full scale IQ of 110 on the WPPSI (verbal 106, performance 112), perceptual study (Figure II) revealed problems in visual discrimination, figure-ground, visual-motor function, auditory sequences, and haptic perception and articulation. Less severe errors were found in visual recall and in auditory discrimination. Retest at age 6 years, 10 months, after a year's efforts to train out his defects, reveals significant improvement in all perceptual areas except in sentence sequencing and in articulation. In the fourth grade Karl now reads at a 5.1 level; his hyperkinesis has subsided; his attention can be sustained and psychiatrically is now within normal limits.

Similar results have been attained in P.S. 61 where the program, now in its second year, has been evaluated by an independent evaluating team as part of an ESEA Title I project. Mean score changes evaluated by correlated t-ratios gave strong evidence of improved perception, as measured by the Search Battery after one academic year in the intervention group. Differences between means were found to be significant at the .001 level, two-tailed test. Significant changes also occurred in oral reading test scores when the intervention group was compared with a control group at the end of first grade. The intervention group mean of $1.88 \pm .99$ contrasted with the control group mean of $1.33 \pm .34$ (t-ratio = 2.45, $p < .05$). This difference between the means at the end of Grade One is especially interesting, since it will be remembered that the P.S. 116 results suggest that the real spurt in reading occurs during second grade.

Summary and Conclusions

This paper has attempted to demonstrate the feasibility of a program to detect children vulnerable to learning failure and to emotional decompensation early in the primary grades. Factor analysis and discriminant function analysis have enabled us to modify the initial diagnostic procedures for broad scale application in order to serve a greater number of children. Study of comparison schools suggests that the modified battery, called Search, thus developed can locate vulnerable children. Results, extending over a four-year period, show that these children can respond to an intervention approach based upon the stimulation of deficits revealed in our neurological and perceptual examinations.

Our surveys in schools of the lower East Side of Manhattan reveal that at least one third of all children in the first grades there do not have the perceptual and neurological organization needed to learn to read. The pervasiveness of these problems impressed us with the need to provide early, school-based intervention to prevent learning failure and to interrupt the destructive influence of learning disability upon emotional development. We believe we have moved Beyond Consultation into a program of preventive psychiatry and preventive education.

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Table 1

DIAGNOSTIC BATTERY

P.S. 116 - 1969-1970

Means, F values, and Probability Levels

Variable	Good Readers N=44	Poor Readers N=43	F	p
	Mean	Mean		
Lamb Chops Matching	7.23	4.79	40.82	<.0001
Lamb Chops Recall	4.55	3.42	9.64	<.003
Flag Test	5.70	2.95	50.49	<.0001
Marble Board	11.48	5.65	74.28	<.0001
Bender	18.09	11.97	59.64	<.0001
Wechsler Dolls	7.30	5.53	14.70	<.0005
Auditory Discrimination	23.68	10.74	116.95	<.0001
Auditory Sequences	6.77	5.04	22.99	<.0001
WPPSI Sentences	19.36	11.21	60.21	<.0001
Rote Sequences (D of W)	5.72	.58	115.12	<.0001
Intermodal Dictation	7.39	.23	222.01	<.0001
Articulation	48.88	43.51	24.53	<.0001
Verbal IQ	108.43	77.79	31.27	<.0001
Performance IQ	109.95	88.95	33.57	<.0001
Neurological Rating	.52	1.23	14.41	<.0005
Psychiatric Rating	.98	1.44	5.90	<.02
Extension Test	.57	.62	.32	NS
Chronological Age	77.34	74.53	7.35	<.008

Table 2

DIAGNOSTIC BATTERY

P.S. 116 - 1969-1970

Scaled Vectors

Variable	Vectors
Lamb Chops Matching	.6089
Lamb Chops Recall	.3413
Flags	.6526
Marble Board	.7300
Bender (Koppitz Scoring)	.6865
Wechsler Dolls	.4105
Auditory Discrimination	.8135
Auditory Sequencing	.4932
WPPSI Sentences	.6884
Days of Week-Rote Sequences	.8108
Intermodal Dictation	.9091
Articulation	.5059
Verbal IQ	.5544
Performance IQ	.5689
Neurological Rating	-.4070
Psychiatric Rating	-.2724
Extension Test	-.0651
Chronological Age	.3016

Table 3

INTERVENTION GROUPS - P.S. 116

Numbers of Children

First Grades of	# of Children examined	--intervention group of-- 1969-70	1970-71	1971-72	1972-73
1969-70	83	29	24+5=29	19	3
1970-71	86	--	29	23+4=27	17
1971-72	42	--	--	20	9
1972-73	81	--	--	--	33
Total in Intervention		29	58	66	62

Table 4

DIAGNOSTIC BATTERY

P.S. 116 - 1969-1970

Rotated Factor Loadings

Variable Description	1	2	3	4	Communality
Lamb Chop: M	.956	.032	.202	-.008	.957
Lamb Chop: R	.959	.178	-.072	.030	.958
Flag	.969	.163	-.007	-.024	.965
Marble	.952	.134	.109	-.083	.943
Bender	.744	.472	-.295	-.060	.866
Wechsler Dolls	.834	.389	-.307	.028	.943
Aud. Disc.	.381	.628	.535	.064	.830
Aud. Seq.	.879	.362	-.244	.040	.965
WPPSI Sentences	.569	.686	-.183	-.015	.828
D of W	.151	.875	-.353	.083	.919
Interm. Dict.	.091	.931	.007	.043	.876
Artic.	-.135	-.230	.888	-.132	.877
Total Neuro. Rating	-.041	.076	-.097	.989	.995
Sums of Squares	6.221 +	3.136 +	1.541 +	1.023=	11.922
Percentage of Total Variance	47.85% +	24.12% +	11.85% +	7.87%=	91.7%

Table 5

ORAL READING SCORES (WRAT) 1969-1973

Children Born in 1963 - P.S. 116

	Fall 1969 First Grade d/b 1963		Spring 1970 First Grade d/b 1963		Spring 1970 Second Grade d/b 1962	Spring 1971 Second Grade d/b 1963		Spring 1971 Third Grade d/b 1962	Spring 1972 Third Grade d/b 1963		Spring 1972 Fourth Grade d/b 1962	Spring 1973 Fourth Grade d/b 1963	
	NI	I	NI	I	Control	(NI) T	I	Control	(NI) T	I	Control	T	I
Range	0-6.5	0-1.3	.5-7.9	.9-3.3	1.1-6.5	.5-12.0	1.0-5.1	NOT	1.2-10.6	2.4-6.5	1.4-10.0	1.8-11.8	3.3-7.
Median	1.2	.9	1.4	1.3	2.3	2.8 (3.0)	2.3	T	4.3 (4.3)	4.0	4.2	4.9	4.3
Mean	1.1	.8	1.9	1.5	2.8	3.1	2.6	TESTED	4.5	4.2	4.8	5.3	4.8
Q1	.9	.5	1.2	1.2	1.4	1.8 (2.1)	1.7		3.5 (3.4)	3.6	3.4	4.0	4.0
Q3	1.3	1.2	2.3	1.4	3.8	3.8 (3.8)	3.4		5.6 (6.0)	4.5	6.1	6.6	5.3
N		29	100	29	77	99	29		102	22	68	91	1

Figure I

LRU-116 PERCEPTUAL BATTERY:
Search Scale
Intensive Scale

NAME Myra AGE 6-8 BIRTHDATE 1963-5 GRADE 1

DATE 1-18-70 OR 1.3 SP 1.2

WPPSI/WISC ___ VIQ 94 PIQ 104 FSIQ 99 EXPEC 48%ile

DIAGNOSTIC CODE Normal Range

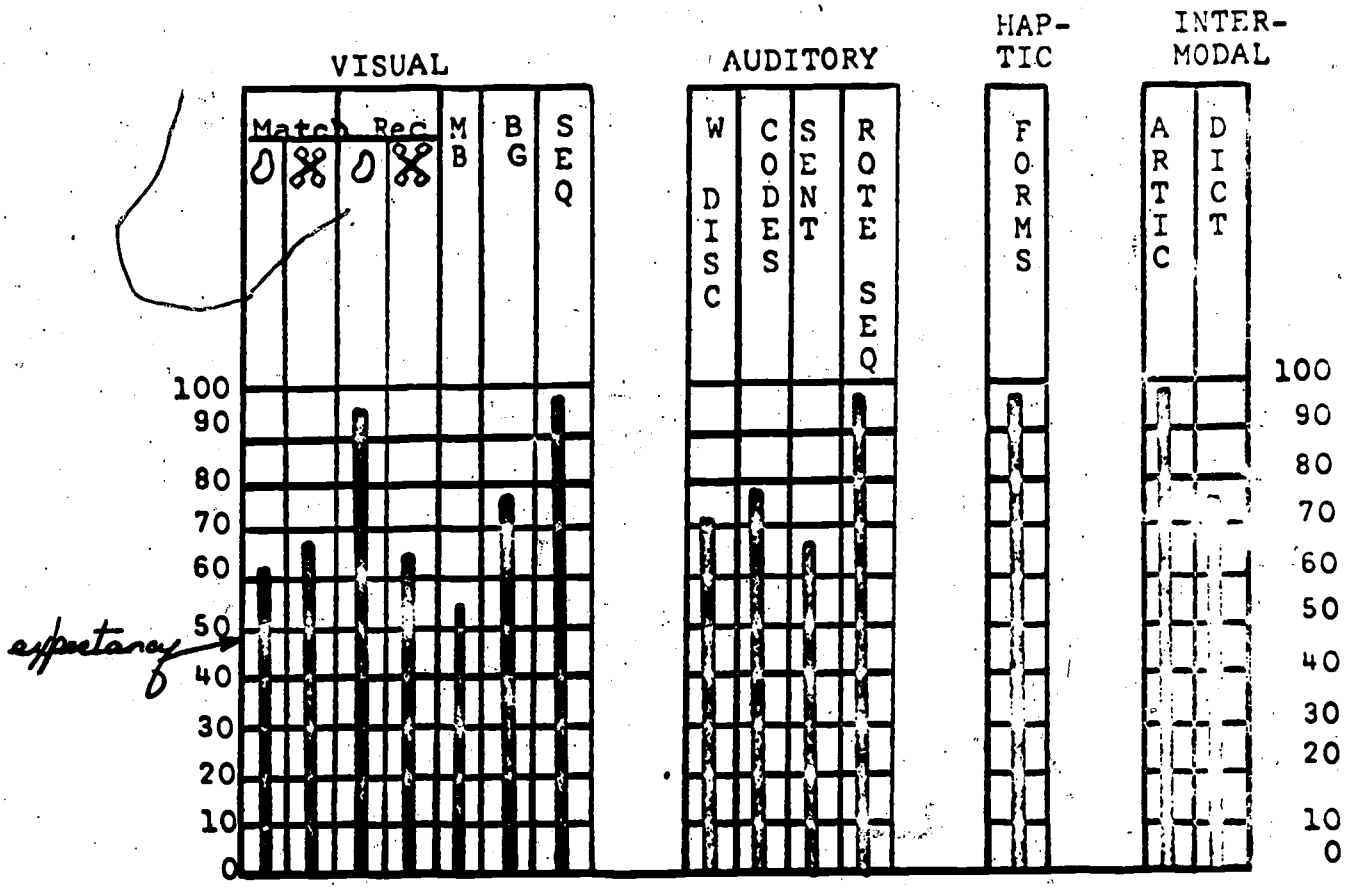


Figure II

LRU-116 PERCEPTUAL BATTERY:
Search Scale
Intensive Scale

NAME Karl AGE 5-10 BIRTHDATE 1963-11 GRADE 1

DATE 8-10-69 OR 0.9 SP 0.1

WPPSI/WISC ____ VIQ 106 PIQ 112 FSIQ 110 EXPEC 75%ile

DIAGNOSTIC CODE 0

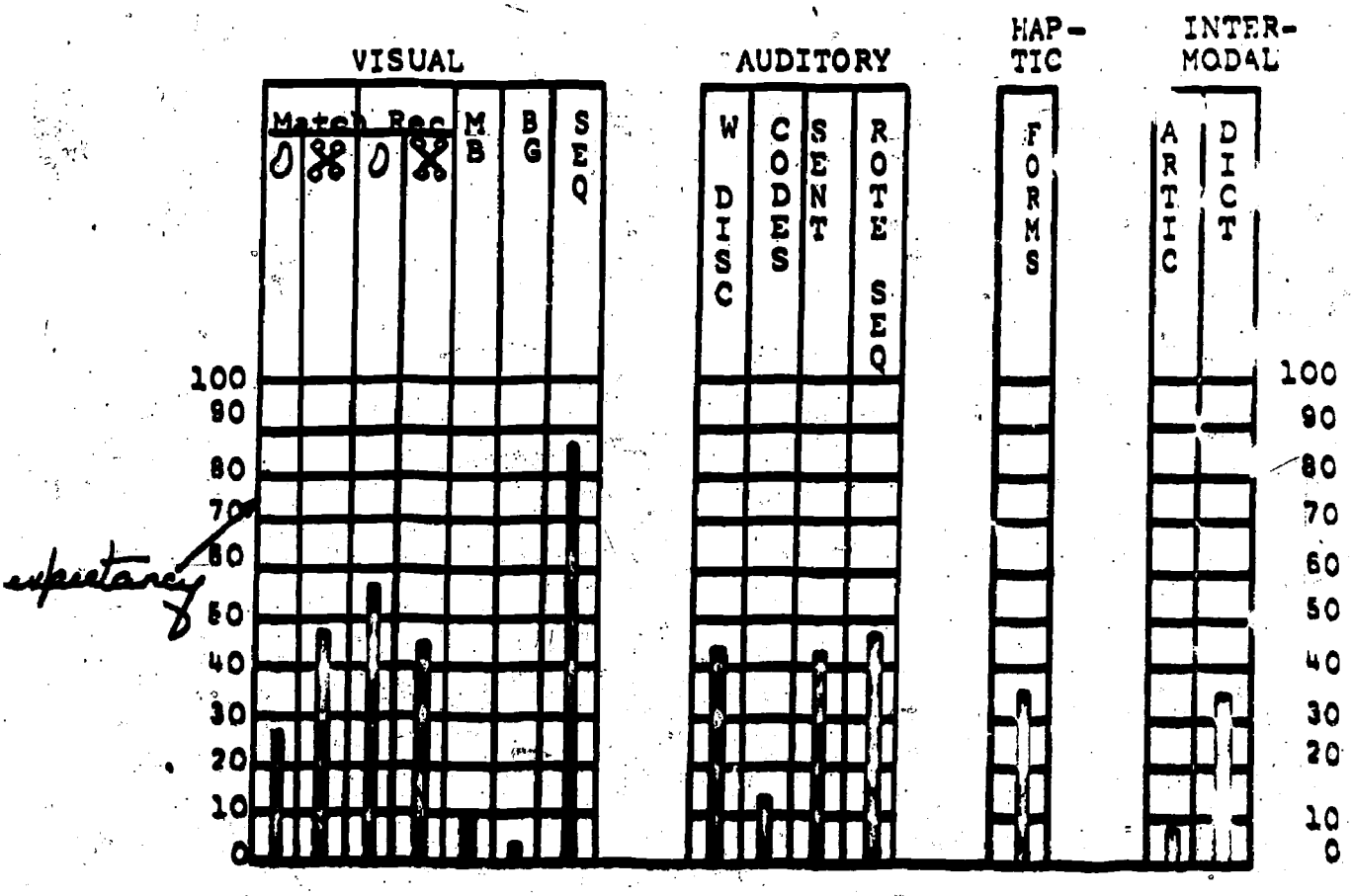


Figure III

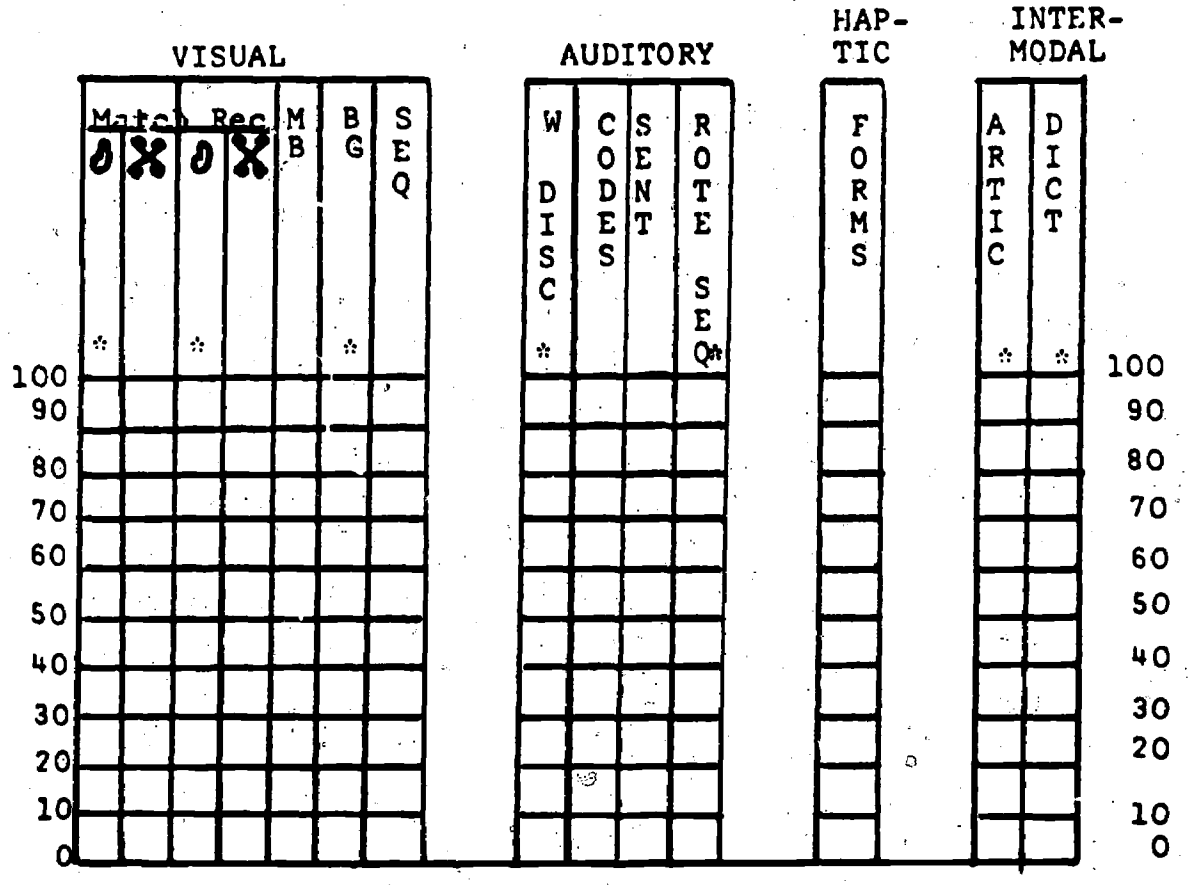
LRU-116 PERCEPTUAL BATTERY:
Search Scale
Intensive Scale

NAME _____ AGE _____ BIRTHDATE _____ GRADE _____

DATE _____ OR _____ SP _____

WPPSI/WISC _____ VIQ _____ PIQ _____ FSIQ _____ EXPEC _____

DIAGNOSTIC CODE _____ RETEST DATE _____ (retest scores in red pencil)



* Items included in Search Battery

Figure IV

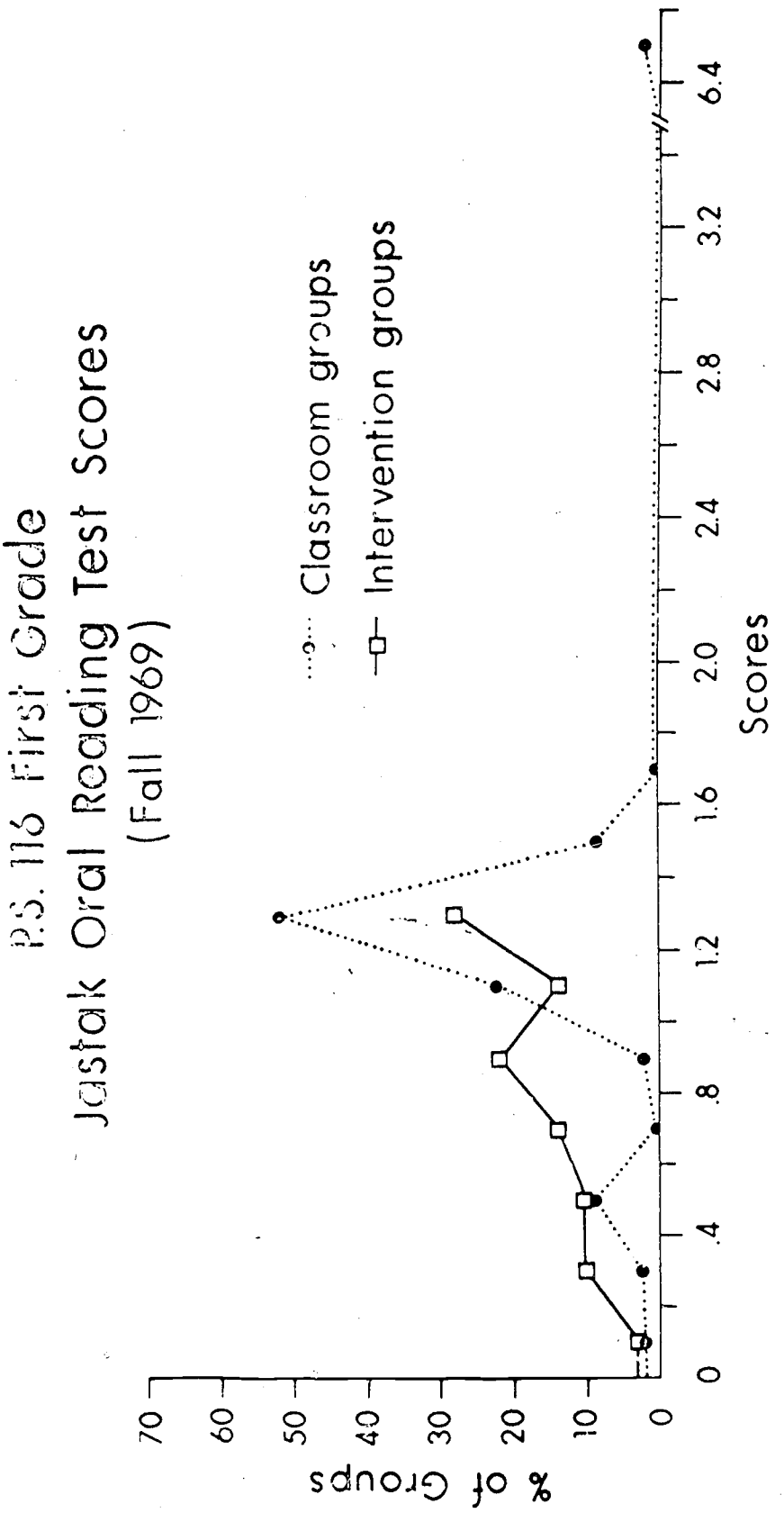

P.S. 116 First Grade
Jastak Oral Reading Test Scores
(Fall 1969)
Classroom groups
Intervention groups
% of Groups
70
60
50
40
30
20
10
0
0
.4
.8
1.2
1.6
2.0
2.4
2.8
3.2
6.4
Scores

Figure V

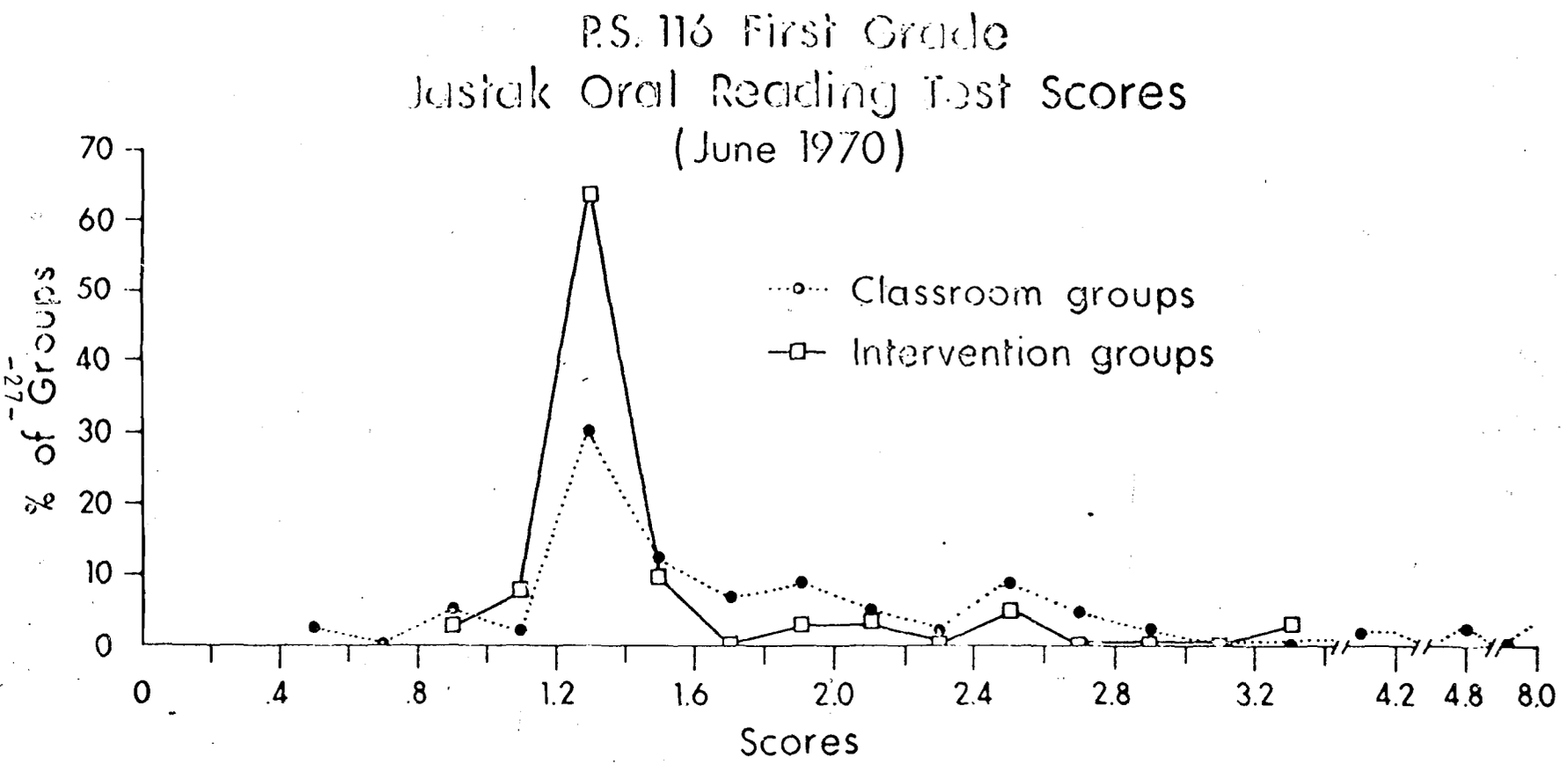

P.S. 116 First Grade
Jastak Oral Reading Test Scores
(June 1970)
% of Groups
70
60
50
40
30
20
10
0
Classroom groups
Intervention groups
0
.4
.8
1.2
1.6
2.0
2.4
2.8
3.2
4.2
4.8
8.0
Scores

Figure VI

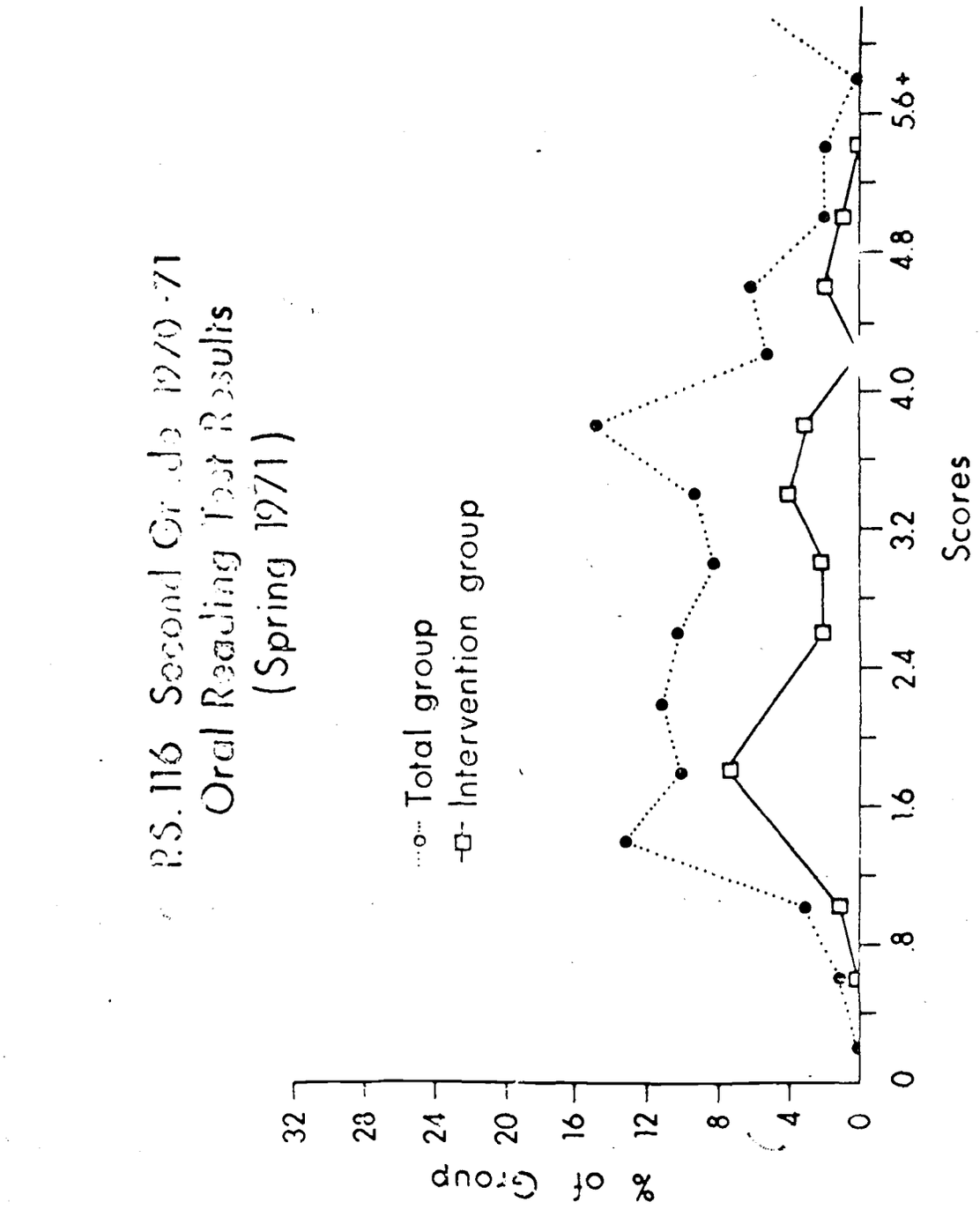

P.S. 116 Second Grade 1970-71
Oral Reading Test Results
(Spring 1971)
Total group
Intervention group
% of group
32
28
24
20
16
12
8
4
0
.8
1.6
2.4
3.2
4.0
4.8
5.6+
Scores

Figure VII

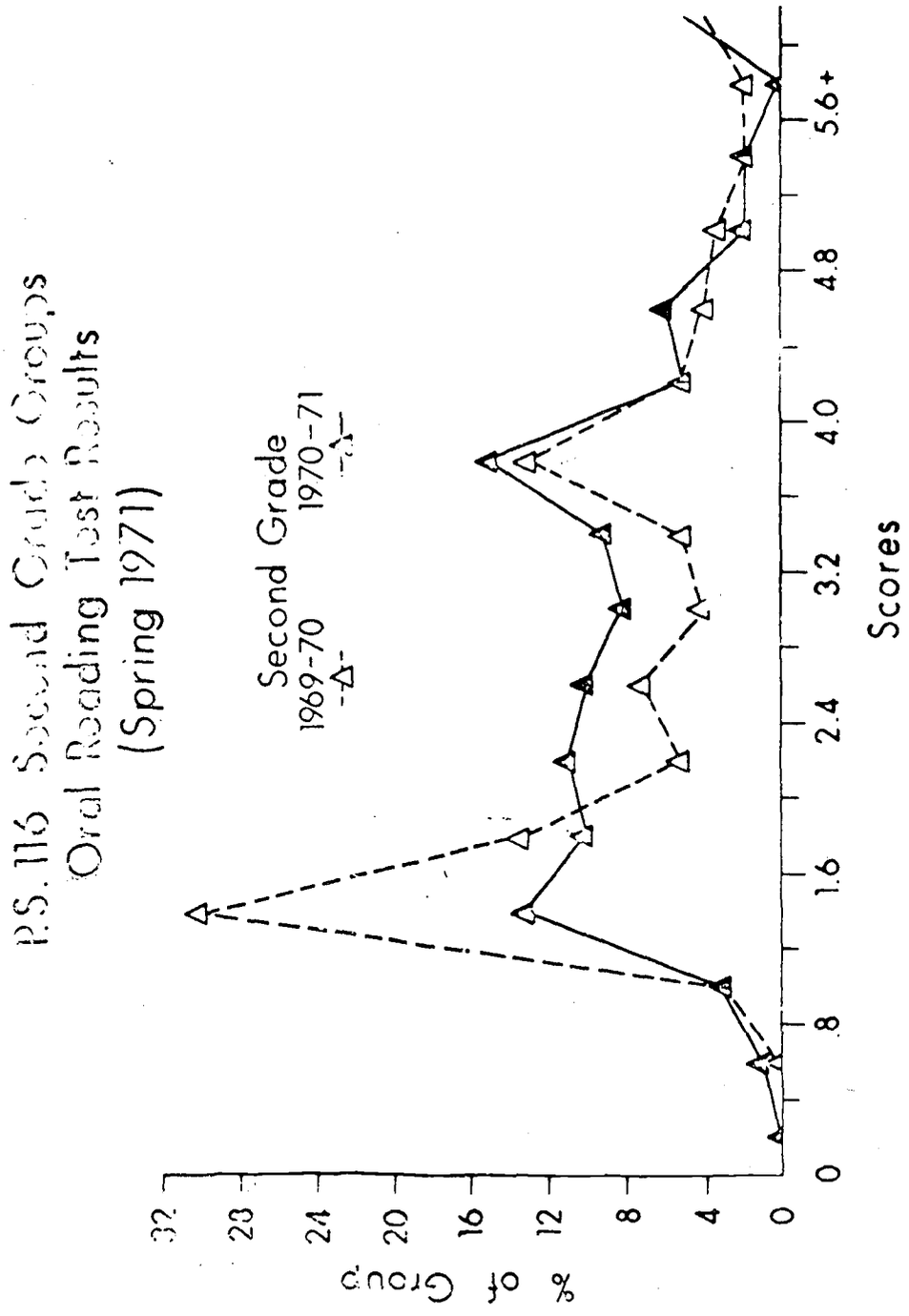

P.S. 116 Second Grade Groups
Oral Reading Test Results
(Spring 1971)
Second Grade
1969-70
1970-71
% of Group
32
28
24
20
16
12
8
4
0
0
.8
1.6
2.4
3.2
4.0
4.8
5.6+
Scores

Figure VIII

P.S. 116 Oral Reading Test Results
Spring 1972

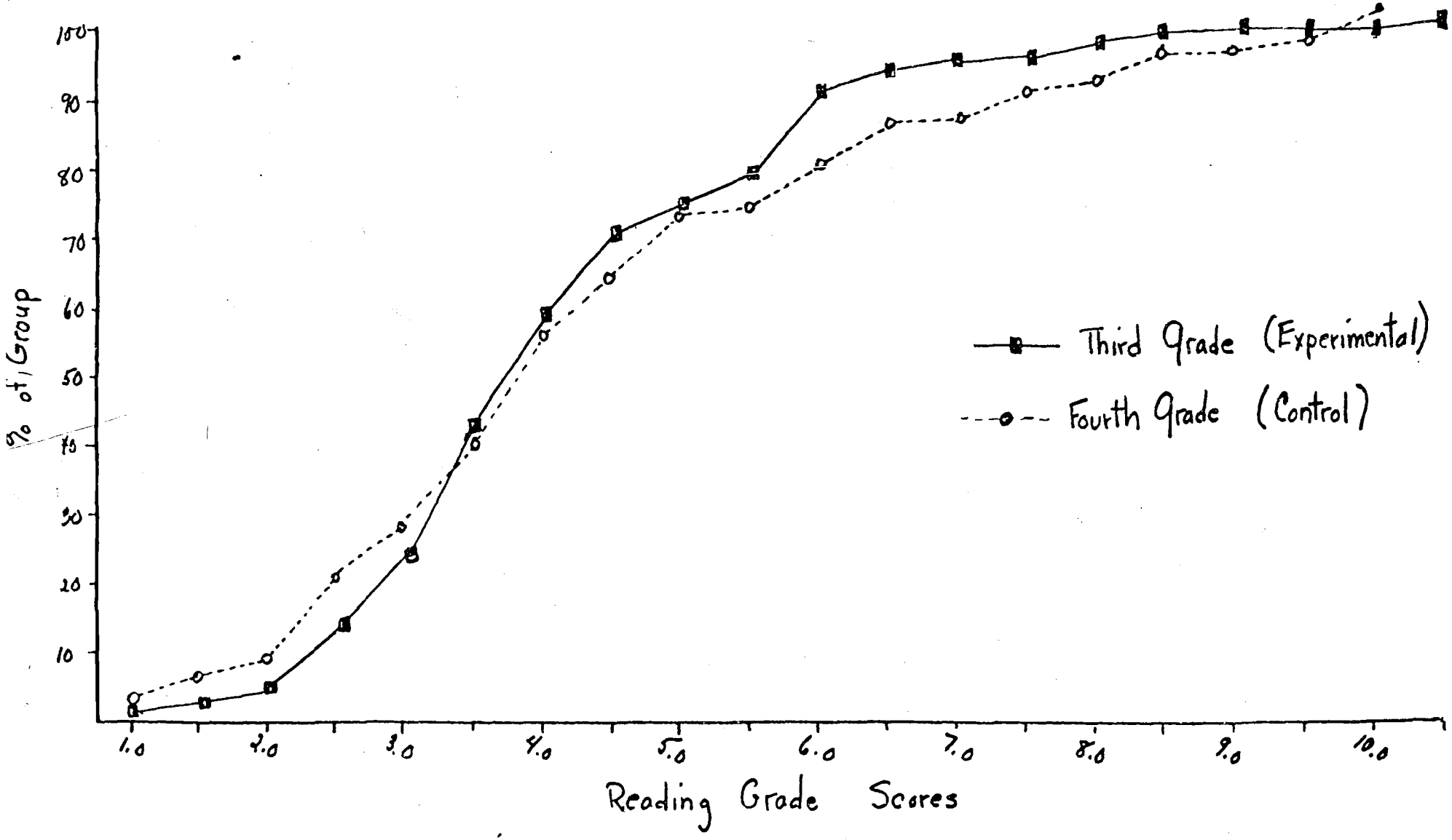


Figure IX

ORAL READING SCORE (WRAT)

P.S. 116 Fourth Grade (Bd. 1963) and Fourth Grade (Bd. 1962)

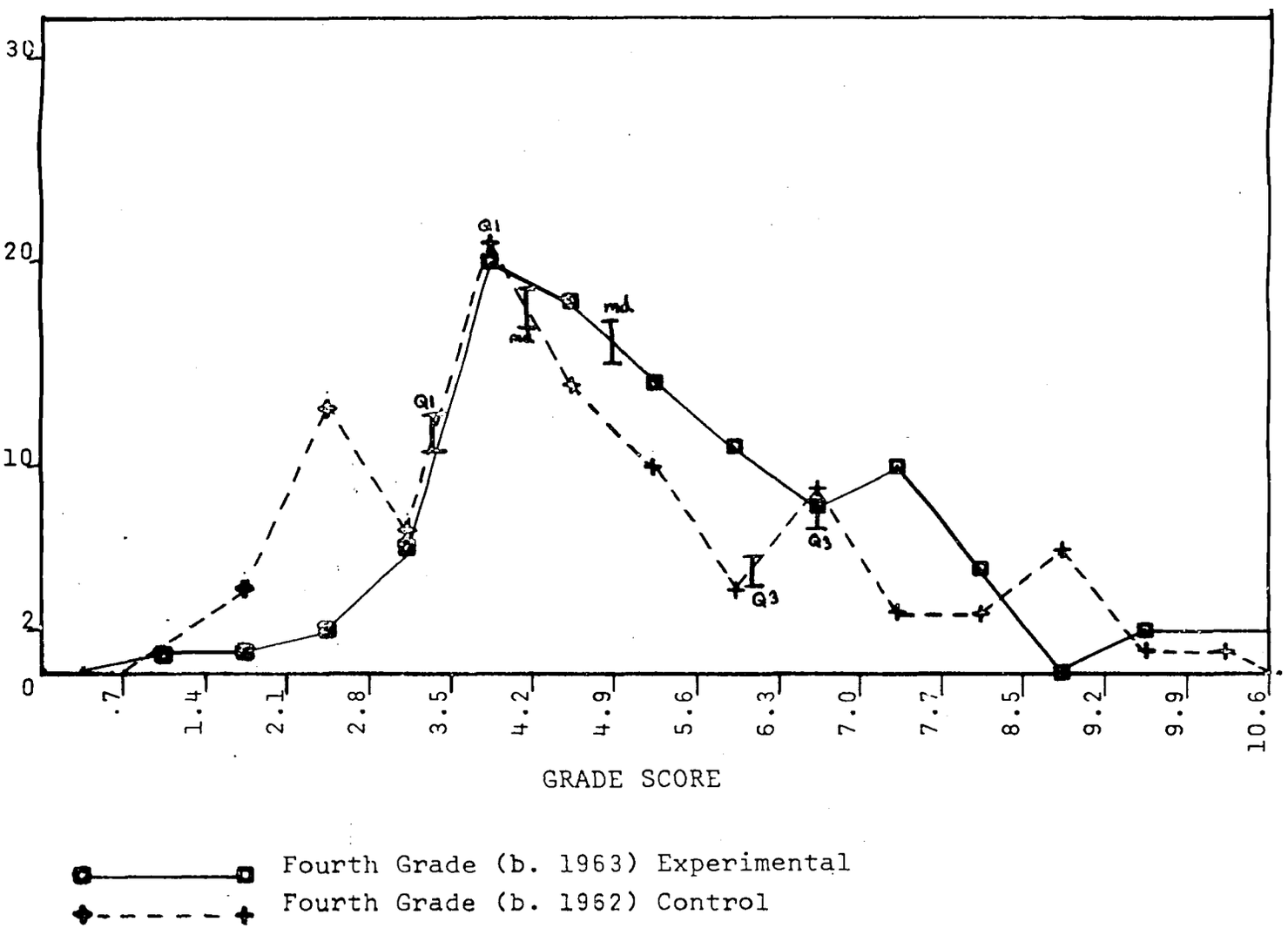
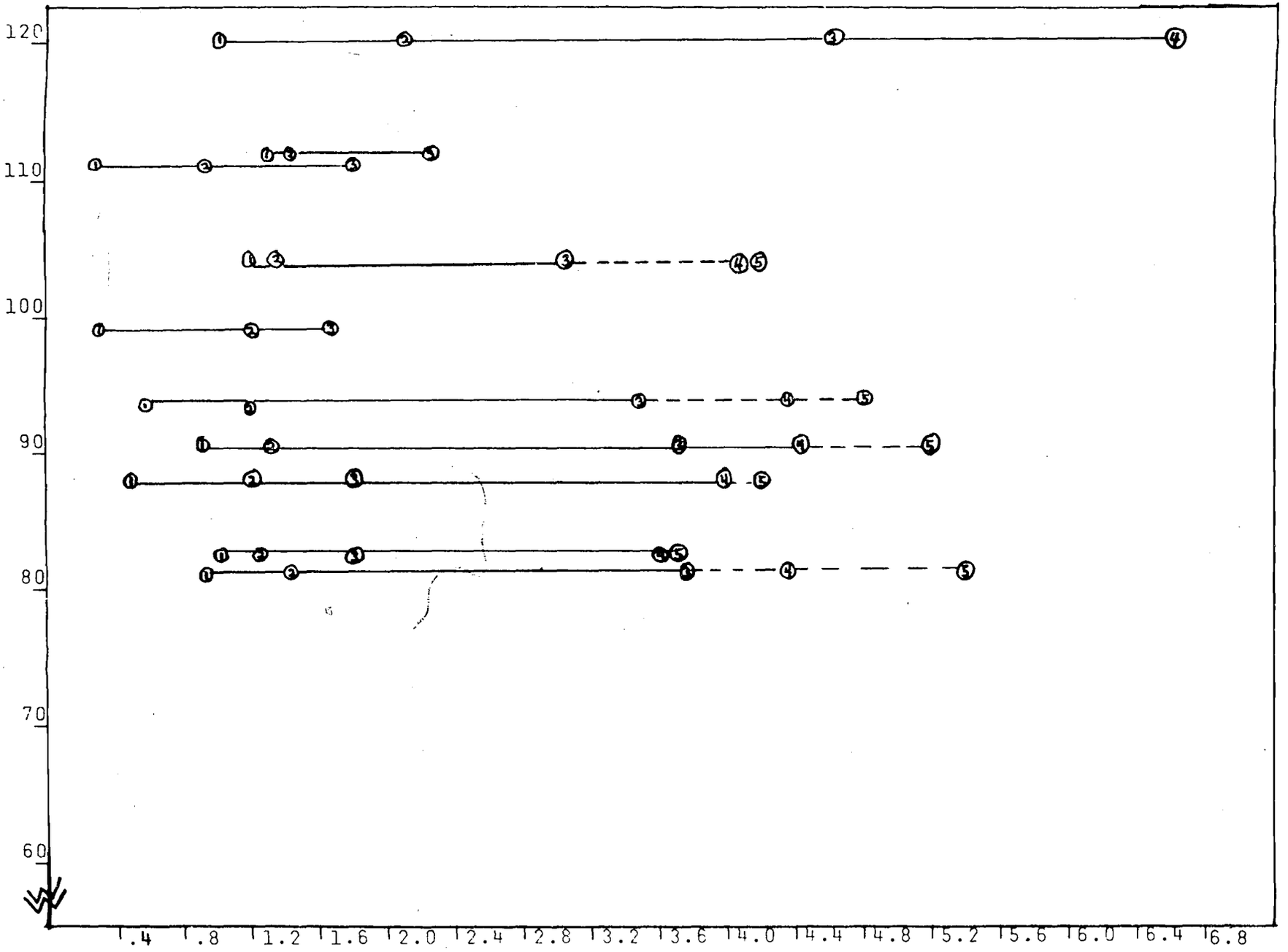


Figure X

ORAL READING TEST RESULTS: SLD GROUP (BIRTHDATE 1963)

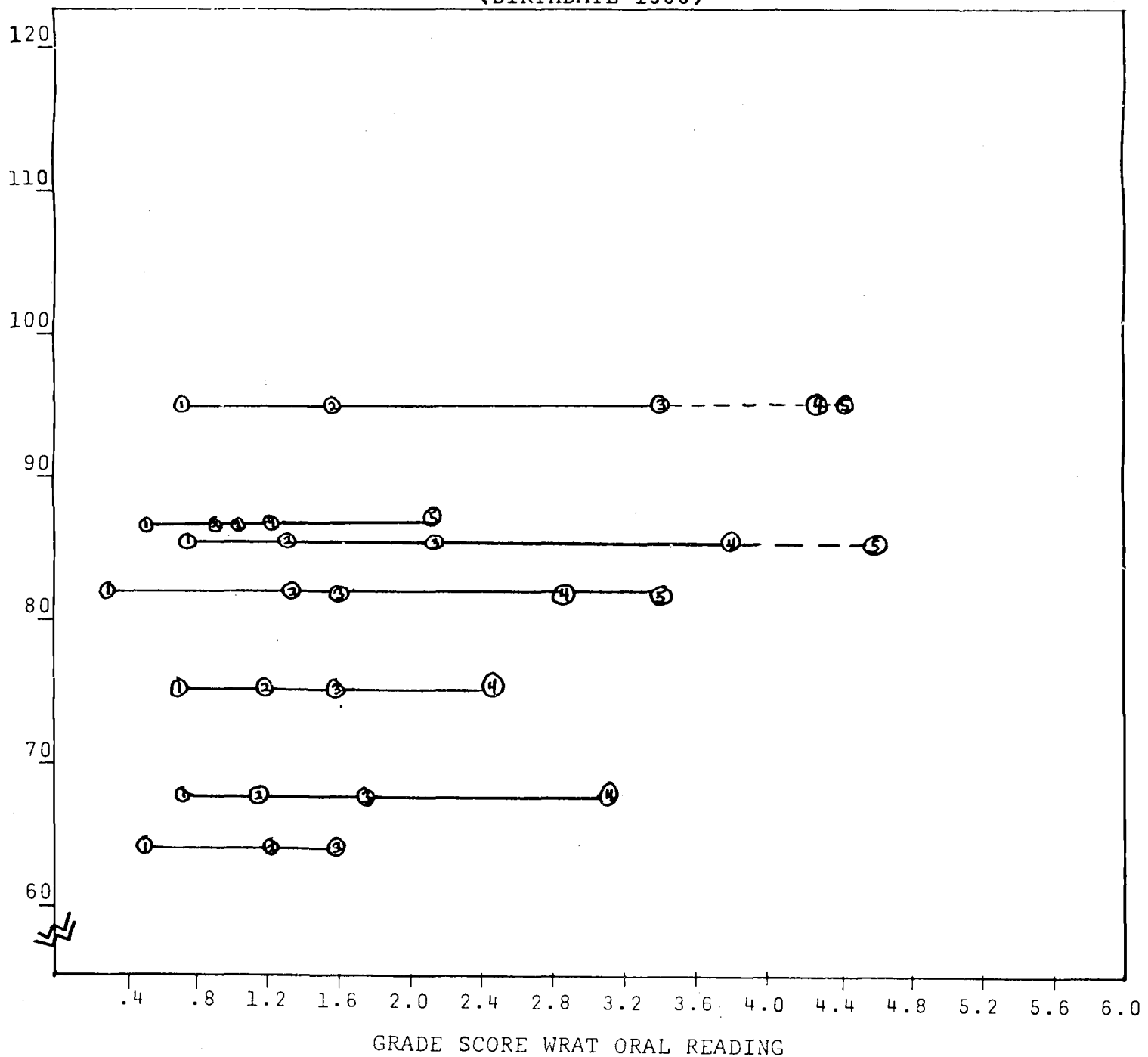


1. Score in Fall, 1969
2. Score in Spring, 1970
3. Score in Spring, 1971
4. Score in Spring, 1972
5. Score in Spring, 1973

Figure XI

ORAL READING TEST RESULTS: DEVELOPMENTAL IMMATURITY GROUP

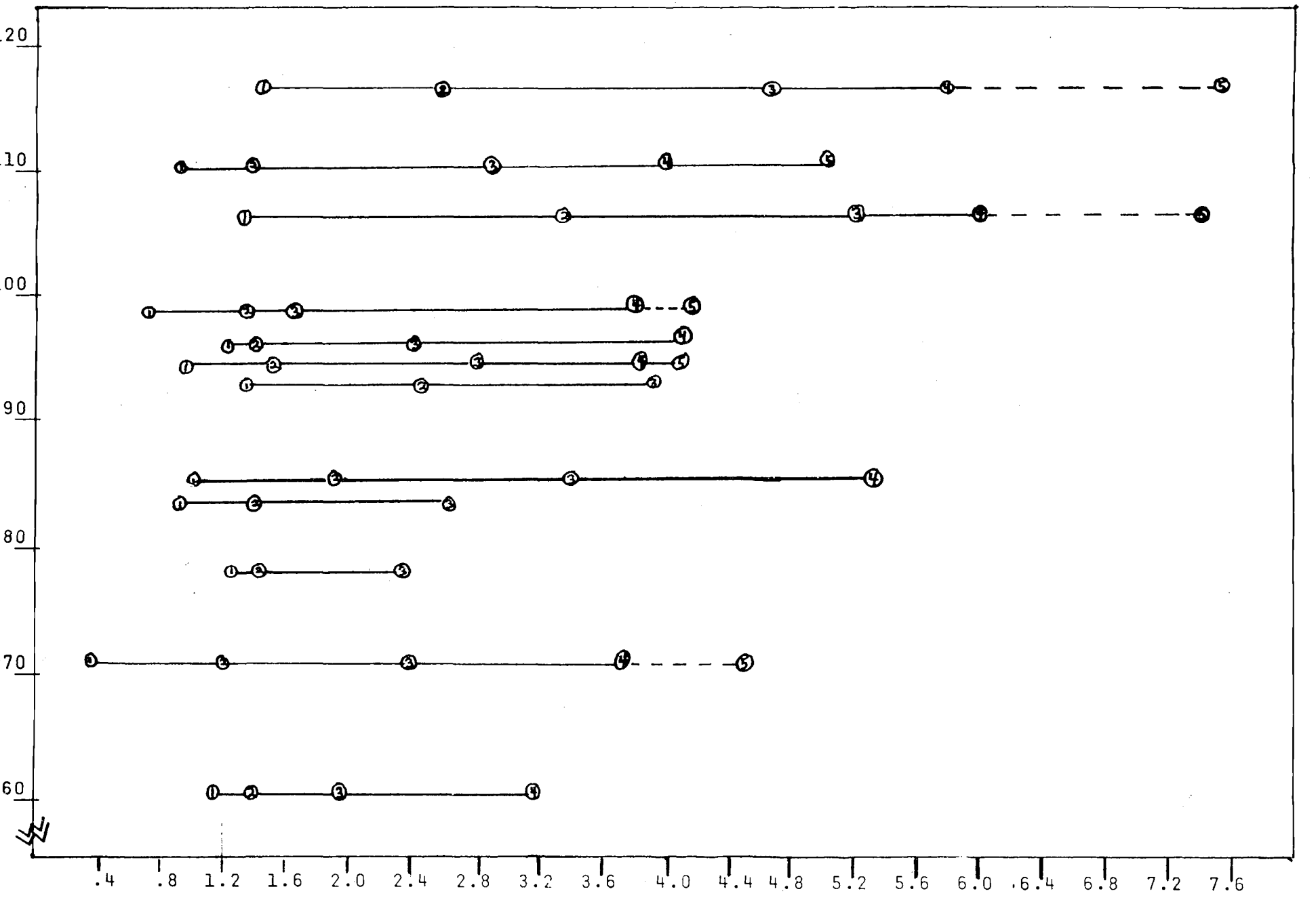
(BIRTHDATE 1963)



1. Score in Fall, 1969
2. Score in Spring, 1970
3. Score in Spring, 1971
4. Score in Spring, 1972
5. Score in Spring, 1973

Figure XII

ORAL READING TEST RESULTS: ORGANIC GROUP
(BIRTHDATE 1963)



1. Score in Fall, 1969
2. Score in Spring, 1970
3. Score in Spring, 1971
4. Score in Spring, 1972
5. Score in Spring, 1973