A Search Battery for Scanning Kindergarten Children for Potential Learning Disability

Archie A. Silver, M.D., Rosa A. Hagin, Ph.D., Estelle DeVito, M.D., Henrietta Kreeger, M.A., and Elizabeth Scully, M.A.

Abstract. SEARCH, a scanning instrument devised to locate 5- and 6-year-olds vulnerable to learning failure and consequent emotional decompensation, is described in terms of statistical characteristics and clinical use. Test content, based upon factor analysis of intensive clinical examinations, surveys perceptual and neurological functions basic to learning. SEARCH provides a total score to assess vulnerability and stanine-based profiles to guide intervention procedures. Clinical use is demonstrated in case material illustrating organic, developmental, and emotional problems.

We shall describe the development and clinical use of a test battery for scanning large numbers of kindergarten-age children in urban school settings to detect those with potential learning problems and those with potential for emotional decompensation. The test battery, called SEARCH, is an individual test for children 5 and 6 years of age. It is designed to be administered at the end of the kindergarten year or at the beginning of 1st grade, requires about 20 minutes to administer and score, and reliably detects those children destined to become reading failures. It is a first step in the broad-scale application of secondary prevention to learning failure and emotional decompensation. For effective prevention, however, there are needed the further steps of intensive individual examination of vulnerable children and the provision of specific intervention once vulnerable children have been located.

In the past five years, methods for the evaluation of reading readiness and for early detection of reading disability have proliferated. In the 1973 (7th) edition of his *Mental Measurements Yearbook,* Buros lists 29 reading readiness and screening tests, as

Dr. Silver is Clinical Professor of Psychiatry; Dr. Hagin, Research Associate Professor of Psychology; Dr. DeVito, Assistant Clinical Professor; and Mrs. Kreeger and Miss Scully, Supervising Teachers at the Learning Disorders Unit, Department of Psychiatry, New York University Medical Center.

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Reprints may be requested from Dr. Silver at the New York University Medical Center, 560 First Avenue, New York, NY 10016.

compared to a listing of 8 such tests in the 1965 (6th) edition. The tests listed in 1973 vary from individual and group tests of reading readiness, such as the Monroe, dating back to 1935, or the most commonly used Metropolitan Readiness Test (Hildreth et al., 1965, as reported by Maitland et al., 1974); to screening tests utilizing parent and teacher questionnaires and checklists, such as the Kindergarten Student Rating Scale (Adelman and Feshbach, 1971); to individual surveys of abilities presumed to relate to learning, as in the Valett Development Survey (1966); to more specific attempts at isolating factors predictive of reading failure, as the Meeting Street School Screening Test (Hainsworth and Sinqueland, 1969). There are, in addition, measures published in the professional literature not reviewed by Buros, such as the de Hirsch-Jansky Predictive Index (de Hirsch et al., 1966) and the Denver Developmental Screening Test (Frankenberg et al., 1970). Most have in common the attempt to assess various aspects of language, perception, motor control, and social and emotional maturity.

Of the 29 tests surveyed in the 7th *Mental Measurements Yearbook,* 11 are categorically not recommended since they do not meet standards set for educational and psychological tests by the American Psychological Association, the American Educational Research Association, and the National Council on Measurement in Education. These standards relate to evidence for reliability and validity, description of sampling procedures, standardization, and the scaling methods used in reporting scores. Of those regarded as acceptable, 6 are tests of reading readiness usually given in 1st grade or higher and are designed not for prediction but to evaluate ability to deal with reading material at the moment. Further, many of these tests require responses to teachers' oral directions and do not appear to be culture-free.

Predictive instruments themselves generally suffer from inexact knowledge of the relationship between the tests given and specific aspects of what they are purported to predict—that is, validity. Predictive tests, therefore, tend to become shotgun affairs, perhaps sometimes bracketing the target, but even then suffering from the imposition of much time and cost, with redundancy abounding. Ad hoc measures without statistical safeguards may yield distressing false positives, inaccurately labeling children and inaccurately directing vital educational decisions. An instrument to be used in screening requires not only reliability and validity but also the ability to test large numbers of children in short periods of time and to be flexible enough to fit into current budget constraints.

SEARCH, described in this paper, stems from two sources: (1) clinical and (2) statistical. The clinical background of SEARCH has focused on spatial and temporal perception, in any or all perceptual modalities, as basic to reading (Silver and Hagin, 1960, 1964). The importance of these skills was emphasized in a two-year intensive interdisciplinary study of a normal 1st-grade population (Silver and Hagin, 1972), in which all children (N = 168) enrolled in the 1st grade of the Kips Bay School, a public school in the Lower East Side of Manhattan, were examined neurologically, psychiatrically, perceptually, psychologically, and educationally. Results of this study revealed again that those children vulnerable to learning failure lacked perceptual skill relating to spatial and temporal organization. A five-year follow-up with our original group of 168 children, now in 5th and 6th grade, validates the clinical judgment that the antecedents of reading failure appear to lie in specific types of perceptual immaturity—namely, in visual, auditory, and body-image immaturity—all relating to orientation in space and time.

Statistically, a factor analysis of 20 variables composing the intensive examinations of the Kips Bay School study identified 5 factors accounting for 61.05 percent of the total variance. The five factors were (table 1): (1) an auditory-associative factor, with auditory per-

Table 1

Intensive Clinical Examination: Rotated Factor Matrix
Kips Bay School 1969–1971 Study N = 154

Variables	I	II	III	IV	V	h^2
1. Oral Reading	.71	−.19	.20	.10	.10	.5958
2. Spelling	.70	−.38	.20	−.08	.22	.7266
3. Lamb Chop: Matching	.21	−.66	.04	.05	.25	.5491
4. Lamb Chop: Recall	.06	−.63	.11	−.11	−.08	.4369
5. Flags Test	.20	−.65	.11	.19	.30	.6023
6. Marble Board Test	.31	−.65	−.01	−.05	.34	.6272
7. Bender	.18	−.74	.23	−.01	.27	.7075
8. Wechsler Dolls	.17	−.31	−.05	−.52	.31	.4960
9. Auditory Discrimination	.70	−.34	−.11	−.10	.17	.6551
10. Auditory Sequences: Codes	.22	−.59	−.20	−.06	−.05	.4471
11. WPPSI Sentences	.45	−.07	−.10	−.13	.70	.7270
12. Rote Sequences: Days of Week	.82	−.16	−.13	−.09	.09	.7321
13. Intermodal Dictation	.73	−.12	−.05	.03	.23	.6110
14. Articulation	.43	−.22	−.39	−.16	.30	.4965
15. WPPSI Verbal IQ	.57	−.18	−.13	−.10	.58	.7190
16. WPPSI Performance IQ	.21	−.19	.17	−.03	.83	.8040
17. Neurological Impairment Rating	−.13	.59	.05	.22	.02	.4180
18. Psychiatric Impairment Rating	−.10	.06	−.45	.72	.19	.7766
19. Extension Test Abnormal	.05	.01	.35	.52	−.19	.4314
20. Chronological Age	−.05	−.14	.78	−.03	.12	.6505
Σa^2	3.77	3.51	1.38	1.27	2.28	Σ = 12.21
Percentage Variance	18.87	17.56	6.91	6.33	11.38	61.05

ceptual tests having a high loading; (2) a visual-spatial factor, with visual, visual-motor, and neurological impairment rating having the highest loadings; (3) a maturational factor, with only chronological age making a strong contribution and with negligible loadings for perception; (4) an emotional factor, with the psychiatric rating achieving the highest loading; (5) a general cognitive factor, with highest loadings from the WPPSI Verbal and Performance IQs and Sentences subtest.

What was striking from the factor analysis was the relative independence of visual, spatial, and auditory-associative factors from chronological age, IQ, and psychiatric ratings. Statistically, then, we were again directed to study the specific perceptual immaturities to which our clinical judgment had previously led us.

With statistical cues from the factor analysis, and with modifications in content for the 5- and 6-year-old, the present version of SEARCH consists of 10 subtests: 3 in visual perception (discrimination, recall, and visual-motor function), 2 in auditory perception (discrimination and rote sequencing), 2 in intermodal (articulation and written response to dictation), 3 in body image (directionality, finger gnosis, and pencil grip). Thus it can be seen that SEARCH samples the same basic visual, auditory, and intermodal perceptions as does the original intensive scale and, in addition, adds information from the neurological examination—namely, maturation in body image, as evidenced by spatial orientation, finger gnosis, and praxis (pencil grip).

Statistical Characteristics

With the modification of the intensive scale, and with the SEARCH now given at the end of the kindergarten year, a new series of norms was established. The normative group (table 2) comprised the entire kindergarten grades of four schools in the Lower East and West Sides of Manhattan: 262 children tested in the spring of 1973, and 272 in the spring of 1974. These were intact, nonselective samples involving every child in the kindergarten grade of each school, except that of the 1967 group of the Soho School, who were examined early in their 1st grade.

Scores for each of the 10 subtests of the SEARCH were tabulated for each child. Initially, an empirical cutoff point—namely, that raw score designating the lowest one third of the distribution of each subtest—was selected. This empirical decision was based upon findings from our earlier intensive examinations of all children in the 1st grade, that approximately one third of the children in that grade are vulnerable to learning failure. Thus, those children scor-

Table 2

Standardization Samples for Search

Sample	N	Sex M	Sex F	Ethnic Background % White [b]	% Black	% Other [a]	Age in Months Age Range	$\overline{X}$ SD	$Search_{10}$	Programs Intensive Examination
Bay										
1967	90	44	46	78	12	10	65–84	71.88 ± 3.87	+	+
Bay										
1968	50	29	21	68	14	18	58–78	68.86 ± 4.08	+	Planned for
1967	96	49	47	26	2	72	70–83	77.30 ± 5.12	+	+
1968	132	71	61	24	0	82	64–76	70.71 ± 3.38	+	Planned for
1968	90	54	36	36	9	55	64–75	70.27 ± 3.53	+	Planned for
ol School										
1967	76	34	42	71	26	3	65–76	70.32 ± 3.29	+	0
AL	534	281	253	45	9	46	58–84	71.73 ± 4.33		

cludes: Chinese, Japanese, Filipino, Asian Indian.
cludes: Puerto Rican, Spanish-speaking.

ing at or below the score designating the lowest one third in each subtest were considered to be vulnerable in the function measured by that subtest. We had, therefore, for each test variable a score which separated those children for whom we predicted success from those for whom we predicted failure. This score was designated by the acronym VAB (Vulnerable At or Below).

Having determined the VAB scores for each subtest, a Total SEARCH score was obtained. This was defined as the number of tests in the SEARCH on which the child exceeded the VAB score. For example, a child earned a SEARCH score of 10 when his scores exceeded the VAB scores on all subtests: a child earned a SEARCH score of 4 when he exceeded the VAB scores in only 4 subtests.

Statistical analysis includes studies of internal consistency, reliability, and validity. Internal consistency of the SEARCH, computed for the total sample of 534 children utilizing the Kuder-Richardson Formula 21, reveals coefficients ranging from .36 (for the visual-motor subtest) to .93 (for intermodal dictation), with a median for SEARCH of .69. Test-retest reliability of the battery for a sample of 30 children drawn randomly from the total Kips Bay group was calculated on the basis of a 14-day interval between test administrations and found to have a correlation of .71 ($p<.01$) for the Total SEARCH score.

Concurrent validity, using Oral Reading scores on the Wide Range Achievement Test (WRAT) as a dependent variable, reveals a correlation coefficient of .51 ($p<.01$). Predictive validity was studied in a school in which no intervention was done. In this school (Lower East Side-Control School), the SEARCH scores obtained at the end of the kindergarten year (spring 1973) were correlated with Oral Reading scores (WRAT) obtained at the end of 1st grade (spring 1974) from the same children. The correlation coefficient was .68 ($p<.01$). When SEARCH scores were analyzed in terms of prediction of reading failure for each individual child, it was found that no child with a SEARCH score of 5 or below earned at the end of 1st grade an Oral Reading score (WRAT) above the median for the group. For those with SEARCH scores of 6 and 7, 53% scored above the median; for those with SEARCH scores of 8 to 10, 85% scored above the median. The Total SEARCH score, therefore, was effective in predicting reading achievement at the end of 1st grade.

Relation to Clinical Diagnosis

Useful as the Total SEARCH score is in locating children vulnerable to educational failure, it has further power in offering clues as to clinical diagnosis as obtained in intensive psychiatric and neurological study of individual children.

Of the 220 children comprising the entire kindergarten grades of the Kips Bay (N = 90) and the Soho Schools (N = 130) scanned with SEARCH in the spring of their kindergarten year, 171 were available for intensive neurological and psychiatric study in their 1st grade year. As a result of these intensive examinations, diagnostic groupings could be made (table 3): 2 children had chronic phys-

Table 3

SEARCH Scores and Diagnosis
First Grade Kips Bay School and Soho School 1973–74

	Chr. Ill	Gen. Ret.	Θ	SLD	Emot. Fam. Prob.	No. Dev.	Cult. Diff.	Total
8–10			1	1	5	61	1	69
6–7			2 *	7	17	16	1	43
4–5	1		6	23	3	2	2	37
0–3	1	2	19					22
Total	2	2	28	31	25	79	4	171

* One child was in our nursery program and so had the benefit of intervention. Her SEARCH score, therefore, is higher than expected from her diagnosis.

ical illness (1, asthma; the other, a congenital cardiac), which kept them from attending school regularly. These children were, in reality, hospitalized for long stretches of time. Of the others, 2 children were immature in all parameters; the cause of this retardation was obscure; 28 children had neurological signs, suggesting a structural defect of the central nervous system; 31 children had language retardation, which we considered to be a lag in development and which was designated as specific or developmental learning disability. An additional 25 children had emotional problems considered to be severe; 79 had no deviations in development or in emotional state; and 4 children were newly arrived in the United States and had not yet mastered English. It will be recognized that those children diagnosed here as "organic" and those with developmental language problems are children with "soft" neurological signs and fit into the broad category of "minimal cerebral dysfunction" (Clements, 1966).

Relating the individual diagnoses to SEARCH scores, we find that if the SEARCH scores are grouped as shown in table 3, 22 children earned scores of 0 to 3. Diagnostically, these include 19 with neurological signs; 2 are the children retarded with no known cause, although they too most probably fit into the organic groups, and 1 child who has asthma. SEARCH scores of 4 and 5 were earned by 37 children. Of these, 23 have developmental learning problems, 6 have neurological signs, 2 have an unusual cultural background, 2 have no deviations, and 1 is chronically ill. If we consider the children earning scores from 0 to 5 as vulnerable, this includes 59 children, of whom only 2 show no deviations on individual examination. The designation of vulnerability in SEARCH scores of 0 to 5 is thus substantiated by intensive individual examination.

At scores 6 to 7, there were 2 "organic" problems, 7 children with developmental difficulty, 17 with emotional problems, 16 with no deviations, and 1 with cultural differences. Of the 8 to 10 scores, 61 had no deviations, 5 had significant psychiatric problems, and 1 was culturally different.

To generalize, relating the Total SEARCH score to intensive individual examination, we find that 86% of children with SEARCH scores of 0 to 3 have neurological signs, 62% of those with SEARCH scores of 4 and 5 have developmental language disability, 88% of those scoring 8 to 10 have no deviations on clinical examination. Of those with SEARCH scores 6 and 7, emotional problems uncomplicated by neurological or developmental defects are found in 40%; another 16% did have developmental language problems, and 40% had no deviations. With SEARCH scores of 5 or less, 2 of 59 children had no deviations; while with SEARCH scores above 5, 77 of 112, approximately 70%, had no deviations.

These generalizations attest to the utility of the SEARCH score in detecting children with problems and in allocating clinical services most effectively.

Therapeutically, with a SEARCH score of 4 to 5, educational intervention can be initiated with some confidence that it will meet the child's needs. With those earning SEARCH scores of 0 to 3, educational intervention alone may be inadequate; with SEARCH scores 6 and 7, it may be inappropriate.

The clinical picture of children at various SEARCH scores will illustrate the types of problems that SEARCH detects.

Case 1

Carlos (fig. 1) [1] earned a SEARCH score of 1 at age 74 months and is credited only with a normal pencil grip. He is a small, frail-look-

Figure 1

NAME C.S. DATE TESTED Year 73 Month 6 Day 21

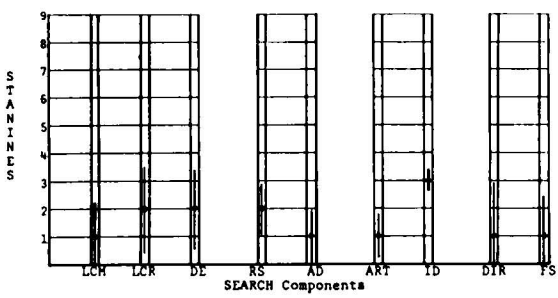
SCHOOL Mrs Quay GRADE K ROOM 224 DATE OF BIRTH 67 5 4

INITIAL READING ESTIMATE 0 AGE 6 1 17 = 79 mos.

EXAMINER Elizabeth Scully NORMATIVE GROUP SELECTED PS. 116, S.D. 1967

SEARCH Component		VAB	Raw Score	Stanine
Lamb Chop Matching		(5)	2	1
Lamb Chop Recall		(2)	1	2
Designs		(3)	2	2
Rote Sequencing		(3)	1	2
Auditory Discrim:	Total	(12)	4	1
Objects M.A.				
Syllables 4				
Articulation		(19)	1	1
Intermodal Dictation		(0)	0	2
Directionality		(4)	1	1
Finger Schema		(7)	2	1
Grip		(Abn)	Normal	
SEARCH Score			1	

Perceptual Profile



ing child who easily overcame his initial test anxiety and who seemed quite comfortable in the examination. He smiled appropriately, related well to the examiner in a clinging, infantile way. His major difficulty was in language, where he was limited in verbal expression to simple declarative replies to questions, frequently omitting the personal pronoun, having infantile articulation, and little spontaneous speech. His store of words for naming is at about a 4-year level, and his vocabulary subtest on the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) had a scaled

[1] The test record blank for SEARCH used in figures 1 to 5 is reproduced with the permission of copyright owners.

score of 5. On neurological examination there were epicanthic folds; the fifth finger is curved inward. Abnormal findings included marked athetoid movements of the extended arms, marked myocloniclike twitches of the face and shoulder, and severe synkinesis. He exhibited a positive neck-righting response, marked immaturity in right-left discrimination, praxis, and finger gnosis. His ocular pupils were eccentric; deep tendon reflexes, unequal, greater on the right. Audiometric examination, performed by Joel Klass, M.D., was normal.

His history reveals that he is the oldest of two children, born 2 months prematurely with a birth weight of about 3 pounds. His first month of life was spent in the hospital with jaundice and feeding difficulty. Developmental landmarks were grossly retarded, with onset of comprehensible speech delayed to about age 4. He was hyperactive, difficult to control. In their management of Carlos, his parents alternate between indulgent babying and spanking. His father is concerned and interested in the child; he works as an elevator operator, is left-handed, and speaks English well. His mother, in New York for seven years, speaks mostly Spanish. The younger sibling, a girl now 4 years old, has no difficulty with English. His mother states that Carlos does not speak Spanish very well.

This child, with marked defects in all subtests of SEARCH, has a vulnerable score on the SEARCH and neurological signs suggestive of a nonprogressive central nervous system defect, possibly as a result of his prematurity and jaundice. He is not generally retarded, as seen clinically and in his Performance IQ of 93 on the WPPSI. Intervention is required here.

Case 2

When examined at age 75 months, Frances (fig. 2) earned a SEARCH score of 3, with visual recall, visual-motor, and directionality subtests above the VAB points. Her full-scale IQ score was 76, as was that of Carlos. Her verbal IQ score, however, was 84, and her Performance IQ score 73. Her neurological signs are not quite as marked as those of Carlos; yet she is hyperkinetic, has poor gross motor coordination, poor motor impulse control—all signs included in the syndrome of "minimal cerebral dysfunction." She has an internal strabismus, nystagmus on lateral gaze, marked perioral pallor, and cyanotic nail beds. She has a harsh systolic murmur, which is under cardiac observation. Examination of her birth record revealed an Apgar of 5. She was born at term via as-

sisted breech. She did not breathe spontaneously, and a full 5 minutes elapsed before resuscitation stimulated breathing.

Figure 2

NAME F. H. DATE TESTED Year 73 Month 5 Day 25

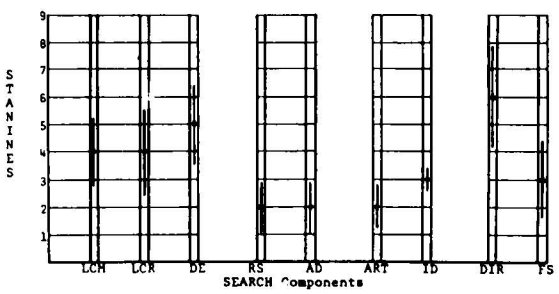
SCHOOL Mtps Day GRADE K ROOM 224 DATE OF BIRTH 67 2 19

INITIAL READING ESTIMATE 0.3 AGE 6 3 6 = 75 mos.

EXAMINER Eleanor Groder NORMATIVE GROUP SELECTED P.S. 116, Q.B. 1967

SEARCH Component		VAB	Raw Score	Stanine
Lamb Chop Matching		(5)	5	4
Lamb Chop Recall		(2)	6	4
Designs		(3)	11	5
Rote Sequencing		(3)	1	2
Auditory Discrim:	Total	(12)	7	2
Objects	5			
Syllables	2			
Articulation		(19)	12	2
Intermodal Dictation		(0)	0	3
Directionality		(4)	9	6
Finger Schema		(7)	6	3
Grip		(ABN)	ABN	
SEARCH Score			3	

Perceptual Profile



Frances represents a diffuse, nonprogressive central nervous system defect possibly associated with anoxia at birth. Her total functioning is at a borderline level. Without intervention, this is the type of child who would eventually be sent to the classes for retarded children. Here again, SEARCH found her to be vulnerable.

Case 3

Tina, at 73 months (fig. 3), has a SEARCH score of 4, functioning on the WPPSI at a dull-normal level. She is clearly competent in auditory perception, as seen in excellent scores in auditory discrimination, rote sequencing, articulation, and directionality. Her visual perception, however, is very poor, and when auditory perception

must be translated into visual-motor function, she fails. Body image, more complex than directionality, as in finger gnosis,

Figure 3

NAME T.L. DATE TESTED Year 72 Month 6 Day 20

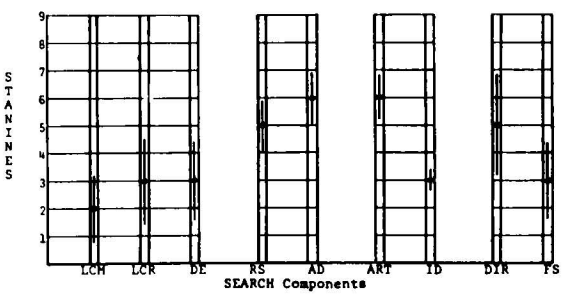
SCHOOL Mtps Day GRADE K ROOM 118 DATE OF BIRTH 67 5 8

INITIAL READING ESTIMATE 1.2 AGE 6 1 13 = 73 mos.

EXAMINER Anita Dick NORMATIVE GROUP SELECTED P.S. 116, 8.D. 1967

SEARCH Component		VAB	Raw Score	Stanine
Lamb Chop Matching		(5)	3	2
Lamb Chop Recall		(2)	2	3
Designs		(3)	2	2
Rote Sequencing		(3)	(6)	5
Auditory Discrim:	Total	(12)	(10)	6
Objects	8			
Syllables	2			
Articulation		(14)	(17)	6
Intermodal Dictation		(0)	0	3
Directionality		(4)	(5)	5
Finger Schema		(7)	6	3
Grip		(ABN)	ABN	
SEARCH Score			4	

Perceptual Profile



praxis, and in more complex right-left discrimination, is immature. The extension test is clearly abnormal. Psychiatrically and neurologically, she is otherwise intact. An 8-year-old brother is said to have a reading disability. In spite of her dull-normal function, she should do well with intervention.

Case 4

In contrast to Tina, whose major deficits on the SEARCH were in the visual perceptual area, Yolanda (fig. 4) has her major defects in the auditory area. This, together with problems of body image and an abnormal extension test, suggests a language disability. She illustrates the varied perceptual profile found in children with lan-

Figure 4

NAME Y.S. DATE TESTED Year 75 Month 6 Day 7

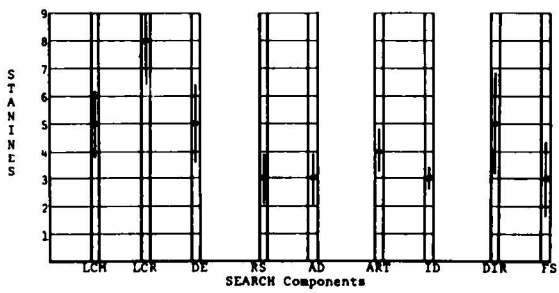
SCHOOL Kips Bay GRADE K ROOM 226 DATE OF BIRTH 67 5 21

INITIAL READING ESTIMATE 0.9 AGE 6 0 16 = 72 mos.

EXAMINER Elizabeth Scully NORMATIVE GROUP SELECTED P.S. 116, N.Y. 1967

SEARCH Component		VAB	Raw Score	Stanine
Lamb Chop Matching		(5)	6	5
Lamb Chop Recall		(2)	7	8
Designs		(3)	14	6
Rote Sequencing		(3)	2	3
Auditory Discrim:	Total	(12)	8	3
Objects 5				
Syllables 3				
Articulation		(14)	15	4
Intermodal Dictation		(0)	0	3
Directionality		(4)	5	5
Finger Schema		(7)	6	3
Grip		(AGM)	AGN	
SEARCH Score			5	

Perceptual Profile



guage disability. The SEARCH again points to her vulnerability to educational failure and to areas for intervention.

Case 5

Kenneth was 74 months old when he earned a SEARCH score of 7 (fig. 5). He is tall, handsome, a child with dark, deep-set eyes. He functions adequately in all aspects of visual, auditory, and body-image perception, except for slightly poor performance on visual-motor function, articulation, and directionality. Neurological examination is within normal limits, except for abnormality on the extension test.

Initial psychiatric examination, however, reveals an anxious child: restless, distractible. He is very verbal, going into long, circumstantial stories concerned with killing, death, and his destruction. He has terrifying dreams, as of a black devil with red eyes and girl's nails. He is afraid that someone is going to kill his sister, and

he does not let his mother open the window for fear a rocket ship will come in. He talks about how he wishes he were born a girl. In short, Kenneth has severe anxiety, phobias, and beginning compulsions. He is considered severely disturbed and already needs psychiatric help.

Figure 5

NAME K.C. DATE TESTED Year 73 Month 5 Day 25

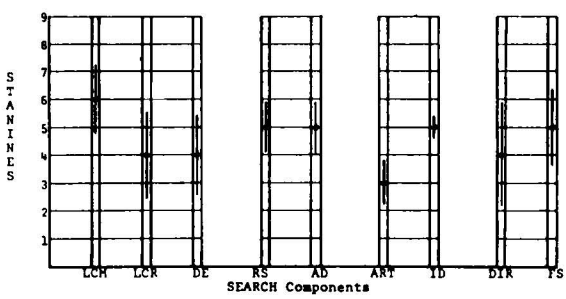
SCHOOL Kips Bay GRADE K ROOM 118 DATE OF BIRTH 67 4 6

INITIAL READING ESTIMATE 1.1 AGE 6 1 19 = 74 mos.

EXAMINER Eleanor Groder NORMATIVE GROUP SELECTED P.S. 116, 8.5. 1967

SEARCH Component		VAB	Raw Score	Stanine
Lamb Chop Matching		(5)	7	6
Lamb Chop Recall		(2)	3	4
Designs		(3)	5	4
Rote Sequencing		(3)	6	5
Auditory Discrim:	Total	(12)	15	5
Objects	7			
Syllables	6			
Articulation		(14)	13	5
Intermodal Dictation		(0)	3	5
Directionality		(4)	4	4
Finger Schema		(7)	10	5
Grip		(AGN)	NORMAL	
SEARCH Score			7	

Perceptual Profile



Summary and Conclusions

Based upon data obtained from individual interdisciplinary clinical examinations of all children in the 1st grades of a public school in the Lower East Side of New York City over two successive years, a scanning instrument, called SEARCH, was devised to detect children 5 and 6 years of age vulnerable to reading failure and to emotional decompensation. SEARCH, an individual test designed to be

administered at the spring of the kindergarten year or early in 1st grade, requires about 20 minutes to administer and score and reliably detects those children vulnerable to learning failure. The items of SEARCH are designed to scan those functions in visual, auditory, and body-image perception which we believe are basic to the acquisition of reading. These functions include visual matching and recall, visual-motor function, auditory discrimination, auditory sequencing, articulation, intermodal dictation, and three tests of body image: directionality, finger gnosis, and praxis. Scores delineating children vulnerable to learning failure were based upon the lowest one third of the distribution for each subtest and were designated as VAB scores (Vulnerable At or Below). A Total SEARCH score, consisting of the number of those subtest scores exceeding the VAB scores, yields a score from 0 to 10.

Study of the distribution of Total SEARCH scores reveals that the lowest one third of the distribution falls at a Total SEARCH score of 5. Thus children scoring at 5 or below are vulnerable to educational failure. The predictive value of the Total SEARCH score is seen in its relationship to independent neurological and psychiatric examinations and to later educational achievement.

The test is useful not only in locating vulnerable children but also in allocating intervention services appropriately. SEARCH is an initial step in the prevention of learning problems and their emotional consequences.

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