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ABSTRACT

This review of the literature on kindergarten assessment and its relationship to primary reading achievement is divided into the the following sections: (1) studies which support early assessment; (2) studies which suggest the use of a battery over a single readiness test; (3) studies which utilize assessment data for treatment purposes; (4) studies which relate to the modality concept; and (5) studies which suggest a developmental sequence in the areas of perception and cognition. Research findings on the correlation of readiness test scores with primary reading achievement clearly indicate that early assessment should be a functional reality in every school district. Studies have shown the superiority of the battery over the single test for identification of high-risk learners. Research findings on specific methods and strategies for use with high-risk pupils are inconclusive. It is suggested that at the end of first grade, pupils whose preferred modality is congruent with the primary instructional strategy of the initial reading program will achieve higher than pupils whose preferred modality is not congruent with the primary instructional strategy of the initial reading program. (LL)

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THE RELATIONSHIP BETWEEN EARLY ASSESSMENT AND ADJUSTED INSTRUCTIONAL STRATEGIES IN READING FOR HIGH RISK LEARNERS:

by
Margaret A. Donovan

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INTRODUCTION

The purpose of this paper is to review the literature on kindergarten assessment and its relationship to primary reading achievement. Research in this area has increased markedly in the last decade. This appears to be a hopeful sign as it may signify a change in focus from the remedial to the preventative. Many studies have dealt with predictability. Their major objective has been to determine what test or battery of tests can accurately identify those pupils who are likely to experience difficulty in initial reading instruction. Other studies have focused on utilizing data from assessment procedures to prescribe alternative instructional strategies and/or educational placement for high-risk learners. In this paper the literature will be organized as follows:

1. Studies which support early assessment
2. Studies which suggest the use of a battery over a single readiness test
3. Studies which utilize assessment data for treatment purposes
4. Studies which relate to the modality concept
5. Studies which suggest a developmental sequence in the areas of perception and cognition.

Educational implications from the research will be explored.

REVIEW OF LITERATURE

Studies Supporting Early Assessment

Interest in early assessment and predicting first grade reading achievement dates back to the early thirties (Chester, 1930; Lee, Clark and Clark, 1934; Dean, 1939; Gates and others, 1939). Many of these early studies tried to determine the most important factors in predicting reading achievement. Dean examined the relative effects of visual acuity, mental age (MA), and reading readiness tests on predicting first grade achievement. He found MA, as measured by the Stanford Binet, was the most efficient predictor (Dean, 1939). For years MA was deemed the most important criterion in predicting first grade reading achievement. Researchers stated that an MA of six years six months was needed for success in beginning reading (Dean, 1939; Gates and others, 1939).

In 1955 Harrington and Durrell studied factors which influence first grade reading achievement. They found that auditory and visual discrimination of word elements were highly related to success in primary reading while MA had little influence on success in learning to read. Perceptual factors have become increasingly important in the research on early assessment.

Recently studies have attempted to identify which readiness test is the most efficient predictor of first grade reading achievement (Dessler and Bridges, 1973; Goodman and Wiederholt,

1973). Lessler and Bridges compared the Metropolitan Readiness Test (MRT), Lee Clark Readiness Test (LCRT), Peabody Picture Vocabulary Test (PPVT), and the Bender Gestalt Test (BGT). They found that the MRT was the best predictor of reading achievement (Lessler and Bridges, 1973). In a similar study with disadvantaged black children, Goodman and Wiederholt compared the MRT, the Slosson Intelligence Test (SIT), and the Frostig Developmental Test of Visual Perception (DTVP). They found the DTVP to be the best predictor (Goodman and Wiederholt, 1973).

Norfleet studied the BGT as a predictor of first grade reading achievement. She utilized the BGT scores to predict good, average, and poor readers. Her findings were significant at the .001 level. In this study the BGT was better at identifying high achievers than low achievers. Consequently, Norfleet suggested that if the primary purpose of the assessment was to identify a high-risk population then a battery would be more accurate than the BGT in isolation (Norfleet, 1973).

Lilly White suggested the use of a high-risk register for identifying potential reading problems. Children who exhibited high-risk symptoms, as identified by a behavioral checklist, would be assessed on a more specialized battery. The battery was not specified (White, 1973). Keogh and Smith also suggest the identification of a high-risk population. They conducted

a follow-up study through fifth grade and found that the BGT combined with kindergarten teacher ratings was effective at predicting high-risk and high potential children. However, teacher ratings were more accurate at predicting high-risk children while the BGT was better at identifying high potential children. These findings are consistent with Norfleet (Keogh and Smith, 1970).

Maitland and others conducted a survey to ascertain what readiness measures were currently being used in the United States. They mailed out 980 questionnaires to various school districts and received responses from 581, or 59 percent. The MRT was found to be the most widely used instrument. Seventy-two percent of the respondents reported using only one test for assessment even though research by Jansky and de Hirsch and others has indicated that a battery is more effective at identifying those children who may experience failure in learning to read (Maitland and others, 1974).

Rubin studied the validity and reliability of the MRT preschool norms. She followed 910 children from pre-kindergarten through the latter part of first grade. Pre-kindergarten scores on the MRT correlated .65 with the MRT scores obtained one year later. Pre-kindergarten scores predicted first grade achievement as effectively as kindergarten scores (Rubin, 1974). These findings suggest that early assessment strategies may be used effectively on pre-kindergarten children.

Studies Suggesting the Use of a Battery

Numerous research studies have substantiated the findings of Jansky and de Hirsch that a battery of tests is a much more efficient predictor than a single readiness test (Teledgy, 1975; Book, 1974; Satz and Friel, 1974). Teledgy evaluated the relative effectiveness of four readiness tests as predictors of first grade achievement. The MRT, BGT, First Grade Screening Test (FGST), and The Screening Test of Academic Readiness (STAR). He found that the MRT was the best predictor in all areas except math, where STAR was the more efficient. The MRT and STAR were very close in overall effectiveness and were clearly superior to the BGT and the FGST. Having determined the relative effectiveness of the four measures, Teledgy used regression analysis to identify the best battery of predictors. The results indicated that the combination of the BGT, Human Figure Drawing (HFD), MRT and STAR letters was the best predictor of overall readiness. This combination was significantly better than any readiness test in isolation (Teledgy, 1975).

Satz and Friel studied the predictive antecedents of specific reading disability utilizing twenty-two different indexes to ascertain if a readiness profile could identify children who will be reading failures in two or three years. Their results strongly suggest that the reading achievement levels of children at the end of first grade can be validly predicted from an assessment of their developmental and

neurological performance at the beginning of kindergarten. The findings showed that the predictive classification was equally accurate for both high and low-risk pupils. The results of the multi-variate analysis revealed that over 90 percent of both the high and low-risk children were correctly classified (Satz and Friel, 1974). These findings are consistent with those of Rubin.

Other investigators have suggested combining a readiness battery with a teacher rating scale (Ferinden and Jacobson, 1970; Sanacore, 1973; Feshbach and others, 1974). Ferinden and Jacobson compared the results of a battery with the ability of kindergarten teachers to select children wtih possible learning problems. Their battery included the MRT, the BGT, the Wide Range Achievement Test (WRAT), and the Evanstan Early Identification Scale (EEIS). The EEIS is a human figure drawing test with a ten point weighted scale. Results indicated that the kindergarten teachers were 80 percent accurate while the battery was 93 percent accurate. It was suggested that the battery be shortened and combined with teacher ratings (Ferinden and Jacobson, 1970).

Sanacore devised a checklist for the evaluation of reading readiness including these areas: auditory discrimination, visual discrimination, left-to-right orientation, oral language development, social and emotional development, motor coordination and physical factors. He suggested that the checklist be

evaluated in conjunction with the following factors before initiating reading instruction: readiness test scores, MA or I.Q. scores, anecdotal records and a conference with the parents. These considerations should provide the teacher with an adequate data base from which to proceed (Sanacore, 1970).

Feshbach compared the de Hirsch battery to the Student Rating Survey (SRS) which he had kindergarten teachers fill out. The SRS examined five factors: impulse control, verbal ability and language development, perceptual discrimination, recall of necessary classroom information, and perceptual motor skills. The findings showed that the SRS' identification of high-risk children correlated .53 with children who scored poorly on first grade achievement tests while the de Hirsch battery correlated .68 with first grade achievement scores. This difference was not significant. A combination of the two measures was suggested (Feshbach and others, 1974).

Another study by Fornes and others suggested identifying high-risk children by clusters of observable behavior. Pupil behavior was classified into four categories: verbal positive, attend positive, not attend, and disrupt. Children formed into four clusters. Group I was significantly different from Group IV; however, Groups II and III were not significantly different. Group IV children were classified as high-risk. This group was 75 percent boys, displayed more non-attending behavior, more disruptive behavior, and more verbal positive behavior. They were very impulsive. It was suggested that a diagnostic

assessment battery be administered to Group IV children (Fornes and others, 1975).

A five year follow-up study by Meyers and others found significant correlations between kindergarten assessment scores, teacher ratings and fifth grade achievement scores. The combined correlation coeficient was .76. The best single predictor was an expressive vocabulary score which had a correlation of .64 with fifth grade achievement (Meyers and others, 1968).

Benger studied the effects of perception, intelligence and personality factors on first grade reading achievement. Significant conclusions were found between these variables and reading achievement in first grade. She recommended the use of the DTVP, Wepman Auditory Discrimination Test (WADT), and a teacher rating instrument to assess personality traits, particularly concentration. Benger stated: "That such a battery would seem to have merit for diagnosing perceptual and personality weaknesses which might underlie primary reading differences" (Benger, 1968, p. 122).

Koppitz combined the BGT with the Visual Aural Digit Span Test (VADST) and examined their relationship to reading achievement. She found that the BGT could differentiate between pupils with learning disability problems and regular students but it could not discriminate between readers and non-readers. However, the VADST could distinguish between readers and non-readers

but not between learning disability and regular class students. The VADST was more correlated with reading specifically while the BGT was more correlated with overall school achievement. Koppitz suggests the combination of these two instruments as an effective screening battery (Koppitz, 1975).

Studies Utilizing Assessment Data for Treatments

Research in early assessment has typically involved correlational studies between various readiness instruments and reading achievement, with few implications for prevention or correction of the problems identified. The studies discussed in this section of the paper have utilized assessment data to provide alternative instructional programs and/or educational placement.

Jansky and de Hirsch have done research in the area of early assessment for well over ten years. Their book, Preventing Reading Failure is a classic in the field (Jansky and de Hirsch, 1972). They have delineated a three stage plan: "Preschool identification of children likely to fail; diagnostic assessment of such children and appropriate intervention" (Jansky and de Hirsch, 1972, p. xv). Their screening battery is designed to identify as many as possible of those children who are going to fail in the elementary grades, while the diagnostic battery is attempting to profile the strengths and weaknesses of individual learners. The screening battery is administered in the spring of kindergarten and includes the

following tests:

1. Pencil use
2. Name writing
3. BGT
4. Minnesota Percepto Diagnostic Test
5. Tapped patterns
6. Sentence memory
7. WADT
8. Boston Speech Sound Discrimination Test
9. Roswell-Chall Auditory Blending Test
10. Oral Language Level
11. Number of words used in telling a story
12. Category names
13. Picture naming
14. Letter naming
15. Horst Nonsense Word Matching Test
16. Word Matching Subtest of the 1937 Gates Reading Readiness Test
17. Matching by configuration (based on Gates)
18. Recognition of words previously taught
19. Spelling two words previously taught

Jansky and de Hirsch report a multiple correlation coeficient of .66 for this battery when it is correlated with reading achievement at the end of second grade. The second stage of their plan is diagnosis of the high-risk children. The diagnostic

battery focuses on abilities underlying the tests rather than the tests themselves. They identify four factors: visual motor organization, pattern matching, oral language, and pattern memory. Many of the specific tests which are classified under these abilities have been administered in the screening and need not be repeated. The third stage is intervention and de Hirsch suggested an approach which focused on the preschool child. She stated "that to approach intervention solely in terms of techniques is simplistic. To be effective, intervention must deal with broader aspects such as timing, the context within which it takes place, and the social strategies by which appropriate help reaches those who need it" (de Hirsch, 1972, p. 93). In the recommendation de Hirsch focused on infant programs, family centers which deal primarily with the child of twenty to thirty months, widespread utilization of the kindergarten assessment practices and evaluation of high-risk children so that appropriate instructional strategies can be prescribed (Jansky and de Hirsch, 1972).

Book formulated a screening battery that was economical in terms of money and time. He used the WRT, the SIT and the BGT to identify children and place them in one of six educational programs: mentally retarded educable ("RE), specific learning disabilities ("SLD), extended readiness program (ERP), tutoring (T), remedial (R), and enrichment (E). He reported a correlation of coefficient of .75 between his predictive battery and reading

achievement at the end of first and second grade. Book suggests the use of this battery for early identification and program planning for learners with perceptual, intellectual and readiness deficits (Book, 1974).

Lesiak and Wait used the ABC Readiness Inventory (ABC) to assess children prior to their entrance to kindergarten. Those children who scored poorest were placed in a diagnostic prescriptive kindergarten with three learning centers. One center focused on language and auditory discrimination, another on visual perception and fine motor coordination and the third center dealt with math concepts and number games. At the end of kindergarten the MRT was administered and this high-risk group had about as many pupils who scored poorly as one would expect in a normal class. This diagnostic prescriptive model was extended. Two transition classes were added, one between kindergarten and first grade and the other between first and second grades (Lesiak and Wait, 1974).

Bradley reports on the early identification of potential learning problems. The pre-test was done in November of kindergarten while the post-test was administered in April of the same year. Specific learning profiles were constructed for all children from the November testing. Pupils were divided into two groups, experimental and control. The experimental group had specialists such as learning disability teachers, physical education teachers, speech therapists and media

specialists work with each child for two thirty minute periods per week in their weakest modality. The control group had learning profiles constructed from the November testing but they did not receive the services of the specialists. The kindergarten teacher was to adjust the program as she saw fit. There were no significant differences between the two groups in the post-test. It was concluded that the assessment procedures were valuable but that the kindergarten teacher could adjust the curriculum to the specific needs of each learner without the intervention of the specialists (Bradley, 1975).

Buktenica discussed the merits of screening procedures to identify learners with visual and auditory perceptual problems. He concluded that group screening instruments could provide a description of each learner's characteristics. He advised matching learner characteristics with instructional strategies (Buktenica, 1971).

Several studies have examined the relationship between auditory abilities and reading achievement (Calfee and others, 1973; Oakland and others, 1973; Rubin and Polack, 1969; Bateman, 1968). Calfee and others examined the relationship of acoustic-phonetic skills to reading ability in subjects ranging in age from kindergarten through twelfth grade. Their results suggested that the ability to manipulate the phonetic components of the spoken language had an important bearing on reading skill (Calfee and others, 1973).

Oakland and others conducted a longitudinal study of auditory perception and reading instruction with black children. They hypothesized that the auditory discrimination abilities of disadvantaged black children could be improved through an appropriate auditory perception training program. They further hypothesized that the auditory perception training program would influence reading achievement. The third hypothesis was directed toward the primary instructional strategy of the initial reading program. They utilized an instructional approach which capitalized on the learner's strengths and minimized weaknesses. The data suggested that an effective remedial program should concentrate on developing children's strengths and utilize instructional approaches which are congruent with them. The first two hypotheses were rejected but the third was significant at the .001 level (Oakland and others, 1973).

Rubin and Polack field-tested an auditory perception training kit with kindergartem boys who had been found to have poor auditory discrimination skills. Their post-test scores indicated that all boys who participated in the program demonstrated significant improvement in auditory discrimination (Rubin and Polack, 1969).

Bateman's study on auditory and visual methods of first grade reading instruction with auditory and visual learners found that those pupils who were labeled as auditory learners on the basis of The Illinois Test of Psycholinguistic Abilities

(ITPA) scored significantly higher than those categorized as visual learners (Bateman, 1968).

Another area of interest to researchers is the relationship between visual perception and reading achievement (Goins, 1958; Frostig and others, 1963; Black, 1974; Cohen, 1966; Church, 1974; Rosen, 1966; Thomas and Chissom, 1973; Whisler, 1974). Results of research in this area are divided. Some experts maintain that visual perceptual training has a direct relationship on reading achievement (Goins, 1958; Frostig and others, 1963; Whisler, 1974). Others find that visual perceptual training results in improvement on tests of visual perception but little or no improvement is reflected on reading tests (Black, 1974; Church, 1974; Cohen, 1966; Rosen, 1966; Thomas and Chissom, 1973).

Other investigators have examined the relationship between auditory and visual perceptual skills and reading achievement (Hall, 1969; Rasner, 1973; Paradis and Peterson, 1975; Rude, 1975). Hall investigated the transfer differences between kindergarten and second graders on aurally and visually presented words. The results indicated that both kindergarten and second graders learned more through visual presentations than through auditory ones (Hall, 1969).

Rosner explored the relationship between specific perceptual skills and achievement in language arts and mathematics. He found that math achievement correlated with visual perceptual

skills while reading achievement correlated with auditory perceptual skills. Rosner suggests that if this study could be replicated on a larger population, then phonic reading programs may serve the need of the greatest number of pupils (Rosner, 1973).

Rude studied the retention abilities of kindergarten pupils for visual and auditory discrimination skills. Visual discrimination skills were retained more effectively than auditory ones over summer vacation. Sex and chronological age were not significant factors affecting retention; however, intelligence was. Rude suggests more emphasis on auditory discrimination and less on visual discrimination. More emphasis on reading in kindergarten and less time allocated to review in first grade (Rude, 1975).

Teledgy examined the relationship between socioeconomic status (SES) and school readiness. He found that lower SES children did significantly poorer than middle SES children on four different readiness measures: MRT, FGST, BGT, and STAR. Teledgy suggested specific educational programming to strengthen the skills of lower SES children in vocabulary, visual motor skills and letter naming (Teledgy, 1974).

Studies Relating to the Modality Concept

Results of research on modality and its relationship to reading instruction are divided. Some researchers suggest that sensory modality preference should be determined and considered

in selecting instructional strategies for reading (Wepman, 1960, 1964, 1968; Bursuk, 1971, Wepman and Morency, 1971; Daniel and Tacker, 1974). Others maintain that predetermined modality preference does not appear to have a direct bearing on the improvement of reading achievement scores (Robinson, 1972; Bruininks, 1969; Vanderer and Neville, 1974; Silverston and Deichman, 1975).

Wepman states that the concept of modality preference argues for tailoring instruction to the capacities of the individual child (Wepman, 1968). In his 1960 study Wepman reported a significant correlation between auditory discrimination and reading achievement. In discussing the educational implications of his findings he comments on the need to individualize instruction at least to the point of grouping visual learners and auditory learners separately especially in the initial stages of reading instruction. Wepman recommends a sight approach for pupils with poor auditory discrimination and a phonic approach for pupils with adequate or good auditory discrimination. Bursuk's study supports this position. She found a correlated aural-visual method was more effective for students with auditory or no sensory modality preference while the visual approach was more effective for those with visual learning preferences (Bursuk, 1971).

Daniel and Tacker's study on modality preference and memory for consonant vowel consonant (CVC) trigrams supports Wepman's

position. They found that auditory preferred learners recalled significantly more triagrams after the auditory presentation than after the visual one, while visual preferred learners recalled more stimulae when it was presented visually. Daniel and Tacker conclude that "teachers and clinicians should investigate the possibility of matching learning approach with sensory preference" (Daniel and Tacker, 1974, p. 258). In Suchman and Trabasso's 1966 study on stimulus preference and cue function in young children, it was found that stimulus preferences act as initial perceptual responses to shape the order of concept attainment.

Meehan suggests the use of an informal modality inventory with students at the fourth grade level who have not made progress in reading that is commensurate with their age and ability. the inventory is based on activities suggested in Aids to Psycholinguistic Teaching by Beech and Giles. Ninety percent accuracy is the suggested criterion for mastery.

Stephen and Kellehey examined the relationship between modality strength and retention. They found that performance on auditory memory and visual memory tests was significantly related to the amount of information retained in continuous discourse under differing presentation modes. They noted the need for further research on this point (Stephen and Kellehey, 1973).

Wepman and Morency concluded a longitudinal study on the

relationship of visual and auditory processing ability and school achievement. They found that perceptual abilities reached their crest by the end of third grade but that perceptual lags have a continuing relationship to school achievement throughout the sixth grade. They recommended that researchers should study the relative values of training to alleviate perceptual defects or focusing upon early instruction which utilizes the preferred modality (Wepman and Morency, 1971).

Robinson's study of visual and auditory modalities related to methods of initial reading instruction supports the position that predetermined modality preference does not appear to have a direct bearing on the improvement of reading achievement scores (Robinson, 1972). She found that children who score high in both auditory and visual modalities also scored highest on tests of reading achievement at the end of first and third grades. Those who were low in both modalities scored lowest in achievement and those with one strong and one weak modality scored between the two extremes. Neither the sight nor the phonic method was superior among pupils with strong and weak modalities. Auditory discrimination was significantly correlated with reading achievement at both the first and third grade levels, regardless of the method used in instruction. Bruininks' study with disadvantaged boys confirms Robinson's findings. Bruininks reports that auditory perceptual tests are more highly correlated with reading achievement of third graders

than are visual perceptual tests (Bruininks, 1969). These findings are in agreement with Bateman's (Bateman, 1968).

Vandever and Neville examined the relationship between modality aptitude and word recognition across three modalities; visual, auditory and kinesthetic. At the end of six weeks, children taught to strength did no better than those taught to weakness (Vandever and Neville, 1974). Sabatino and Darfman matched learner aptitude with the primary teaching strategies utilized by two communal reading programs. The results of this study did not support the modality concept (Sabatino and Darfman, 1974).

Silverston and Deichman reviewed the literature on sense modality and its relationship to the acquisition of reading skills. They concluded that predetermined modality preference as it is presently defined does not appear to have a direct bearing on reading achievement. However, they caution the reader to view their conclusions with skepticism due to the variation in instrumentation and experimental foci in the various studies (Silverston and Deichman, 1975).

Studies Suggesting a Developmental Sequence in Perception and Cognition

Several researchers have suggested a developmental sequence in perceptual and cognitive skills (Piaget, 1950; Bryan, 1964; Birch and Belmont, 1965; Wepman and Morency, 1971; Rosner, 1971; Belmont, 1974; Kershner, 1975; Machowsky and Meyers, 1975).

Piaget identifies four stages in the developmental sequence: sensorimotor, pre-operational, concrete operations and formal operations. In this sequence, as the child matures he is able to deal with increasingly more abstract concepts.

Bryan investigated the relative importance of intelligence and visual perception in predicting reading achievement. In this study the DTVP and the Kuhlman-Anderson Intelligence Test (KAIQ) were correlated with reading achievement scores of first, second and third graders. The DTVP correlated better with first grade achievement while the KAIQ correlated better with third grade achievement. These findings suggest that visual perceptual skills are more important at the initial stages of reading while intelligence appears to be more important at the third grade level (Bryan, 1964).

In an initial report on the Auditory Analysis Test (AAT) Rosner and Simon stated that the greatest development in auditory analysis came between kindergarten and first grade. He tested 284 children ranging from kindergarten to sixth grade. The median kindergarten raw score was 3.1 while the third grade median was 25.5 and the sixth grade median was 32.3. It was concluded that the majority of growth in auditory analysis was completed by the end of third grade (Rosner and Simon, 1971). These findings are consistent with those of Wepman and Morency who found that perceptual abilities reached their crest by the end of third grade (Wepman and Morency, 1971).

Birch and Belmont's 1965 study on age-specific competence in judging auditory-visual equivalence is supportive of the developmental sequence suggested by Wepman and Morency. They found that the most rapid period of perceptual growth was between the ages of five and seven years in bright normal middle-class children. This would place the spurt of perceptual growth in the late pre-operational or early concrete stages in Piaget's developmental sequence. Birch and Belmont suggest that success in initial reading may be more related to perceptual development while later reading achievement may be highly correlated with intelligence and cognitive development.

Machowsky and Meyers investigated the relationship between auditory discrimination, intelligence and reading achievement at the first grade level. Their findings indicated that auditory discrimination was significantly correlated with reading achievement at this level. They suggested that specific perceptual tests should have a closer relationship with early school tasks while later school performance should be more closely predicted by the conceptual factors tapped by intelligence tests (Machowsky and Meyers, 1975). These findings are consistent with those of others reported earlier (Birch and Belmont, 1965; Wepman and Morency, 1971; Rosner and Simon, 1971).

Denny examined the relationship of three cognitive style dimensions to reading ability at various grade levels. The dimensions he considered were: conceptual style preferences,

cognitive tempos, and attentional styles. Subjects consisted of eighty students ranging from second through fifth grade. Forty of these pupils were identified as poor readers. All subjects were tested on the Gilmore Oral Reading Test (GORT), Gates-McKellop Reading Diagnostic Tests (GMDT), Conceptual Styles Test (CST), Matching Familiar Figures Test (MFFT), Fruit Distraction Test (FDT) and the PPVT. Highly significant differences were discovered between good and poor readers on all reading measures. Analyses of the conceptual style and cognitive tempos did not reflect significant differences between good and poor readers. Attentional styles as identified on the FDT reflected significant differences between good and poor readers. The correlations for attentional style and reading ability were consistently higher for younger children. Denny suggests "that there is some evidence of a shift from perceptual-motor and attentional deficits among younger poor readers to language and conceptual deficits among older poor readers" (Denny, 1974, p. 708). These findings are consistent with the developmental sequence in perceptual and cognitive skills.

IMPLICATIONS

Research findings on the correlation of readiness test scores with primary reading achievement clearly indicate that early assessment should be a functional reality in every school district. Studies have shown the superiority of the battery over the single test for identification of high-risk learners (Jansky and de Hirsch, 1972).

In the light of research findings on the relationship between SES and readiness scores, it is recommended that a diagnostic battery replace a screening battery in schools which service primarily lower SES children. It is not enough just to identify high-risk pupils, alternative instructional strategies based on each learner's strengths and weaknesses must be provided. Identification of high-risk children is not an end but rather a means to designing a more effective curriculum. This child-centered classroom necessitates an outstanding teacher who is knowledgeable, warm, sensitive and flexible. She must have the expertise and the affective qualities which enable her to utilize a variety of approaches and strategies to meet the diverse needs of each learner.

Research findings on specific methods and strategies for use with high-risk pupils are inconclusive. Some studies have examined the relationship between training in specific areas of weakness, such as auditory or visual perception, and reading achievement (Lesiak and Wait, 1974; Bradley, 1975; Oakland,

1973; Rubin and Polack, 1969; Black, 1974; Church, 1974). Generally these findings indicate that specific training in auditory or visual discrimination results in improvement in the skill which is trained but there is no direct gain in reading achievement. Most investigators have concluded that specific training in reading activities is a more effective remedial treatment than specific training in auditory or visual perception. There is some evidence to indicate that specific perceptual training is more effective with children between five and seven years than it is with older children.

Other researchers have concentrated on utilizing the pupils' strengths for the initial primary instructional strategy (Wepman, 1960 ; Bursuk, 1971; Wepman and Morency, 1971; Robinson, 1972, Bruininks, 1969; Vandever and Neville, 1974). Results of these studies are about evenly divided. Some researchers suggest that sensory modality preferences should be determined and considered in selecting instructional strategies for reading (Wepman, 1960, 1964, 1968; Bursuk, 1971; Wepman and Morency, 1971). Others maintain that predetermined modality preference does not appear to have a direct bearing on the improvement of reading achievement scores (Robinson, 1972; Bruininks, 1969; Vandever and Neville, 1974).

This writer hypothesizes that at the end of first grade pupils whose preferred modality is congruent with the primary instructional strategy of the initial reading program will

achieve higher than pupils whose preferred modality is not congruent with the primary instructional strategy of the initial reading program. This hypothesis is based on a developmental sequence which posits that the greatest spurt of perceptual growth comes between five and seven years. If this is true, then it is likely that during this high growth period the range of perceptual skills for specific learners is greatest. If reading instruction is introduced to children between five and seven years as is the policy in American schools then the concept of modality preference seems particularly important. As the pupil matures the concept of modality should become less important while other factors, such as cognitive style, will increase in importance (Kagan and others, 1973; Birch and Belmont, 1965).

Levels of Function	Developmental Sequence	Specific Diagnostic Focus
Conceptual Level	Formal Operations approx. 11 yrs.-adult	Cognitive Style a) analytic-descriptive b) inferential-catergorical
	9 yrs.-11 yrs.	c) relational
Perceptual Level	Concrete Operations 7-11 yrs.	Modality Preference a) auditory b) visual c) kinesthetic
	7-9 yrs.	
	Pre-Operational 3-7 yrs.	
Reflex Level	Sensori-motor Birth-2 yrs.	Sensory Input Channel a) sight b) hearing c) taste d) smell e) touch

An Innovative Assessment Project in Hawaii

The Aiea project is designed to accomplish two major goals: (a) to improve the teaching of reading at the primary level; and (b) to identify as early as possible those children who have visual and/or auditory perceptual problems so that appropriate steps may be taken to overcome them. Knowledge gained from the assessment program about each child's strengths and weaknesses should enable teachers to use effective teaching strategies which result in pupil growth in the acquisition of reading skills. Increased attention to the identification of potential reading problems should prevent serious difficulties from arising.

Aiea Elementary School is located in the central Oahu district. Aiea's students come from a multi-ethnic, multi-lingual, lower socio-economic community. The major ethnic backgrounds represented in the community are Filipino, part-Hawaiian, Oriental and Caucasian. School records indicate that approximately 50 percent of the school population receives public assistance or some type of subsidy. Approximately 50-60 percent of the students scored below the 25 percent on standardized reading achievement tests.

In the spring, kindergarten students attending Aiea Elementary School are evaluated by this diagnositc battery: Peabody Picture Vocabulary Test (PPVT); Goodenough Draw-A-Man Test (GDMT); Beery-Buktenica Test of Visual Motor Integration (VMI); Keystone Telebinocular (KTB); Wepman Auditory Discrimination Test (WADT); Illinois Test of Psycholinguistic Abilities (ITPA) selected tests: Auditory and Visual Sequential Memory (AVSM), Informal Inventory of Letters and Numbers (ILN) and Gates MacGinitie Readiness Test (GMRT). All tests except the GMRT are administered in a one-to-one setting by graduate students in reading from the University of Hawaii. The GMRT is administered in a small group setting, approximately four or five children in a group. Test data for each pupil are placed on a profile chart to show each learner's strengths and weaknesses. This information is utilized in prescribing instructional strategies for initial reading instruction.

Children are divided into three classifications based on their profiles: auditory-preferred learners, visual-preferred learners and learners with no modality preference. Auditory-preferred learners use a strong phonics program for initial reading instruction. Visual-preferred learners are placed in the Hawaii English program. Learners with no modality preference use an eclectic program such as the Ginn 360-720. Discriminate analysis was used to verify the

clinical classifications of children into these three groups; auditory-preferred learners, visual-preferred learners, and learners with no modality preference. Ninety-five percent of the classifications were verified in the first two years of the project.

Annual follow-up achievement tests are administered to all children in the project. Last May all first and second graders were tested on appropriate levels of the Gates MacGinitie Silent Reading Test and less than 20 percent of the children scored below the 25 percentile. These findings seem encouraging and we are hopeful that these students will be able to maintain their gains.

AIEA ELEMENTARY SCHOOL

KINDERGARTEN PROFILE SHEET

Chronological Age	PPVT - Mental Age - Form A	Auditory Sequential Memory - Age Score	Beery - Visual Motor Age	Visual Sequential Memory - Age Score	Goodenough Draw-A-Man	Visual Acuity	Pass-Fail	Wepman-Auditory Keystone	Letter Recognition-Auditory Discrimination	Letter Recognition-Upper Case	Number Recognition-Lower Case	Number Recognition 1-30	STANINE	Listening Comprehension	Following Directions	Auditory Discrimination	Auditory Blending	Visual Discrimination	Visual-Motor Coordination	Letter Recognition	Word Recognition	STANINE	Percentile	Total-Readiness Percentile	Preferred Modality	Program Placement	Room Placement	Referral Action
10-0																						95						
9-6																						90						
9-0																						85						
8-6																						80						
8-0																						75						
7-6																						70						
7-0																						65						
6-6													9								9	60						
6-0													8								8	55						
5-6													7								7	50						
5-0													6								6	45						
4-6	32												5								5	40						
4-0													4								4	35						33
3-6													3								3	30						
3-0													2								2	25						
2-6													1								1	20						

GATES MACGINITIE READINESS

SUMMARY DATA

Age Scores

Number Correct or Pass-Fail

STANINE

NAME _____

BIRTHDATE _____ ROOM _____

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