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READING--A CONTROVERSIAL VIEW, RESEARCH AND RATIONALE.

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THE VIEW THAT READING IS A ROTE, AUTOMATIC, CONDITIONED, NONMEANINGFUL PROCESS WHICH PRECEDES (THUS IS SEPARABLE FROM) COMPREHENSION IS CORROBORATED IN A TWO-PART INVESTIGATION. IN PART I, EVIDENCE IS PRESENTED TO SUPPORT THE POSITION THAT READING IS A NONMEANINGFUL PROCESS. IN PART II, A STUDY OF THE EFFICACY OF AN AUDITORY APPROACH TO FIRST-GRADE READING COMPARED TO A VISUAL APPROACH IS REPORTED. EIGHT ABOVE-AVERAGE KINDERGARTEN CLASSES IN THE HIGHLAND PARK, ILLINOIS, SCHOOL SYSTEM WERE GIVEN THE DETROIT GROUP INTELLIGENCE SCALE AND THE METROPOLITAN READING READINESS TEST. FOUR OF THE CLASSES WERE ASSIGNED TO HETEROGENEOUS CLASSES TAUGHT BY EITHER THE AUDITORY (LIPPINCOTT'S SERIES) OR THE VISUAL (SCOTT-FORESMAN SERIES) METHOD. THE OTHER STUDENTS WERE LABELED AUDITORY OR VISUAL SUBJECTS ON THE BASIS OF SCORES ON THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES AND WERE PLACED IN FOUR TREATMENT CLASSES. AT THE END OF THE FIRST GRADE, THE GATES PRIMARY WORD RECOGNITION AND PARAGRAPH READING TESTS AND A SPELLING TEST WERE ADMINISTERED TO ALL CLASSES. RESULTS WERE COMPARED FOR (1) AUDITORY AND VISUAL METHODS IN THE NONPLACEMENT CLASSES, (2) AUDITORY AND VISUAL METHODS WITH AUDITORY AND VISUAL SUBJECTS, AND (3) GOOD AND POOR READERS FROM PLACEMENT CLASSES. THE AUDITORY METHOD WAS FOUND TO BE VASTLY SUPERIOR TO THE VISUAL METHOD FOR BOTH READING AND SPELLING. TABLES, PROFILES, AND REFERENCES ARE INCLUDED. THIS PAPER WAS PUBLISHED AS A "CURRICULUM BULLETIN," VOLUME 23, NUMBER 278, MAY 1967, AND IS ALSO AVAILABLE FROM THE SCHOOL OF EDUCATION, UNIVERSITY OF OREGON, EUGENE, OREGON 97403, FOR $0.60. (LS)

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READING: A CONTROVERSIAL VIEW

RESEARCH AND RATIONALE

by

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Note: The rationale for the view of reading presented in Part I developed slowly over many years. The research project presented in Part II was one of four or five main lines of evidence which led the author eventually to reject the popular view of reading as a "meaningful, visual process" and formulate it rather as a "non-meaningful, auditory" process.

Part I

Reading, A Non-Meaningful Process*

The concept that the activity popularly and commonly known as reading can and should be viewed as a non-meaningful process is by no means a new one, nor is it one that should be considered grossly heretical. In the teacher's manual accompanying Lippincott's Basic Reading series (McCracken & Walcutt, 1963) this position is clearly and forcefully stated:

> The written words are in fact artificial symbols of the spoken words, which are sounds. So reading must be the process of turning these printed symbols into sounds. The moment we say this, however, someone is sure to ask (and probably in a tone of the greatest anxiety), "But what about meaning? Do you propose to define reading as mere word-calling, without regard for meaning?" Yes, we do. (p. iv)

Jastak (1946) and Bloomfield and Barnhart (1961) have also clearly and emphatically pointed to the distinction between (a) reading as a process of converting letters to sounds and (b) the ultimate goal of this process, which is to obtain meaning from the resultant sounds. Teachers sometimes refer to these as "word calling" and "comprehending." It appears unfortunate that the former, which is herein called reading, is sometimes viewed as a "necessary evil." In our eagerness to help children reach the eventual goal of obtaining meaning or comprehending what they have read, we perhaps have sometimes neglected the all-important prior stage of mastering the mechanical, rote process of letter-to-sound conversion. One might

*This paper was prepared while the author was Associate Professor, Institute for Study of Exceptional Children and Adults, DePaul University.

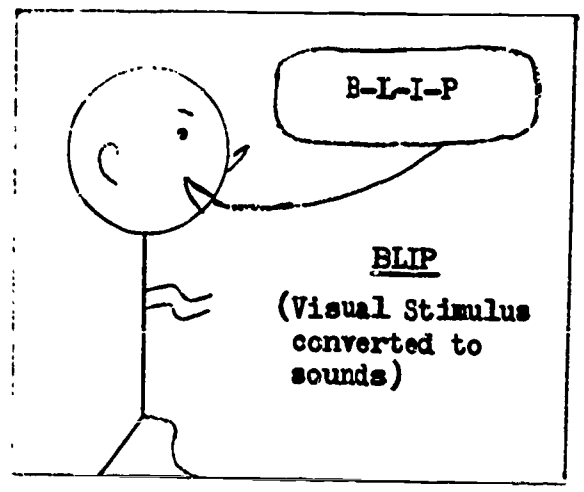
well ask why another statement of this position is necessary when it has been stated earlier and so well by others. It has been observed that many, if not most, elementary teachers and reading specialists are reluctant to consider seriously the possibility that initial reading instruction could or should neglect to emphasize meaning. Cases have been encountered where teachers who are using materials such as the Lippincott series, espousing this point of view, have denied ever hearing of such a position!

Others assert, after an initial presentation of the concept of reading as a non-meaningful process, that all it means is that word recognition is also important but they prefer to define reading as more inclusive. While it would be easy to pretend the issue vanishes by being labelled a matter of "semantics," the fact is that how one views the basic nature of the reading process should have a determining role in how reading is taught. It is because of these important implications for reading instruction that it seemed time to look once again at the differences between the process of reading and the purpose of reading.

Two lines of evidence—clinical and research—will be advanced in support of the position that reading should be viewed as a rote, automatic, conditioned non-meaningful process which precedes (and thus is separable from) comprehension.

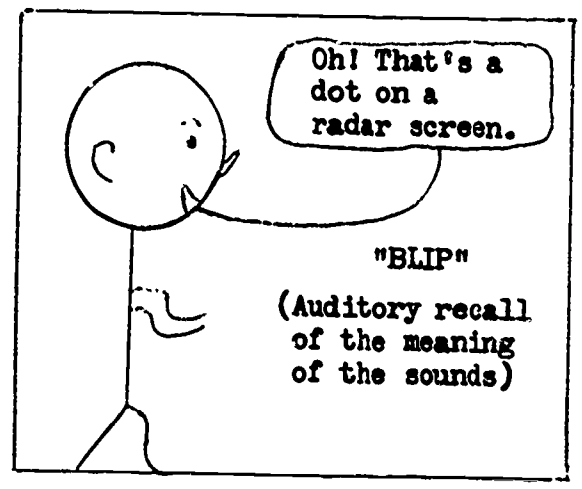
Logical and clinical approach

Clinical work with children who have difficulty in reading leads to the observation that very, very few of them have difficulty in comprehending symbols such as the spoken word "dog." But they almost all share a pronounced difficulty in converting the letters d-o-g into the spoken sounds "dog." One way to view this distinction would be to think in terms of two stages as shown below:



Stage One

Reading or Converting symbols to sounds.



Stage Two

Comprehension or attaching meaning to the sounds produced in Stage One.

Stage One is the process of reading. It differs only in quantity, not quality, from what the rat does when he learns to jump to the circle, but not to the triangle (differential responses to visual stimuli). Stage Two is that of comprehending or attaching meaning to the symbols which have been identified in the previous step. This second stage should indeed be taught to children and taught very directly and explicitly, but it is the contention of this paper that in the early stages of so-called reading instruction, the child has quite enough to do in Stage One and his task ought not be unduly complicated by simultaneously requiring Stage Two. The process of learning

to drive a car (this same illustration was used by McCracken & Walcutt, 1963) is perhaps analogous. It is certainly true that we learn to drive for the eventual purpose of obtaining meaning. But, we would consider it somewhat ill-advised to combine teaching a novice to drive with a task such as driving a dignitary to the airport during rush-hour traffic when the time schedule is tight. We recognize that the mechanics of driving must be practiced without the pressure of any immediate purpose beyond mastering the mechanics. It is also true in both driving and reading that after the mechanical (Stage One) part has been mastered it seems to disappear. As adults we are seldom aware of the actual process of converting printed symbols to sound equivalents as we read, just as we frequently shift gears, brake, and accelerate without consciously attending to those behaviors. This is one of many instances in which introspective knowledge of how we as normal adults perform a given task does not necessarily provide helpful guides in teaching that task to young children who have not yet become proficient in it.

In order to check the accuracy of the contention that children who have trouble in reading are in need on instruction in Stage One, not Stage Two, it would be very simple for classroom teachers to administer two forms of a test like the Gates Reading Tests (e.g., Advanced Primary Paragraph Reading) in two different ways and compare the scores. If the teacher were to read the paragraphs aloud to the class ("Draw a line under the little cat.") and have them do the required comprehension of the spoken word (symbol) and make the appropriate marks on the test, Stage Two would be measured.

If a comparable form of the test were then administered in routine fashion, the child would be required to perform both Stages One and Two. The difference between the two scores would thus constitute a measure of the need for instruction in Stage One.

Earlier it was indicated that Stage Two, attaching meaning to symbols, should be taught directly. However, obtaining meaning from printed letters is only one kind of comprehension and we are advocating that it not be taught until after the child is comfortable with the process of converting printed letters to sounds. However, the world is full of many symbols and signals which children need to learn to comprehend. We would suggest that teaching the meanings of facial expressions, moss on a tree, traffic flow (e.g., in terms of what it means or tells us about the time of day, the direction of the downtown area, the socio-economic class of the area, etc.) etc., are all legitimate educational pursuits and that they do not differ from the teaching of the meanings of words which have been previously read. In short, we are urging that reading be taught as a rote, conditioned, mechanical process of converting letters to sounds and that the comprehension of many symbols (including sounds combined into words) be taught as a separate process. It is a highly significant, but widely overlooked fact that reading disability is usually defined as a discrepancy between proficiencies in comprehending symbols (mental age, loosely translated) and in converting visual symbols to sounds and then obtaining meaning from them (reading as traditionally measured, including both Stages One and Two). Thus, by definition, reading disabilities occur in Stage One! If a child is strong in Stage One (word-calling) but poor in Stage Two (comprehension), as does occasionally happen, we say he has a problem in "comprehending what he reads," acknowledging in spite of ourselves that we really do equate word-calling with reading, as well we should.

An important qualification to this discussion is that a very substantial percentage of children, perhaps 3/4 of them, seem to acquire the skills of reading and comprehending almost by "osmosis." The method of instruction seems to matter very little compared to the fact of exposure. While in theory we would argue that reading should be taught to all children as the non-meaningful process it really is, in practice it would probably matter only to those few children who actually need systematic reading instruction because they do not learn by "osmosis."

Research approach

The distinction we have made between Stage One and Stage Two as symbol conversion or identification versus symbol recognition or comprehension, appears to parallel that made in the psycholinguistic model of Illinois Test of Psycholinguistic Abilities (ITPA). In the test, two levels of language are assessed--the representational or meaningful and the automatic-sequential or rote, non-meaningful. The ITPA has generated recent research which is quite relevant to the concept of reading as a non-meaningful process. Two of the earliest studies utilizing the ITPA (Kass, 1962; Bateman, 1963) found that reading achievement correlated positively with the non-meaningful language subtests, and not with the meaningful ones. In fact, Kass found a negative relationship between reading achievement and the ability to comprehend meaningful visual stimuli. Ragland (1964) also reported that retarded readers performed better than non-retarded readers on the comprehension of meaningful visual stimuli. Additional data (see Part II of this bulletin) also indicate that good readers and poor readers are differentiated psycholinguistically by their performances in the use of language at a non-meaningful level. These four studies just mentioned included mentally retarded, partially seeing, dyslexic, and normal subjects.

Evidence which bears on the validity of the assertion that reading can and should be taught as a symbol-sound conversion process can also be adduced from new research on methodology in reading instruction. But it is first necessary to point out that "Stage One instruction," in our terminology, is most closely approximated in today's practice by intensive phonics programs in which the initial instructional emphasis is on symbol-sound conversion with comparatively little attention to meaning per se. These systems have been described as synthetic--"in which the child is taught certain letter-sound relationships or word elements (Stage One) before beginning to read (Stage One plus Stage Two)." (Bliesmer and Yarborough, 1965, p. 500)

The other widely used approach embodies an initial emphasis on meaning and learning whole words prior to the introduction of specific letter-sound relationships. It is often called the analytic approach or the look-say method. In our terminology, it requires the child to perform Stage Two first and then later introduces him to Stage One.

Bliesmer and Yarborough (1965) compared ten different beginning reading programs in first grade--five of these were synthetic (phonics) and five were analytic (whole word and meaning). Reading achievement was measured by five subtests of the Stanford Achievement Test: Word Reading, Paragraph Meaning, Vocabulary, Spelling, and Word Study Skills. When the means of the two programs were compared on these five measures, 92 differences were significantly in favor of the phonics programs and none significantly favored the analytic programs (125 total comparisons). With specific regard to comprehension skills, 20 of 25 comparisons significantly favored the phonics program and none significantly favored the analytic programs. This study was well controlled (e.g., programs were randomly assigned to teachers, in-service training was provided by consultants from the program publishers, covariance procedures were applied to adjust mean criterion scores, etc.) and the authors' conclusion that " . . . reading programs which give attention to sound-symbol relationships prior to teaching of words . . . tend to be significantly more productive . . . than do analytic reading programs which involve the more conventional approach of going directly from readiness procedures to the reading of whole words" is well founded.

In an excellent review of all available rigorous (carefully defined by the authors) comparisons of reading achievement of groups which had early intensive phonics with groups that had not, Gurren and Hughes (1965) found that the evidence "clearly favors intensive teaching of all the main sound-symbol relationships from the start of formal reading instruction" and that "such teaching benefits comprehension as well as vocabulary and

spelling." Of the 22 rigorous comparisons of "conventional" and "phonetic" reading programs, 19 were favorable to "phonetics," 3 to neither group, and one to "conventional." Sub-analyses revealed that 16 comparisons favored the "phonetics" in specific regard to comprehension, while none favored the "conventional."

In summary, it is this observer's opinion that logical analyses of the reading process, clinical experience, and research data all point unmistakably toward the currently unpopular notion that reading can and should be taught as the formation of a series of rote, non-meaningful, conditioned bonds between visual stimuli (letters) and vocal responses (sounds). This non-meaningful process is, of course, carried on for the eventual purpose of obtaining meaning from the symbols, but this fact ought not remain an obstacle to teaching the process of reading.

If one were to test the merit of this position (and one certain merit, however small, is that it is testable) he would perhaps carry the position to its extreme and employ a program in which (a) the symbol-sound relationship were always constant, e.g., i/t/a, and (b) all "meaningful words" were excluded until after the child had thoroughly mastered the conditioned associations using only individual sounds and nonsense combinations. Teachers often ask how long it would take for the child to master the 44 sound-symbol bonds in i/t/a, especially if all meaningful words were excluded. Research would of course be required to answer this with certainty, but if the best application of known principles of learning were systematically employed, a couple of months would appear to be a reasonable guess.

Another objection frequently raised to this type of proposal is that the children might not be "motivated" to learn 44 rote associations. This, too, would have to be tested, but it would seem that careful application of reward and precise structuring to insure task success could eliminate such anticipated difficulties.

The nature of the process of learning the 44 sound-symbol associations advocated here should be no different from that of learning 44 children's names, or 44 baseball players' batting averages, or 44 models of automobiles. In all cases an arbitrary label is assigned and if one forgets that label, there is no way to meaningfully deduce it. It is in just this sense we urge that the process of converting letters to sounds, which we have called reading, should be viewed as a rote, non-meaningful process.

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Part II

The Efficacy of an Auditory and a Visual Method of First-Grade Reading Instruction with Auditory and Visual Learners*

Most educators probably agree with the proposition that reading instruction ideally should be geared to individual children's learning style. However, most attempts to do this kind of matching of method and child have actually centered on flexibility in planning for varying rates of learning and for interests rather than for styles of learning. Within regular classrooms, the basic method of teaching—i.e., of presenting the process of reading, has not been individualized. In contrast, some remedial teachers do, however, use radically different methods—e.g., kinesthetic, visual, phonics—with different children.

In a recent study of reading disabilities in children, de Hirsch, Jansky, and Langford (1966) compared relative strength in visual and auditory perceptual areas. All of the children rated as superior visual-perceptual subjects (N=3) in kindergarten achieved high scores on reading tests at the end of second grade, but of the superior auditory-perceptual children (N=7) only those who had received intensive phonic training were able to read satisfactorily. The authors concluded, therefore, that teaching methods should to a large extent be determined by modality strength and weakness. Conversely, Harris (1965) failed to find any significant association between the specific teaching method used and the presumed aptitude for that method. In addition to visual and auditory methods and aptitudes, he also explored kinesthetic patterns.

The basic purpose of this study was to explore the efficacy of an auditory approach to first-grade reading compared to a visual approach, both when children were homogeneously grouped by preferred learning modality (auditory or visual) and when they were not so grouped.

Subjects and Procedures

This study was initiated by the Highland Park, Illinois, school system* as part of its program to evaluate and continually improve first-grade reading instruction.

In the spring of the year, eight kindergarten classes were given the Detroit Group Intelligence Scale and the Metropolitan Reading Readiness Test. In addition, the Illinois Test of Psycholinguistic Abilities (ITPA) was administered to the children in four of the classes.

On the basis of these test results the children were assigned to their first-grade classes. The four classes which were not administered the ITPA were designated as non-placement classes. Two of these non-placement classes received auditory method reading instruction and the other two received visual method instruction. These non-placement children were assigned to their first-grade classrooms in the usual manner utilized by the school system—an informal "sorting process" in which an effort is made to have all classes heterogeneous and similar to each other on CA and

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*Dr. Bateman was a Research Assistant Professor at the Institute for Research on Exceptional Children, University of Illinois at the time this study was conducted.

*The excellent cooperation and assistance of the entire Highland Park school system including the members of the school board, the administration, the kindergarten and first-grade teachers, the guidance department, and especially Mr. Allen Trevor, Principal of Sherwood School, and Miss Sue Hunt, Director of Guidance Services, is gratefully acknowledged. Thanks are also due to the staff of the University of Illinois' Institute for Research on Exceptional Children who provided guidance, time, and personnel for all individual testing. And special thanks go to Sr. Joanne Marie, O.S.F., Ph.D., Cardinal Stritch College, for her assistance in the preparation of this paper.

IQ and to control boy/girl ratio within each class. The classes were not known to differ from each other in any respect other than method of reading instruction employed by the teacher. There were no significant differences among the four classes on IQ, MA, or total reading readiness.

Each child in the other four classes—the placement classes—was labelled an "auditory" or a "visual" subject on the basis of his performance on the two ITPA subtests of memory which measure automatic-sequential language abilities and have been found to correlate with reading. The total group of placement children (N=87) was stronger in auditory memory (auditory-vocal sequential, subtest #8), where the mean language age was 80.75 months, than in visual memory (visual-motor sequential, subtest #9), where the mean language age was 71.30 months. The "typical" child in this group thus scored 9 months higher on auditory memory than on visual memory. The difference was used as the base line in the determination of whether a child was labelled "auditory" or "visual." If his auditory memory score exceeded his visual memory score by more than 9 months, he was designated an auditory subject and if it exceeded the visual by less than 9 months he was a visual subject. There were some borderline cases which were labelled on the basis of the total profile (comprised of four additional auditory tests and three additional visual tests).

Many of the children in the auditory group showed only a very slight preference for the auditory modality, and the same was naturally true in the visual group. But all the strong preference children were clearly in their appropriate group. The inclusion of "borderline" subjects has the effect of minimizing obtained differences.

Table 1 shows the constitution of all eight classes.

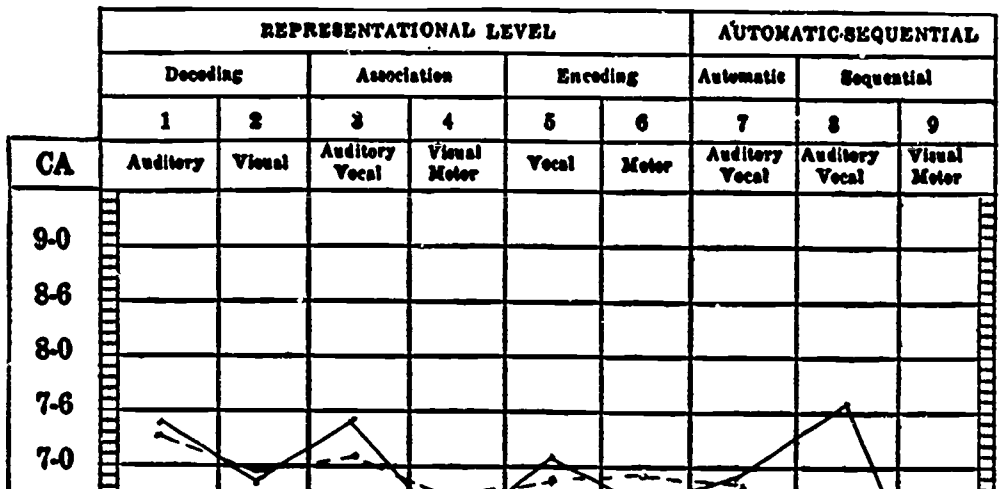
Table 1 - Eight Classes

Tests given in Kdgtn.	Placement Classes	Subjects	Method	N	$\overline{IQ}$
Group IQ	1 ($A_S A_M$)	Aud.	Aud.	24	126.0
Reading Readiness	2 ($V_S A_M$)	Vis.	Aud.	24	124.7
	3 ($A_S V_M$)	Aud.	Vis.	20	124.8
ITPA	4 ($V_S V_M$)	Vis.	Vis.	19	126.2
				87	
	Non-Placement Classes				
Group IQ	5 (A-V_S, A_{M1})	Aud. & Vis.	Aud.	25	124.3
Reading Readiness	6 (A-V_S, A_{M2})	Aud. & Vis.	Aud.	23	127.0
	7 (A-V_S, V_{M1})	Aud. & Vis.	Vis.	25	121.6
	8 (A-V_S, V_{M2})	Aud. & Vis.	Vis.	22	125.6
				95	

Profile 1 shows the mean ITPA scores of the two Placement Classes of auditory subjects (N=44) and the two Placement Classes of visual subjects (N=43). The greatest differences occur in auditory memory and visual memory since these subtests were the bases on which the children were divided.

Profile 1

ITPA Performance of Auditory (N=44) & Visual (N=43) Subjects



———	Aud.	87.8	81.5	88.2	76.5	84.6	80.4	83.4	90.9	66.9	Months
- - -	Vis.	87.0	82.4	84.7	81.1	82.7	82.8	82.7	70.6	75.7	Months

However, the auditory subjects' mean score was slightly higher on all five auditory subtests and the visual subjects' score was higher on the four visual subtests.

The auditory method classes utilized the Lippincott beginning program and the visual method classes used the Scott, Foresman series. None of the teachers of the placement groups was told whether his class was composed of auditory or of visual subjects (the two auditory-method teachers guessed correctly which group they had within the first few weeks of school, but this was not confirmed for them). All eight first-grade teachers in the study attended in-service orientation sessions in which the use of only those supplementary reading materials and techniques consistent with the basic approach used in that classroom (auditory or visual) was emphasized and discussed.

Only one instance of "contamination" was discovered in which a teacher of a non-placement visual method class employed some supplementary auditory materials.

At the end of first grade the Gates Primary Word Recognition and Paragraph Reading tests were administered to all eight classes. Each pupil's scores on these two tests were averaged to obtain his reading grade. A spelling test (author-constructed) consisting of 12 words and 6 nonsense words was also administered to all subjects.

Results - Non-Placement Classes

The results obtained are presented in three sections: (1) A comparison of the auditory and visual methods in the non-placement classes; (2) a comparison of the auditory and visual methods with auditory and visual subjects; (3) a comparison of good and poor readers from the placement classes. Summary data for the non-placement classes are presented in Table 2.

Table 2 - Non-Placement Classes (N=95)
Reading and Spelling Achievement

	Class			Average Rdg. Grade		Spelling
	N	Subjects - Method	$\overline{IQ}$	$\overline{X}$	SD	$\overline{X}$ No. Right
	25	A-V, A_{M1}	124.3	3.34	1.14	7.04
	23	A-V, A_{M2}	127.0	3.27	.57	6.57
Total	48	Auditory Method	125.6	3.31	.91	6.81
	25	A-V, V_{M1}	121.6	2.95	.51	2.88
	22	A-V, V_{M2}	125.6	3.00	.53	2.65
Total	47	Visual Method	123.5	2.98	.52	2.77

The 2 point IQ difference between the combined auditory method classes (N=48) and visual method classes (N=47) was not significant. The auditory method was significantly superior ($\pm = 2.17$, $p < .05$) to the visual method. The mean reading achievement of the children in the auditory classes was 3 1/3 months higher tha in the visual classes.

The same clear superiority of the auditory method over the visual is seen in the spelling scores as presented in Table 3.

Table 3 - Non-Placement Classes
Spelling Achievement

Spelling Score	Auditory Method Classes	Visual Method Classes
0-5 words right	14 (29%)	39 (83%)
6+ words right	34 (71%)	8 (17%)
N	48	47

The above data reveal that when children were heterogeneously grouped without regard to preferred learning modality, the auditory method of instruction produced results significantly superior to those of the visual method in both reading and spelling.

Results - Placement Classes

Analysis of variance (two-way fixed effects model) of reading achievement revealed that for the four placement classes the auditory method was significantly superior to the visual method ($F = 16.38$, 1 df, $p < .01$) and that the auditory subjects were significantly superior to the visual subjects ($F = 9.28$, 1 df, $p < .01$). Method accounted for 14 per cent of the variance and subjects for 7 per cent. There was no interaction between subject and method ($F = 1.62$, NS). Table 4 summarizes reading and spelling achievement of the four placement classes.

Table 4 - Placement Classes
Reading and Spelling Achievement

	Placement Classes			Average Rdg. Grade		Spelling
N	Subjects	Method	$\overline{IQ}$	$\overline{X}$	SD	$\overline{X}$ No. Right
24	A	A	126.0	3.62	.37	11.29
24	V	A	124.7	3.43	.38	7.92
20	A	V	124.8	3.34	.59	7.85
19	V	V	126.2	2.90	.51	1.79

The superiority of the A_SA_M group and the poorer performance of the V_SV_M group in reading are apparent.

Analysis of variance of spelling scores revealed the auditory subjects were superior to the visual subjects ($F = 49.4$, 1 df, $p < .01$) and the auditory method was superior to the visual method ($F = 42.7$, 1 df, $p < .01$). Method accounted for 24 per cent of the variance and subjects for 28 per cent. Again, there was no interaction between subject and method ($F = 2.0$, 1 df, NS).

Good Readers versus Poor Readers

The children in the placement classes who scored at the 3.9 grade level or above were designated "good" readers and those who scored below 2.9 grade level were "poor" readers. These highly arbitrary cutoffs were dictated by the necessity of choosing points which would yield groups of a size suitable for study.

Of the sixteen good readers, 14 had received the auditory method and only 2 the visual method. Of the 18 poor readers, 16 were visual subjects, 12 of whom had received the visual method.

The clear superiority of the auditory method over the visual and the less marked superiority of the auditory subjects (as found in the analysis of variance) are both apparent in Table 5.

Table 5 - Class Placement of Good and Poor Readers

	N	A_SA_M	A_SV_M	V_SA_M	V_SV_M	A_S	V_S	A_M	V_M
Good	16	10	2	4	0	12	4	14	2
Poor	18	1	4	1	12	5	13	2	16

The mean IQ of the good readers was 129.6 compared to 120.2 for the poor readers. Table 6 shows the IQ breakdown by preferred modality.

Table 6 - IQ of Good and Poor Readers

	N	A_S	V_S	T
Good	16	127.8	135.0	129.6
Poor	18	111.4	123.6	120.2

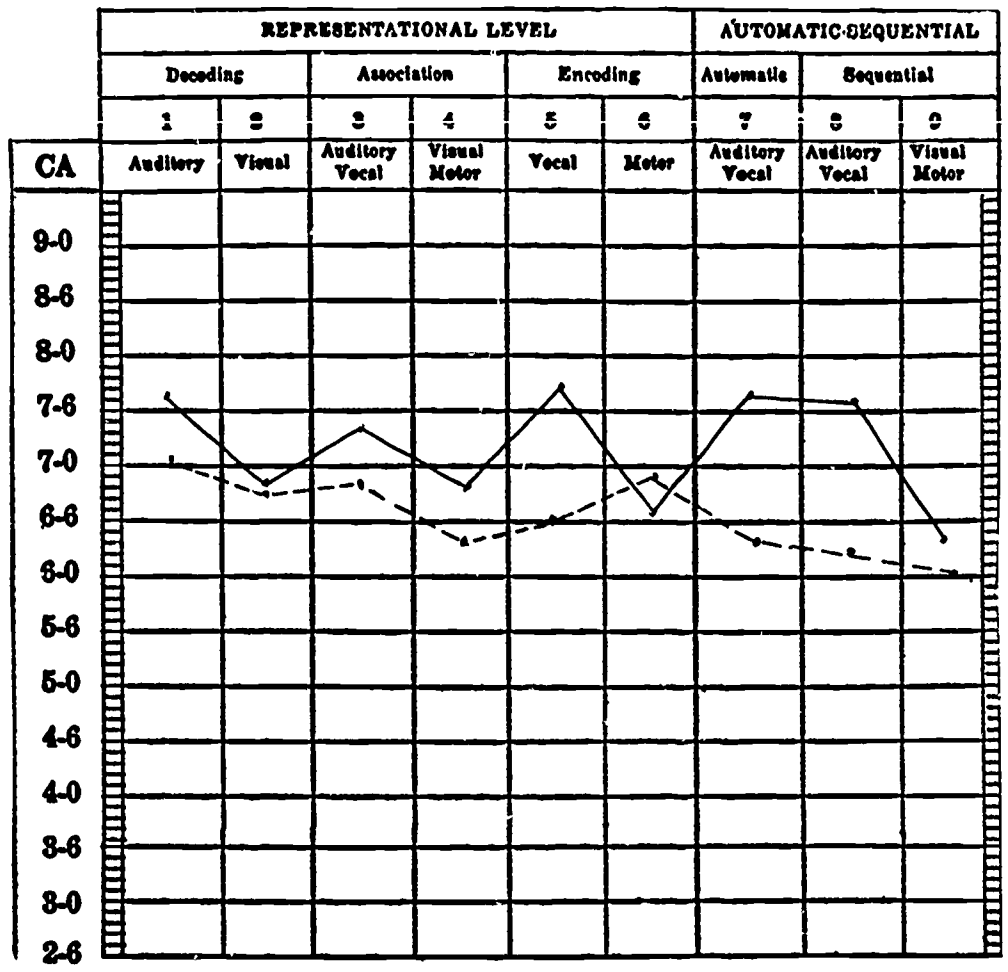
The visual subjects who were good readers were substantially above the average IQ for the total group, while the auditory subjects who were poor readers were appreciably below the group mean in intelligence. These data again confirm the earlier observation that children who prefer the visual modality are handicapped, relative to those who prefer the auditory modality, in reading. An interesting possibility is suggested--did the few visual subjects who became "good" readers by the end of first-grade also become more auditorially oriented?

When the ITPA profiles of the 16 good readers and 18 poor readers were plotted (see Profile 2) it was immediately apparent that the psycholinguistic patterns were different in shape as well as in level. The level difference was to be expected since the IQs and MAs of the good readers were higher than those of the poor readers. The good readers were predominantly auditory subjects (12 of 16) so their highly auditory profile is not unexpected. However, the poor readers were predominantly visual subjects (13 of 18) but their profile is not predominantly visual. Profile 1, presented earlier, shows that the mean difference between the total group of auditory subjects and the total group of visual subjects on auditory-vocal automatic is less than one month. Yet on Profile 2 it is 15 months. Also, Profile 1 shows only a 2-month superiority of the auditory subjects in vocal encoding, while the good readers (Profile 2) are 15 months higher than the poor readers. This suggests that, given good auditory memory, other auditory-vocal skills (incidental verbal learning and vocal expression) may play a more important role in reading than previous ITPA studies have indicated.

The poor readers' ITPA profile differs from their "parent" visual group in that they show a peak in motor encoding and are below the total visual group in visual memory. The low visual memory might be related to the presence of the 5 auditory subjects in the poor reader group. But

Profile 2

ITPA Performance of Good (N=16) and Poor (N=18) Readers



Good $\overline{IQ}$ 129.6

Poor $\overline{IQ}$ 120.2

____	Good	16	91.6	82.8	89.2	82.6	93.1	79.8	92.5	91.9	76.8 Months
- - -	Poor	18	84.7	81.7	82.6	79.9	78.2	83.8	77.3	75.1	73.6 Months

this assumption poses a difficulty in accounting for the strong showing of the poor readers in motor encoding, which is a visual-motor test. The high motor encoding score of the poor readers does suggest that some very active (hyperactive?), "acting-out" children may have difficulty adjusting to the auditory-vocal world of reading.

The unexpected finding that the $A_S A_M$ group produced 10 good readers and only 1 poor reader, while the $V_S V_M$ group had 12 poor and no good readers, has precluded the kind of inter-group comparisons of good and poor readers that would have been most meaningful, in regard to psycho-linguistic abilities.

There was no overlap whatever between the distribution of spelling scores of the good readers ($\overline{X}$ = 12.3 words correct) and the poor readers ($\overline{X}$ = 2.2 words correct).

Summary and Discussion

The major findings of this study may be very simply stated: the auditory method of reading instruction was superior to the visual method for both reading and spelling; the auditory-modality-preferred subjects were superior in both reading and spelling to the visual-modality-preferred subjects; and there was no interaction between subjects' preferred modality and the method of instruction used.

Within the fields of remedial and corrective reading one of the recurring issues centers on whether instruction should be geared to the child's pattern of cognitive strengths or to his weaknesses. It was hoped that this study might provide evidence on this point as two groups (A_SA_M and V_SV_M) were taught to their strengths and two groups (A_SV_M and V_SA_M) to their weaknesses. However, one of the strength groups was significantly superior (A_SA_M) to all other groups and the other (V_SV_M) was significantly inferior. The weakness groups (A_SV_M and V_SA_M) were intermediate in results produced and were highly similar to the non-placement classes. One way to talk about these results is to say that it is not enough to ask, "Should we teach to the child's strengths or his weaknesses?" but that we must specify about which child we are asking. The data from this study suggest the answer would then be to teach to his strengths if he is an auditory learner or to his weakness if he is a visual learner. However, a much simpler way of stating all this is to say that the auditory method is superior, regardless of the child's own pattern of learning.

It is, of course, possible that this may be true for a homogeneous, above-average intelligence group such as this, and still not be true for the extreme cases found in a reading disability population.

The close correspondence found between reading and spelling achievement was striking and possibly supportive of the observation that both reading and spelling are basically processes of making sound-symbol associations.

The findings of this study support those of Harris (1965) who found no interaction between subject and method and those of Bliesmer and Yarborough (1965) who compared the effectiveness of 10 beginning first-grade programs of reading, including Lippincott and Scott, Foresman and found the Lippincott program was significantly superior to the Scott, Foresman on every measure of reading employed (Stanford Achievement Tests subtests of Word Reading, Paragraph Meaning, Vocabulary, Spelling, and Word Study Skills). The 484 children included in this study were from middle and lower socio-economic levels, in contrast to the higher level of the present investigation. Bliesmer and Yarborough use the description "synthetic approach, in which sound-symbol relationships (letter sounds) are taught before words are taught" to designate what the present study called "auditory method" and they use "analytic approach of going from sight words to sounds" to describe what this study called "visual method." In the Bliesmer-Yarborough study the four "auditory methods" (including Lippincott) were all significantly superior to the three "visual methods" (including Scott, Foresman).

The evidence appears to be mounting that reading is basically a sound-symbol association process and should perhaps be taught to all children as such. The assumption has often been made by many (including the writer) that some kind of matching procedure in which instruction is differentially geared to individual children, replete with their individual differences, must be better than an arbitrary application of one method to all children. However, it is just possible that our lack of knowledge of adequate or best methods of teaching a given set of behaviors such as reading has made this assumption too easy.

Limitations of the Present Study and Suggestions for Further Research

One of the major limitations of this study is that the sample was drawn entirely from a high socio-economic level. The general ability and achievement level was unusually high (e.g., only one child in the entire sample had a group IQ of below 100) and it is somewhat ironic to describe a first-grader who reads at a 2.9 grade level as a "poor" reader! However, it should not be overlooked that the major findings of this study in regard to the superiority of the auditory method have also been obtained on low and middle socio-economic level children (Bliesmer and Yarborough, 1965).

The second major limitation appeared only when the results were available—namely, the auditory method produced only two poor readers while the visual method produced only two good readers, thus making many planned analyses impossible.

This study yielded many data which remain unanalyzed, and also suggests further data gathering. Examples of possible analyses include: (a) correlational studies including both predictive and content validity studies employing the subtests of the ITPA, the Detroit Group Intelligence Scale, and the Metropolitan Reading Readiness Tests; (b) redefinition of good and poor readers to allow comparisons of those two groups within each modality preference; (c) ITPA retest of good and poor readers to check for any changes in preferred modality, as a function of method of instruction employed.

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