EFFECTS OF CODE 78 ON CHILDREN WITH LEARNING DISABILITIES IN THE LEWISVILLE INDEPENDENT SCHOOL DISTRICT

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF MASTER OF ARTS IN SPECIAL EDUCATION

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF EDUCATION

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AUGUST, 1975

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July 15, 19 75

We hereby recommend that the thesis prepared under our supervision by Carol Ann Hughes Bailey entitled Effects of Code 78 on Children with Learning Disabilities in the Lewisville Independent School District

be accepted as fulfilling this part of the requirements for the Degree of

Master of Arts

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Chapter I

The Problem and Procedure

The area of concern was that of increasing the reading level of children with learning disabilities phrased by Capobianco (1964) as children "with a syndrome of behaviors which interfere with the learning process" (p. 188). These children have met failure in the academic area of reading as presented in various methods (Frierson, 1966). They are usually reading below grade level, below the established achievement or expectation level for a particular grade, as measured on standardized tests (DeBoer & Dallmann, 1970). The Peabody Individual Achievement Test (PIAT) is a standardized achievement test that scores in terms of reading grade levels (Dunn & Markwardt, 1970).

Many methods have been used to teach reading to learning disabled (LD) children (Frierson, 1966). One new method for teaching reading is Code 78, a phonetic multisensory approach (Crane & Polk, 1973). Each new method needs to be evaluated. Ketchum (1964) stated:

> Casual attitudes towards identification and remediation of reading disorders and their related dysfunctions are still unfortunately prevalent in some schools today.... We must maintain a more cautious stance toward bandwagon enthusiasms and fads (Money, 1962). (p. 593)

A successful method to teach reading to LD children would be beneficial in increasing their reading levels to meet grade level expectations.

Statement of the Problem

The problem was to determine if a phonetic multisensory reading method surpasses the effectiveness of basic orthographic-phonic approaches in teaching reading to LD children.

The purpose of this study was to examine the relationship between the increase of reading in grade level as measured by the PIAT of second, third, and fourth grade LD children receiving Code 78 reading method daily and of second, third, and fourth grade LD children not receiving Code 78 in the Lewisville Independent School District.

To evaluate the efficiency of the experimental treatment the association between the independent variable (receiving Code 78 reading method daily) and the dependent variables (the increase of reading comprehension grade level and the increase of word recognition grade level as measured by the PIAT) was investigated.

Hypotheses

1. There will be no significant ($p = <.10$) difference

after six months between reading word recognition levels of second, third, and fourth grade LD children receiving Code 78 daily and of those not receiving Code 78 as measured by the PIAT.

2. There will be no significant difference after six months between reading comprehension levels of second, third, and fourth grade LD children receiving Code 78 daily and of those not receiving Code 78 as measured by the PIAT when $p = .10$.

The .10 level was used because of the small sample selection. Glass and Stanley (1970) stated:

> It is customary to assign a value to α of .05 or .01; although .05 and .01 may be appropriate for industrial or agricultural research in which the ANOVA first enjoyed popularity, there is little reason to advocate their use exclusively in educational and psychological research. The value of α a researcher wishes to use should depend on certain aspects of his particular analysis. Values of $\alpha = .15$ or .10 might be justifiable if a small number of subjects are included in the experiment. (p. 356).

Procedure

Sample

Description of the population. The setting for the study, Lewisville, Texas, had a population of 25,000 with the ethnic ratio of .85 American Indian; 3.5% Negro; .03% Oriental; 3% Spanish American; and 92.4% Caucasian in the public schools. The Lewisville Schools enrollment was

6210 as of September, 1974. There were approximately 2,000 second, third, and fourth grade students in the regular and special education classes in the current school year of 1974 - 1975.

Sample selection. An experimental class of ten second, third, and fourth grade LD children were matched according to intelligence quotients (IQ), age, sex, race, and socio-economic status to a control group of ten LD children. The following criteria were used in matching each of the ten pairs:

(1) Enrollment in second, third, or fourth grade classes and in the special education program in the Lewisville Independent School District.

(2) IQ scores of 67 or above on the Weschler Intelligence Scale for Children (WISC) with the full scale IQ scores differing no more than 15 points in each matched pair. IQ scores were obtained from the WISC given to each child when accepted into the special education program for LD children.

(3) Age of each child was recorded as of September 1, 1974, with no more than seven months difference in the date of births in each matched pair.

(4) All the children were from a Caucasian race with middle class socio-economic status.

(5) Children were reading from .5 to 2.0 years below grade level as measured by the PIAT.

Limitations

(1) The nonequivalent control design $\underline{O}\ \underline{X}\ \underline{O}$ / $\underline{O}\ \ \underline{O}$ was used and did not allow for random assignment of the children.

(2) The results of this study can only be applied to children like those participating in the study.

(3) This experiment was concerned with the effect of Code 78 and did not attempt to evaluate other reading programs.

Pretest of Reading Levels

Reading levels were obtained from the PIAT given to each child enrolled in special classes in the fall of 1974, the pretest data. All tests were given by trained qualified personnel, educational diagnosticians, and the school psychologist.

Method

Treatment. The experimental group of ten children received a Code 78 reading session daily beginning in October, 1974. The Primary Code 78 Kit was used which

included a teacher's manual, a daily sessions plan manual, picture cards, word cards, writing papers, story cards, test cards, and a prerecorded cassette tape. Each child progressed through the program on an individual basis. The ten control children did not receive Code 78.

Re-evaluation of reading grade levels of the children were obtained in April, 1975, using the PIAT for post-test data.

Children in both groups were unaware of the study. The teachers of the control children were unaware of the study being conducted. Only the teacher giving the treatment to the ten children in the experimental group was aware of the study.

Behavioral Objectives.

(1) To measure by the PIAT the increase of reading comprehension by grade levels of the students at the end of a six month period.

(2) To measure by the PIAT the increase of reading word recognition by grade levels of the students at the end of a six month period.

Analysis of the Data

In evaluating Code 78, the reading grade levels recorded on the PIAT pretest in October, 1974 and the

post-test in April, 1975 were compared and computed to obtain the gain scores for both groups.

An Analysis of Variance (ANOVA) was performed on the data. The hypotheses were tested at the .10 level of significance.

Chapter II

Research Related to the Study

The ability to read has been specified as a basis for all academic learning. Children with learning disabilities need to be taught to read. Wilson (1971) stated:

> The importance of reading in the disability of learning is attested by the fact that nearly all of the authors who wrote chapters for this volume gave some attention to the difficulties of the child who does not learn to read easily and well.... It seems safe to say that not all children are going to learn to read in the same way and that you should cultivate different techniques and some ability to distinguish which children are likely to profit from which reading approaches. (pp. 6-7).

Ingram (1965) continued "a minority of children fail to do well in school because they have special defects of attention of specific perceptual difficulties which impair their ability to learn as other children" (p. 71).

Code 78 has been described as a phonetic multisensory approach to reading that includes auditory, visual, kinesthetic perception with motor expression. Ketchum (1964) wrote "The reading specialists must continue to maintain a flexible view concerning the various kinesthetic, visual, auditory, and tactile remedial techniques" (p. 593).

Frierson (1970) found "The child with learning disabilities often benefits from a multimodality approach in

which he speaks, writes, and hears as well as sees each new word to be learned" (p. 481).

Peter (1965) stated "Only by employing techniques which are relevant to the handicap can we develop programs which meet the needs of children with a wide range of reading disabilities" (p. 81).

Kephart brought out the significance of "perceptual-motor match" in 1966 where by:

> ...perceptual information is matched to earlier motor information. Through this matching procedure, perceptual data come to supply the same consistent body of information that the previous motor data supplied. By this means a consistent body of information, which can be translated back and forth between motor and perceptual abilities, is established (p. 228).

Peter (1965) observed "Children with perceptual-motor difficulties can begin with the physical activities recommended by Kephart (1960)" (p. 81).

It was further observed of reading difficulties in Wilson's book in 1971 that:

> Emphasis on the motor-sensory approach is interesting at this time, because we are becoming more aware of the importance of our senses beyond those of vision and hearing. There are a number of ways of appealing to youngsters (p. 146).

Cruickshank (1967) stated:

> Getman advocates a program involving six major phases, including practice in general coordination, balance, eye-hand coordination, eye movement, form perception, and visual memory (p. 232).

Kirk and Johnson (1951) indicated:

> Gray defines and delineates phonetic and structural analysis and presents a program for recognition based on this system of analysis. The important aspects of such a program are: (1) to teach for auditory memory and discrimination by means of reading, rhymes, games and so forth, (2) to begin by teaching the sound of the consonants and one vowel sound.... Neither phonics nor structural analysis alone, as a method of teaching word recognition, is sufficient for independent effective reading (pp. 266-267).

Frierson (1967) reports that in 1940 the Hegge-Kirk-Kirk reading method stressed the blending of sounds to visual clues without much meaning. He related:

> Frostig and Horne, can readily be seen as focusing on remediation of visual perception and assimilation with some attention to certain motor responses. Lowell and Stoner's (1960) work in auditory training,.... is somewhat parallel to Frostig's contribution (p. 18).

Cruickshank (1967) wrote:

> Phonetic skills may be developed by using materials which is designed in a way similar to items for perception skill. Visual perception combined with auditory skill will form the basis for the child's phonetic analysis of words (p. 215).

Frierson (1970) found that the:

> Fernald (1939) system of remedial reading can be conceptualized as employing the assimilation of simultaneous visual and kinesthetic symbolic stimuli as an aid to retrieval....and is tightly and systematically organized.... Gillingham and Stillman's (1960) program is just as comprehensive and systematic, but is throughly multisensory. Monroe (1932) and Harris (1956) offer many specific suggestions for particular problems and are not as concerned with channel or sequence (p. 19).

He continued that the McGinnis (1963) system also provided an approach to remedial reading with emphasis on

"communication disorders" (pp. 19-20).

No evidence could be found of research on Code 78. The Code 78 Teacher's Manual stated Code 78 was field tested in Texas, Kansas, and West Virginia (Crane & Polk, 1973). The results were not published or documentated.

A conversation with Laura Lee Crane, co-author of Code 78, revealed that a number of research projects using Code 78 are now proceeding in the Gainsville Independent School District, West Orange-Cove School District, Birdville Independent School District, Fort Worth Independent School District and the Starpoint School at Texas Christian University. Results of some of these studies may begin to be published after the school year of 1974 - 1975. Results of the use of Code 78 in Bess Race Elementary in Crowley, Texas with the low reading groups in regular third and fourth grade has not been documentated or published but certain data may be obtained.

Chapter III

Analysis of the Data

Procedure

The intact experimental group of ten LD children was matched with ten LD children, the control group. The experimental group received a Code 78 lesson daily for six months beginning in October, 1974, and ending in April, 1975. The control group did not receive Code 78 lessons.

The treatment of a Code 78 lesson daily consisted of phonetics presented in a multisensory reading approach. The purpose of this approach was to increase reading word recognition and comprehension. Daily lessons varied according to the lesson manual.

The PIAT was administered in the fall, 1974, and in April, 1975, to obtain reading word recognition and comprehension levels. The evaluative data from these tests, gain scores and necessary computations appear in Table 1 and in Table 2.

Treatment of Data

It was hypothesised that there would be no significant difference between the gains of the experimental group and

Table 1

PIAT Reading Scores In Word Recognition and Comprehension

	1974 Word Recognition	1975 Word Recognition	Gain Word Recognition	Squared Gain Word Recognition	1974 Comprehension	1975 Comprehension	Gain Comprehension	Squared Gain Comprehension
Experimental	1.6	3.4	1.8	3.24	2.1	2.5	.4	.16
	1.5	2.0	.5	.25	1.9	2.2	.3	.09
	1.6	3.5	1.9	3.61	2.2	2.7	.5	.25
	2.6	3.6	1.0	1.0	2.5	3.1	.6	.36
	2.4	3.9	1.5	2.25	2.5	2.7	.2	.04
	1.5	1.8	.3	.09	1.9	2.0	.1	.01
	2.0	3.9	1.9	3.61	2.4	3.1	.7	.49
	3.3	4.0	.7	.49	2.9	2.8	-.1	.01
	3.2	3.6	.4	.16	3.0	3.1	.1	.01
	2.0	3.1	1.1	1.2	2.5	2.9	.4	.16
Control	1.3	2.0	.7	.49	1.9	2.4	.5	.25
	1.5	1.4	-.1	.01	1.5	1.4	-.1	.01
	1.5	2.6	1.1	1.21	1.5	2.7	1.2	1.44
	1.6	2.2	.6	.36	2.2	2.2	.0	.0
	1.6	3.0	1.4	1.96	2.1	2.1	.0	.0
	2.2	3.0	.8	.64	1.9	2.8	1.9	.81
	3.0	3.8	.8	.64	2.4	3.7	1.3	1.69
	1.4	2.0	.6	.36	2.5	2.6	.1	.01
	2.2	2.0	-.2	.04	2.6	2.2	-.4	.16
	2.0	3.1	1.1	1.21	2.1	2.7	.6	.36

Table 2

ANOVA on PIAT Gain Scores

	Word Recognition				Comprehension			
Source	SS	df	MS	F	SS	df	MS	F
Total	3.6455	19	---	---	3.645	19	---	---
Between Groups	.9245	1	.9245	4.294*	.0405	1	.0405	.2022
Within Groups	3.8750	18	.2152	---	3.605	18	.20027	---

* statistically significant, $p = <.10$

the control group in reading word recognition levels after six months. An ANOVA was performed on the gain scores of both groups in word recognition. The F-ratio in word recognition indicated that there was a significant difference at the $p = <.10$ level in the gains of the experimental group when compared to the control group as shown in Table 2. The null hypothesis was rejected. The F-ratio of 4.29 closely approximated but did not exceed the .05 level of confidence.

It was hypothesised that there would be no significant difference between the gains of the experimental group and the control group in reading comprehension levels after six months. An ANOVA was performed on the gain scores of both groups in comprehension. The F-ratio in comprehension indicated that there was no significant difference at the $p = <.10$ level in the gains of the experimental group when compared to the control group as shown in Table 2. The null hypothesis was not rejected.

Summary and Interpretations

It was the purpose of the study to determine the effects of Code 78 when presented to LD children in increasing their reading word recognition and comprehension levels when compared to LD children not receiving Code 78.

It was hypothesised that there would be no significant difference at the .10 level between the gains attained by the two groups in reading word recognition. The hypothesis was rejected. There was a significant difference between the gain scores. It appears that Code 78 was a superior method to obtain higher reading word recognition levels with LD children.

It was hypothesised that there would be no significant difference at the .10 level between the gains attained by the two groups in reading comprehension. This hypothesis was not rejected. There was no significant difference between the gain scores. It appears that Code 78 was not a superior method to obtain higher reading comprehension levels with LD children. It must be stressed that the results of this study are only to be applied to the students participating in the experiment.

Conclusions

Code 78 appears to be a very good phonetic multi-sensory method for teaching LD children word recognition. The hypothesis regarding word recognition was rejected at the .10 level of significance which is acceptable often in educational research.

The word recognition F-ratio of 4.294 exceeds the F-Distribution table figure of 3.01 at the 90th percentile and closely approximates the 95th percentile F-Distribution table figure of 4.41. When the F-ratio of 4.294 is subtracted from the .05 level of significance figure of 4.41, the difference is a very small .12.

It could be stated that Code 78 is effective in teaching word recognition in 90 out of 100 presentations. Code 78 appears to be very close to being effective in 95 out of 100 presentations.

The relationship between the presentation of Code 78 to LD children and their success in reading word recognition seems to be exceedingly good. It might be stated that with the success in reading word recognition, LD children have the basic skills needed in attaining reading competency. In reviewing the vocabulary presented in Code 78, it could be conjured that if a more extensive vocabulary was included that the .05 level of significance would be

reached and exceeded in reading word recognition competency.

Code 78 does not appear to be a very successful multisensory phonetic reading method for teaching comprehension to LD children. The reading comprehension hypothesis was not rejected at the .10 level of significance, nor could it be rejected at the .25 level of significance. The comprehension F-ratio of .2022 does not exceed the 90th percentile F-Distribution table figure of 3.01.

It might be projected that the reliability of Code 78 in enabling LD children to obtain competency in reading comprehension is not valid. It appears that success would be apparent in much less than 75 out of 100 presentations when using Code 78 as the only method for obtaining reading competency. In reviewing Code 78, it could be supposed that if more sentence structures and paragraphing were used earlier in the program a higher level of reading comprehension competency would be reached.

It could be suggested that Code 78 develops the necessary skills through reading word recognition to enable LD children to continue to progress to reading competency. Comprehension would very likely be acquired if a basal reading series were presented to the children upon completion of Code 78. It is felt that the children would progress through a basal reading series much faster than

usual as a result of the knowledge gained from Code 78.

It has been hypothesised that LD children, reading well below grade level, having received Code 78 in one school session and placed in a basal series the next school session reached and sometimes exceeded their grade level in reading word recognition and comprehension.

Code 78 could be presented in conjunction with a basal reading series, strengthening the phonics portion of the series. A basal reading series could be a vital enrichment to Code 78. Because of the very structure of Code 78, it could be very beneficial in the acquisition of spelling competency. Another aspect embodied in Code 78 is the step by step program that develops cursive penmanship. It could be concluded that because of the diversity of Code 78 it is a profitable program for LD children in their struggle to reach reading competency.

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