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ABSTRACT

Results of an experiment testing two programed sequences designed to increase auditory blending ability are reported. Subjects were 117 randomly selected kindergarten children who were divided into three groups. The first group received 18 programed training sequences utilizing a phonics approach, the second group received 18 programed training sequences utilizing a linguistics approach, and the control group was told 18 narratives of an appropriate level. Results of a constructed criterion test of auditory blending ability indicated that children in both the experimental groups did significantly better than those in the control group, but that there was no significant difference between the effects of the phonics and linguistic approaches. These results suggest that auditory blending skills can be taught effectively to kindergarten aged children and that neither the phonics nor linguistic approach is superior for such training. Suggestions for further research on auditory blending skills development and its relationship to other reading skills are made. Tables and references are included. (AL)

Mayo

Presents the results of an experiment testing two planned training sequences designed to increase auditory blending ability. Two treatment groups and a control group were randomly selected, following blocking on sex, from a population of 130 kindergarten children. Treatment I consisted of eighteen programmed training sequences utilizing a Phonics approach, Treatment II consisted of eighteen programmed training sequences utilizing a Linguistics approach and the control group were told eighteen narratives of an appropriate level. The lessons and narratives were presented on magnetic tapes. A criterion measure was designed to test auditory blending ability. Planned comparisons were used for the analysis of the data. Correlations of variables were also computed. Both treatments showed significant ($p < .01$) differences over the control group following treatment. There was no significant differences between Treatment I and Treatment II.

If auditory blending is a factor which may contribute to a child's ability to learn to read as has been suggested by some authors, then developing curriculum which teaches this skill may have some effect on early education. The results of this study indicate that auditory blending can be increased in a population of kindergarten children inclusive of the culturally different children such as those found in Target Area schools.

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Two Techniques of Teaching Auditory Blending Skills to Kindergarten Children[1]

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Reading is an enormously complex process which encompasses numerous sensory, motoric, conceptual and communication skills. The teaching of reading is based on the possession of minimal levels of certain of these skills. For many years of reading research there has been an awareness of the importance of visual skills, but only in the last decade are auditory skills receiving more than token attention. The importance of auditory abilities for beginning reading achievement has suggestions for the

[1]This article is a summary of a doctoral dissertation prepared under the direction of Associate Professor Donald E. Carline at the University of Colorado.

curriculum. In beginning reading, the separate sounds in words must be perceived accurately, remembered, kept in a sequence and blended together. Hanesian (1966) states that individual assessment of a child's auditory abilities of discrimination, memory and blending will help to identify those specific skills which are important for his achievement in reading. She suggests that at the kindergarten and first grade levels testing of auditory abilities can aid in determining whether these abilities have developed.

Comments from the Literature

Several studies indicate the need for early auditory blending skill and its relationship with reading. Lehtiner (1959) states that the earliest stages of reading require organization of auditory sequences of sound blending in order to understand relationships inherent in structural analysis skills. One study of several auditory abilities showed that blending

had the strongest relationship to beginning reading achievement (Hanesian, 1966).

Since many studies of auditory skills deal with poor readers that are often in the intermediate grades, it seems relevant to inquire if there might be different relationships between auditory perceptual skills and reading at different ages. Feldmann, Schmidt, and Deutsch (1966) suggest in the early stages of learning to read when decoding skills are predominant, that relationships might be strong, but in later stages of reading when meaning skills increase in importance, the strength of the relationship between auditory and reading skills might decrease. It could then be argued that perhaps amelioration of any auditory perceptual deficits present when the child was in the early stages of reading, when the relationship between auditory and reading skills was strong, might positively affect learning

to read. Chall, Roswell, and Blumenthal (1963) found that auditory blending ability, whether tested in the first grade, second-third, or fourth grades is positively correlated with oral and silent reading ability through the fourth grade. They go on to suggest that should additional testing with more pupils of different socio-economic status support these findings, an auditory blending test might be a useful measure in a reading readiness battery.

Clarification needs to be made of the terminology of auditory discrimination and auditory blending skills. Much of the literature delves into the area of auditory blending when discussing auditory discrimination abilities. These are two separate skills. When a child has auditory discrimination ability, he can recognize similarities and differences in speech sounds. These can be broken down into the ability to discriminate beginning, medial,

and ending sounds of words. Auditory blending ability involves the ability to reproduce a word by synthesizing its component sounds. A child may at one point on the learning continuum be able to discriminate auditorially but be unable to blend auditorially. As Lehtiner (1959) states, a child with difficulties in synthesizing two sounds may know the separate sounds but he may repeat them over and over, being quite unable to "hear" or perceive them as a single word.

Techniques Tested and Criterion Test

Assuming that auditory blending is a pertinent skill to be taught in the early stages of learning to read, the question then arises as to which technique or method should be utilized. One method used is the phonics method where words are sounded out letter by letter and then the individual sounds must be synthesized to form a word. One of the more outspoken advocates against this method was linguist Leonard

Bloomfield. He decried the fact that synthetic phonic methods isolate speech sounds. For example the phoneme [b] does not occur alone in English utterance; neither does the phoneme [b] followed by an obscure vowel sound (Bloomfield & Barnhart, 1961). Synthetic phonics he felt proceeds as though the child were being taught to speak. Caleb Gattegno has also produced linguistic materials for reading instruction and he isolates the short vowel sounds at the beginning but, as Bloomfield would concur, always teaches a consonant with a vowel. This method was utilized in the linguistic materials developed.

A consistent patterning of the linguistic sequence of words developed by a combination of Leonard Bloomfield and Caleb Gattegno methods was chosen in developing the lessons for both the phonics and linguistics groups. The concepts of the analytical type

of phonics was completely avoided in working out the curriculum materials. One of the research questions then is asking if the children can be taught to blend sounds together better by hearing the vowel-consonant (VC) or consonant-vowel-consonant (CVC) sounds of a word isolated first and then blended together -- phonics approach, or by being taught an isolated vowel sound and then introducing words of a pattern (VC or CVC) that are always heard in their synthesized form -- linguistics approach. Kindergarten pupils were selected as it was felt that in the middle of the school year many pupils of first grade level would be well on their way to mastery of the skill of auditory blending. On the kindergarten level it was felt that few would be able to blend auditorially.

The first experimental treatment consisted of eighteen lessons presented on magnetic tape. This

treatment utilized the phonics approach of first isolating the individual sounds of a word and then blending them together. In the first five lessons the sounds of the short vowels (a,u,i,e,o) were presented; the next eleven lessons presented a CV, VC, or CVC pattern introducing a new consonant sound each lesson. The eleven consonants introduced were p,t, s (as in sit), m, d, r, f, c (hard), n, b, and h in that order. The last two lessons reviewed various combination of the five short vowels and the eleven consonants.

The second experimental treatment was eighteen taped lessons utilizing the linguistics approach of always presenting the sounds in their synthesized form. In the first lesson the sound of the short vowel a was presented, then in the next four lessons patterns of words (VC and CVC) containing the consonants t,f,

c, r, p, n, b, m, s, h, and d were introducted. The remaining thirteen lessons practiced various combinations of the sounds already introduced and presented the short vowels i, e, u, and o. An average of three ditto sheets per lessons accompanied each tape for both treatment groups. This was to give some visual guidance to the auditory presentation.

The control group was given a series of eighteen stories. Narrative material of an appropriate level and of length similar to the experimental treatment groups was delivered to the pupils through the tape medium.

Treatment I averaged 12.8 minutes per lesson, Treatment II averaged 12.1 minutes per lesson, and the Control averaged 8.2 minutes per lesson. Thus, the narrations turned out to be a somewhat shorter

time presentation than the treatment groups. This seemed to fit the attention spans of the kindergarten pupils as the treatment lessons required active participation of the listener, whereas the story tapes only required listening.

No standardized test was available which measured auditory blending in the desired manner. Therefore, a criterion test was constructed that was modeled somewhat after the Roswell-Chall Auditory Blending Test. The directions and test were placed on tape and validated with a sample kindergarten class different than any used in the experiment. The four parts of the test, consisting of ten items each, examined different aspects of auditory blending. Part I dealt with the ability to synthesize words of two phonemes. Part II dealt with words of three phonemes, but the first

phoneme was isolated and the last two phonemes were synthesized when presented. Part III dealt with the ability to synthesize words of three phonemes. Part IV dealt with nonsense words utilizing consonants that were not presented in the lessons. In this part there were three phonemes, but the first two phonemes were synthesized when presented and then the third phoneme was isolated. All isolated or synthesized phonemes were presented at approximately one-second intervals, and the subject was asked to put the sounds together and name the word formed. An example of a word representing each part of the test was presented prior to the test for practice. The score for each part was the total number of words blended correctly giving a total possible score of forty. The test and directions to the students were recorded on tape so that a consistent

test presentation was possible. A pre- and post-test of the Auditory Blending test developed was administered.

Also a pre- and post-test of the standardized Prereading Battery, auditory discrimination part, by Clymer-Barrett was administered. A correlation was run between the Clymer-Barrett tests and the Auditory Blending tests to see if there were any correlation between discrimination of sounds (beginning and ending) and auditory blending. Other factors considered on the correlation matrix were sex, ethnic group (Anglo or Spanish), amount of Spanish spoken in the home, morning or afternoon kindergarten session, and speech articulation errors as tested by an individual speech articulation test.

Selection of Population

The sample was drawn from the consolidated school district of Pueblo County. There are nine elementary schools in this area, which takes in the entire county except for the city of Pueblo proper. Five of the elementary schools are Target Area schools by definition of the Title I act of E.S.E.A. For this study three of the five schools selected were from the Target Area schools. The population of the schools ranged from 179 to 338. Two of the schools had a morning and an afternoon kindergarten session which gave a total of seven class sessions from which to draw the students. The number of students enrolled in each kindergarten session ranged from eleven to thirty-one.

For the pilot study a kindergarten class of nine students was selected that was located in a

school that was not used in the main study. For testing the mechanics of the taped lessons, and the criterion test, it was desirable to have a small class where the teacher could observe the behavior of the students more closely. This class also represented a much more disadvantaged group in terms of economic level than the other schools in the district. It was felt if the tapes were meaningful to this group and if they could follow the directions given with the tapes that it was a good indication that other groups of kindergarten pupils could also.

Pre-testing

In mid-January of 1971 the kindergarten teachers in the five schools selected for the study administered the Auditory Discrimination section of the Clymer-Barrett, Prereading Battery Form A to their

students. This test is designated for use at the end of kindergarten or the beginning of first Grade. This is a paper and pencil group administered test.

The Auditory Discrimination part of the test consists of two parts. The first part is the discrimination of beginning sounds in words. This task consists of twenty items, each of which requires the pupil to locate and mark, from among three alternative choices, the picture whose name begins with the same sound as the name of the stimulus pictures. The teacher pronounces the names of the pictures in each item to avoid ambiguity in names. The second part is the discrimination of ending sounds in words. This is a twenty item task with the same make up as the first part except it deals with ending sounds. There are twenty points possible for the two parts to the test with a total score of forty possible.

The other pretest given was the Auditory Blending Test which was administered by the researcher during the week following the administration of the Prereading Battery. The taped test was given individually in either an isolated room or via headphones. The administrator recorded the correct responses of the student being tested on the record sheet.

Selection of the Experimental Units

Since girls are typically superior to boys on reading skills tasks, blocking of subjects available was done on sex. (However; while sex differences in reading achievement show findings which favor girls, in researching the literature there appears to be no clear indication of the relation of sex and auditory abilities.) Following blocking on sex, subjects in each class were randomly assigned to one of the three groups. There was a limitation

of eight headphones available per tape recorder which affected the two classes of thirty or more pupils. The first twenty-four pupils randomly selected and assigned to a group were included in this study in those two classes and the remaining students were not.

This means out of one hundred and thirty subjects that were available from the seven kindergarten classes only 117 were used. Treatment Group I was assigned forty students, Treatment Group II was assigned thirty-eight and the Control Group was assigned thirty-nine. Nine subjects were dropped or lost during the course of the study which began in January and was completed in March 1971. This was a loss of 7.69 percent.

Of those remaining in the study there was an

average of 17.25 days attended of a possible eighteen sessions. This breaks down into an average attendance of 17.16 days for Treatment Group I, 17.37 for Treatment Group II, and 17.24 days for the Control Group.

Treatment and Screening for Articulation and Hearing

The eighteen lessons per group were presented three days a week for a total of six weeks, January 25 to March 5, 1971. Each group in a class heard their lesson on the same day but the days of the week on which they were heard had some variance. The order in which each group heard their tapes was varied. No set pattern was adhered to, but a check was made to see that the order of presentations was varied over the six weeks period. The teachers chose not to make up the absences of any of the groups and no other pupil in the study other than those assigned to the control group was allowed to listen to the narrative tapes.

The teachers were advised not to discuss the contents of the tape with the students and they were told to cover the curriculum that they normally would during this period without adding or subtracting to it for the purposes of this study. The groups were kept intact as they were randomly selected. New pupils entering after the study began were allowed to participate by listening to the narrative tapes, but they were not included in the study. Three out of the five teachers had the available use of teachers aides and these aides often set the listening station up, adjusted the headphones and monitored the students. This had obvious advantages over the groups where the teachers had no aides and were busy with the other two-thirds of the class. The advantage was spread over the entire three groups, though, so it was not felt that this affected

←the total results of the study.

During the six weeks of treatment, the students were also screened for articulation errors and hearing. For the articulation test the test normally given by the Speech Therapists of the school district at the end of the kindergarten year was administered. This test was given individually and consisted of twenty-six sets of three words that tested the consonant sounds in the beginning, middle, and ending of words. The words were pronounced one at a time by the administrator and the word was then repeated by the student. Any discrepencies in articulation were noted. The average number of articulation errors was 1.3 for Treatment Group I, 1.4 for Treatment Group II, and 2.0 for the Control Group. The average number of errors for the entire population was 1.5.

The Verbal Auditory Screening for Children (VASC) was used for screening the students' hearing. Mencher and McCulloch (1970) describe the test as consisting of four randomized lists of the same twelve spondee words, recorded by a male voice and played on a continuous tape cartridge. The initial word in each list is presented at 51 dB, "Reference Normal SRT," with each subsequent word presented at a 4 dB attenuation rate. The last three words are presented at 15 dB. The tape is played in a modified tape deck which has provisions for calibration and monitoring. A bird warble and a lion's roar also were included as stimuli. The test purportedly examines hearing from 100 to 7500 Hz. The child is instructed to point to a picture on a board in front of him which represents the stimulus word. The examiner records the child's responses as "correct," "incorrect," or

"no response" by making an appropriate notation on a check-off sheet. Two children were tested simultaneously.

Using the criteria that a hearing loss was constituted by a loss above 20 dB in both ears, there were only three students who did not pass the hearing test. One student was in Treatment Group II and two students were in the Control Group.

Post-testing

After the six weeks of treatment were completed, the classroom teachers administered the Auditory Discrimination section of the Clymer-Barrett, Prereading Battery Form B to their students. The other post-test was the Auditory Blending Test. This was administered individually by a person who was not involved in the study previous to the test.

The Research Design

Two Hypotheses were tested. Hypothesis I: Auditory blending ability is a developmental skill and as such it can be increased by a planned training sequence. Planned comparisons were used to answer the question of whether the experimental treatment groups as a whole tend to differ from the control group.

Hypothesis II: There will be no difference in scores and on a criterion measure for Phonics Approach Treatment and the Linguistic Approach Treatment. Planned Comparisons were used to see if there was any difference between the two treatment groups.

All possible correlations between the part scores and total scores on the pre and post auditory discrimination and auditory blending tests were computed. Other factors considered on the correlation

matrix were sex, ethnic group (Anglo or Spanish), amount of Spanish spoken in the home, morning or afternoon kindergarten session, and speech articulation errors as tested by an individual speech articulation test.

Description of the Sample

The sample consisted of 108 kindergarten children from five Pueblo, Colorado county schools. Fifty-three subjects were male and fifty-five female. Table 1 gives descriptive data for the entire sample's independent variables. Table 2 gives descriptive data on the sex and age of each treatment group.

Insert Tables 1 and 2 about here

Since blocking for sex took place before random selection of each group, there is approximately an even balance of males and females in each treatment

Table 1

Means, standard deviations, and ranges of variables for the sample

Independent Variables	Mean	Standard Deviation
Age[a]	69.85 mo.	4.03
Ethnic Group[b]	1.32	.47
Spanish Spoken in Home[c]	1.70	1.23
Kindergarten Session[d]	1.19	.41
Number of Absences	1.33	2.72
Number of Articulation Errors[e]	1.56	3.62

[a]Range: 64-77 months

[b]Two ethnic groups were identified. Anglos were assigned a value of 1 and Spanish 2.

[c]Six categories were identified. No Spanish spoken in the home was assigned a value of 1, 1/8 of the time 2, 1/4 of the time 3, 1/2 of the time 4, 3/4 of the time 5, all of the time 6.

[d]Those in the morning sessions were assigned a value of 1 and afternoon 2.

[e]Determined by total errors on articulation tests.

Table 2

Sex and age for each treatment group

Group	Male	Female	Mean Age	Range of Age
Treatment I Phonics	20	19	70.15 mo.	64 - 77 mo.
Treatment II Linguistics	17	18	68.62 mo.	64 - 76 mo.
Treatment III Control	16	18	69.35 mo.	65 - 75 mo.
Totals	53	55		

group. The ages range from five years and four months to six years and five months which means there is slightly over a year's variance in age. Table 3 and 4 deal with the ethnic background and the estimated amount of time Spanish is spoken in the home. This estimate was obtained from the responses to a questionnaire sent home to the parents or guardians of all the subjects.

Insert Tables 3 and 4 about here

Tables 5 and 6 deal with the descriptive data by treatment group for the kindergarten session attended, the number of articulation errors and the number of absences.

Insert Tables 5 and 6 about here

Table 3

Sex and ethnic background
for each treatment group

Group	Anglo		Spanish	
	Male	Female	Male	Female
Treatment I Phonics	15	11	5	8
Treatment II Linguistics	12	10	5	8
Treatment III Control	14	10	2	8
Totals	41	31	12	24

Table 4

Amount of time Spanish spoken in home
for each treatment group

Group	Sex	Amount of time Spanish spoken in home: None	1/8	1/4	1/2	3/4	All
Treatment I Phonics	Male	0	1	2	2	0	0
	Female	0	0	5	2	0	1
Treatment II Linguistics	Male	3	1	1	0	0	0
	Female	1	0	2	2	2	1
Treatment III Control	Male	0	0	2	0	0	0
	Female	1	0	6	1	0	0

Table 5

Kindergarten session attended and mean number of articulation errors for each treatment group

Group	Kindergarten Session A.M.	P.M.	Mean Number of Articulation Errors
Treatment I Phonics	31	8	1.26
Treatment II Linguistics	27	8	1.37
Treatment III Control	27	7	1.88
Totals	85	23	

Table 6

Means and standard deviations for numbers of days absent by sex and ethnic group in each treatment group

		Anglo		Spanish	
Group	Sex	Mean	Standard Deviation	Mean	Standard Deviation
Treatment I Phonics	Male	.80	1.32	.40	.89
	Female	.82	1.25	1.25	1.49
Treatment II Linguistics	Male	2.00	5.74	.60	1.34
	Female	.50	1.08	1.25	1.28
Treatment III Control	Male	1.00	1.41	0.00	0.00
	Female	.30	.67	1.25	1.39

Tables 7 and 8 give descriptive data for the pre- and post-test of Auditory Discrimination and Auditory Blending for the entire sample.

Insert Tables 7 and 8 about here

Tables 9 and 10 break this information down into the various treatment groups. With a six weeks

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Insert Tables 9 and 10 about here

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lapse between Form A and Form B of the auditory discrimination task there was a mean gain of 3.69 total points. Looking at the mean gains from the pre- and post-tests for the specific treatment groups, Treatment I had 2.36 total points, Treatment II had 3.29 and Treatment III of the Control group had 3.03. This slight gain in auditory discrimination skills would seem to be unrelated to the training

Table 7

Means and standard deviations of the pre and post auditory discrimination tests of the sample

	Mean	Standard Deviation
Pre-test - Auditory Discrimination:		
Beginning Sounds[a]	11.35	4.89
Ending Sounds[b]	14.14	8.44
Total[c]	24.78	9.92
Post-test - Auditory Discrimination:		
Beginning Sounds	12.82	5.29
Endings Sounds	15.66	7.57
Total	28.47	9.39

[a]Total possible: 20

[b]Total possible: 20

[c]Total possible: 40

Table 8

Means of the pre and post auditory discrimination tests by treatment group

	Pre-test Means			Post-test Means		
Group	Beg.[a]	End.[b]	Total	Beg.	End.	Total
Treatment I Phonics	11.26	14.21	25.46	12.74	15.08	27.82
Treatment II Linguistics	10.94	12.20	23.14	12.09	14.34	26.43
Treatment III Control	11.91	13.29	25.20	13.88	14.35	28.23

[a]Beginning Sounds - 20 possible

[b]Ending Sounds - 20 possible

Table 9

Means and standard deviations of the pre and post auditory blending tests of the sample

	Mean	Standard Deviation
Pre-test - Auditory Blending:		
Part I[a]	.40	.83
Part II[a]	.16	.50
Part III[a]	.08	.28
Part IV[a]	.02	.13
Total[b]	.67	1.17
Post-test - Auditory Blending:		
Part I	1.04	1.26
Part II	.26	.66
Part III	.19	.64
Part IV	.12	.48
Total	1.59	2.38

[a]Total Possible: 10

[b]Total Possible: 40

Table 10

Means of the pre and post auditory blending tests by treatment group

	Pre-test Means Treatment Group			Post-test Means Treatment Group		
	I	II	III	I	II	III
Part I	.38	.37	.38	1.15	1.26	.50
Part II	.16	.23	.15	.23	.29	.12
Part III	.08	.09	.09	.28	.26	.03
Part IV	.03	.00	.03	.13	.11	.06
Total	.64	.69	.65	1.79	1.91	.71

received in auditory blending as all groups were equally affected. For the Auditory Blending Tests it is apparent by the mean gains from the pre- and post-test that the auditory blending training influenced treatment groups I and II as compared to the control group.

Analysis of Designs I and II

The primary analysis tested the first hypothesis that auditory blending is a skill, developmental in the sense that it is increased by practice and use, and the skill can be increased by a planned training sequence. Planned comparisons of the experimental and control groups yielded the results shown in Table 11. The analysis of the results show

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Insert Table 11 about here

Table 11

Results of planned comparisons between experimental and control groups using the post auditory blending test as criterion of measurement

	Treatment I Phonics	Treatment II Linguistics	Treatment III Control
n	39	35	34
$\bar{X}$	1.79	1.91	.71

Source of variation	df_e	MS_e	t	p
Experimental vs. Control	96	4.97	2.49	$p < .01$

that the comparison of the experimental and control groups yield a t score of 2.49 which is significant in favor of the experimental groups at the .01 level.

Descriptive data are given in Table 12 for the scores on the Post Auditory Blending Test for the

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Insert Table 12 about here

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three independent variables of treatment group, sex, and ethnic group. The means for Treatment I, the Phonics Group, shows a trend for more achievement for the female-Anglo students. The means for Treatment II, the Linguistic Group, and the Control Group were more uniform. It is interesting to note that the means for the male-Anglo students in all three treatment groups were very similar, much more so than any other group.

Table 12

Means and standard deviations of post auditory blending test for three independent variables

	Treatment I Phonics		Treatment II Linguistics		Treatment III Control	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Male-Anglo	1.13	1.25	1.42	1.78	1.00	1.04
Female-Anglo	3.18	4.64	2.60	2.72	.60	.84
Male-Spanish	1.20	2.17	2.00	2.55	0.00	0.00
Female-Spanish	1.50	2.07	1.75	2.38	.50	.76

The auxiliary design tested the second hypothesis, that there would be no difference in scores on the Auditory Blending test for the Phonics Group and the Linguistics group. The results of the planned comparisons of the two experimental groups are shown in Table 13. There was no significant difference

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Insert Table 13 about here

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between the two approaches to teaching auditory blending.

Correlational Data

Correlations of all dependent and independent variables were computed. The results did not yield any meaningful intercorrelations of any level of significance for the variables of treatment group, sex, age, ethnic group, amount of Spanish spoken in the home, kindergarten session, number of absences,

Table 13

Results of planned comparisons between the phonics group and the linguistics group using the post auditory blending test as the criterion of measurement

		Treatment I Phonics	Treatment II Linguistics	
n		39	35	
$\bar{X}$		1.79	1.91	
Source of variation	df_e	MS_e	t	p
Phonics vs. Linguistics	72	4.97	-.230	none

and number of articulation errors.

The correlational matrix for the pre Auditory Discrimination Test and the various independent variable are presented in Table 14. A negative correlation at the .05 level of significance exists

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Insert Table 14 about here

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between the type of ethnic groups a subject belonged to and the ability to discriminate beginning sounds. There was also a negative correlation at the .01 level of significance between the amount of Spanish spoken in the home and the ability to discriminate beginning sounds. This correlation was also felt in the total score for the test at the .05 level of significance.

The post Auditory Discrimination test scores were correlated with the various independent variables in

Table 14

Correlational matrix for the pre auditory discrimination test and the independent variables

	Discrimination of Beginning Sounds	Discrimination of Ending Sounds	Total Score
Treatment Group[a]	.046	-.038	.036
Sex[b]	.062	-.131	-.009
Ethnic Group[c]	-.220*	-.066	-.114
Amount of Spanish Spoken at Home[d]	-.266**	-.126	-.196*
Kindergarten Session[e]	.061	.074	.133
Articulation Errors	-.064	.110	-.108

*p<.05
**p<.01

[a]The experimental subjects were assigned a value of 1 and the control 2.

[b]Males were assigned a value of 1 and females 2.

[c]Anglos were assigned a value of 1 and Spanish 2.

[d]Six categories were identified. No Spanish spoken in the home was assigned a value of 1, 1/8 of the time 2, 1/4 of the time 3, 1/2 of the time 4, 3/4 of the time 5, all of the time 6.

[e]Morning classes were assigned a value of 1 and afternoon 2.

Table 15. On the post test there were no significant

Insert Table 15 about here

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levels of correlation with the variables of ethnic group nor amount of Spanish spoken in the home. Thus the disadvantages of the culturally different were being overcome by the time of the post-test administration. For the post-test of Auditory Discrimination the afternoon kindergarten subjects showed a significant correlation with the ability to discriminate beginning sounds at the .01 level. The number of articulation errors showed a negative correlation with the ability to discriminate beginning sounds at the .05 level and a positive correlation with the ability to discriminate ending sounds at the .05 level of significance. In comparing the pre-test

Table 15

Correlation matrix for the post auditory discrimination test and the independent variables

	Discrimination of Beginning Sounds	Discrimination of Ending Sounds	Total Score
Treatment Group	.147	-.024	.058
Sex	-.042	-.159	-.149
Ethnic Group	-.106	-.073	-.116
Amount of Spanish Spoken at Home	-.158	-.085	-.155
Kindergarten Session	.256**	-.120	.054
Articulation Errors	-.225*	.234*	.059
Pre Auditory Discrimination test:			
Beginning Sounds	.626**	.141	.456**
Ending Sounds	.214*	.717**	.707**
Total Score	.684**	.151	.500**

*p<.05
**p<.01

scores and the post-test scores of the Auditory Discrimination test, there are positive correlations at the .05 and .01 levels of significance for all areas except the ability to discriminate beginning sounds and also the total score as compared to the ability to discriminate the ending sounds. Although not shown on the table, the correlation between the post-test ability to discriminate beginning sounds and the ability to discriminate the ending sounds yielded only a correlation of .052. All other areas of the post-test correlated at the .01 level of significance. The lack of correlation between these two factors did not appear on the intercorrelations of the pre-test. There the ability to discriminate beginning sounds correlated with the ability to discriminate ending sounds at the .01 level of significance.

The correlation matrix for the pre Auditory Blending test and the independent variables are shown in Table 16. On the pre-test there was a

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Insert Table 16 about here

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positive correlation at the .01 level of significance between Parts II and IV of the test and the kindergarten session the subjects attended. The only other significant correlation was between the ability to discriminate beginning sounds on the pre Auditory Discrimination test and Part III of the pre Auditory Blending test.

Table 17 shows the correlations of the criterion test of Auditory Blending (post-test) and the various independent variables. There was a positive correlation

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Insert Table 17 about here

Table 16

Correlation matrix for the pre auditory blending test and the independent variables

	Part I	Part II	Part III	Part IV	Total
Treatment Group	.029	-.048	-.022	.047	.000
Sex	.097	-.014	.064	.133	.093
Ethnic Group	.104	-.006	-.147	.049	.042
Amount of Spanish Spoken at Home	.195*	-.046	-.125	.032	.092
Kindergarten Session	.054	.264**	.083	.260**	.202*
Articulation Errors	-.024	-.032	-.090	-.039	-.057
Pre Auditory Discrimination Test:					
Beginning Sounds	.012	-.079	.210*	.126	.037
Ending Sounds	-.007	-.046	.037	.069	-.008
Total Score	.035	-.055	.157	.130	.052

*p<.05
**p<.01

Table 17

Correlation matrix for the post auditory blending test and the independent variables

	Part I	Part II	Part III	Part IV	Total
Treatment Group	-.190	-.012	-.176	-.089	-.166
Sex	.043	-.065	.187	.059	.071
Ethnic Group	-.112	-.085	-.035	.101	-.069
Amount of Spanish Spoken at Home	-.093	-.105	-.063	.127	-.066
Kindergarten Session	.123	.238*	.028	.019	.144
Articulation Errors	-.181	-.092	-.105	-.048	-.165
Pre Auditory Discrimination Test:					
Beginning Sounds	.264**	.179	.300**	.128	.301**
Ending Sounds	.180	.049	.069	.045	.073
Total Score	.239**	.162	.231*	.121	.263**
Post Auditory Discrimination Test:					
Beginning Sounds	.346**	.305**	.261**	.227*	.388**
Ending Sounds	.133	.019	.055	.060	.055
Total Score	.295**	.184	.188	.174	.259**
Pre Auditory Blending Test:					
Part I	.004	-.038	-.055	.116	.002
Part II	-.010	.054	-.071	-.008	-.010
Part III	.070	-.018	.067	-.004	.051
Part IV	-.004	-.054	-.040	-.033	-.034
Total	.015	-.013	-.059	.072	.005

*p<.05
**p<.01

at the .05 level between the kindergarten session attended by the subject and the performance on Part II of the test. There are no significant correlations between the pre Auditory Blending test scores and the post Auditory Blending test scores. On the pre and post Auditory Discrimination tests there is a correlation, on all but two of the Part scores, at the .01 level of significance between the ability to discriminate beginning sounds and the ability to blend auditorially. Thus after training the subject to blend auditorially we find a common factor or factors in the subject's ability to discriminate auditorially beginning sounds in words and his ability to perform on the auditory blending task.

Summary and Conclusions

In the primary analysis both treatment groups

were superior to the control group at a .01 level of significance. In the auxiliary analysis there was no significant difference between the two experimental groups. The correlational data indicated that a relationship exists between auditory blending after training and the childs ability to discriminate beginning sounds in words.

These results suggest that for kindergarten level children, planned training sequences designed to increase auditory blending are effective. Neither the Phonics approach nor the Linguistic approach seems to be a more superior method of training.

In general, it can be stated in light of these results, that for a population of kindergarten pupils inclusive of the culturally different children such as those found in Target Area schools, auditory

blending, as measured by the defined criterion measure, can be increased. It is beyond the scope of the present study to infer that an increase in the child's ability to blend auditorially will necessarily be accompanied by an increase in his ability to learn to read although previous research indicates that this may be the case.

Suggestions for Further Research

Further research is needed to determine if auditory blending skills can be brought to the point of mastery with further training and practice. The most advantageous time for training of this type needs to be determined. It might be possible to show that the same or similar training used in this study would have more lasting effects if presented in first grade in conjunction with the reading curriculum as opposed

to kindergarten. Tests of retention of the auditory blending skills acquired should be administered six months after treatment.

Further examination is needed to discover what common relationships auditory discrimination skills and auditory blending skills have. Do the children who evidence facility in learning the skills of auditory discrimination also rapidly learn to blend auditorially? Is there any sequence in teaching the two skills that yield optimum results? For example, if the subjects are taught to discriminate beginning sounds in words would they then be able to acquire auditory blending skills or should they first achieve mastery of discrimination of beginning, medial and ending sounds of words?

What relationship exists between the ability to blend words auditorially and the level of achievement

attained in first grade reading? Is the need for the skill of auditory blending dependent on the type of method utilized in teaching reading in the first grade? The answer to these questions would require selection of a sample from a broad spectrum of first grade classrooms.

Although this study found that there was no significant difference in auditory blending training between the Phonics method and the Linguistics method, it would be interesting to conduct further research to see if either method was more beneficial for various types of children. Variables that should be considered are sex, level of intelligence, learning style (auditory or visual) and cultural background.

Further examination of the effectiveness of programmed instruction with young children is needed.

A comparison of tape presentation of the training sequences and teacher presentation is needed. If neither type of presentation is superior, curriculum materials should be developed for both styles of presentation. The classroom teacher would then be able to select the medium that fit her teaching style and classroom organization the best.

References

Bloomfield, L., & Barnhart, C.L. Let's read: A linguistic approach. Detroit: Wayne State University Press, 1961.

Chall, Jeanne, Roswell, Florence G., & Blumenthal, Susan H. Auditory blending ability: A factor in success in beginning reading. The Reading Teacher, 1963, 17, 113-120.

Feldmann, Shirley C., Schmidt, Dorothy B., & Deutsch, Cynthia P. A study of the effects of auditory training on remedial reading. Paper read at American Educational Research Association, Chicago, Illinois, February 17, 1966.

Hanesian, Helen. The relationship of auditory abilities to first grade reading achievement. Unpublished doctoral dissertation, Columbia University, 1966.

Lehtiner, Laura. The brain injured child; What can we do for him? The Dallas Medical Journal, 1959, Special Edition, 15-71.

Mencher, G. T., & McCulloch, Barbara F. Auditory screening of kindergarten children using the VASC. Journal of Speech and Hearing Disorders, 1970, 35, 241-247.

Test References

Auditory Blending Test. Roswell, Florence G., & Chall, Jeanne. New York: Essay Press, 1963.

Prereading Battery. Clymer, T., & Barrett, T.C. Princeton, New Jersey: Ginn, 1969.