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Investigation of the Effectiveness of a Speech Improvement Program for Preschool Children

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INVESTIGATION OF THE EFFECTIVENESS OF A SPEECH IMPROVEMENT PROGRAM FOR PRESCHOOL CHILDREN

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CHAPTER I

INTRODUCTION

The question of whether speech therapy is necessary for preschool children with articulatory defects has been of particular concern to some public school speech therapists. Darley (1961) contends that some speech therapists working in the schools have established the practice of not scheduling children into speech therapy classes until they have reached third grade. Presumably, this reflects both their experience with developmental speech changes in young children and their present knowledge which indicates that important modifications in articulation occur in young children without corrective speech services (Poole, 1934; Roe and Milisen, 1942; Templin, 1953).

A few school districts in Washington State offer preschool speech therapy to the public under the Public School Special Education program, e.g., Richland School District #400, Pasco School District #1, and Kennewick School District #17. Parents are encouraged to bring their children in for a speech evaluation if they feel their children need special attention in speech development. Most children brought in

for evaluation are developing normal speech habits. Some children warrant special attention and special programs, which provide auditory training, language development training, and specific sound production training, are available to them.

Statement of the Problem

It was the purpose of this study to investigate the effectiveness of a speech improvement program for preschool children.

Importance of the Study

Because few school districts offer preschool speech programs and because there is a paucity of literature concerning these programs, it is difficult to ascertain the effectiveness of speech therapy at the preschool level. Weiner (1967) states in his paper, entitled, Auditory Discrimination and Articulation, that formal speech training has a positive effect on the speech development of children below the age of nine years. He goes on to say that there is a positive relationship between auditory discrimination and articulation which is seldom found above the nine year age level.

What is needed are studies to determine whether or not preschool speech improvement classes are advantageous.

Limitations of the Study

This investigation was restricted to preschool children from Richland, Washington. These preschool children's speech were developmentally below the level of their particular age group as demonstrated by Poole's Norms, (1934).

Definitions of Terms Used

For the purpose of the study the following terms were defined:

Preschool. Preschool children are children between the ages of three and five years old.

Tri-Cities. The Tri-Cities refers to Richland, Pasco, and Kennewick, Washington.

Auditory training. Auditory training is designed to enable an individual to distinguish or to recognize sounds and their differences.

Speech correction. Speech correction is the professional field which deals with the elimination and alleviation of speech defects or with the development and improvement of speaking intelligibility, sometimes distinguished from

speech improvement.

Treatment. Treatment is the different conditions under which the experimental and control groups are put.

Speech defect. A speech defect is any deviation of speech which is outside the range of acceptable variation in a given environment.

Speech improvement. The betterment of poor or average speech; sometimes distinguished from speech correction.

Organization of the Remainder of the Study

The remainder of the study enlarged on the following material:

Chapter II reviews the literature relating to preschool speech improvement programs.

Chapter III describes the research setting, data gathering methods, the selection of the sample, and follow-up methods.

Chapter IV reports the findings of the study, using the Mann-Whitney U test. An analysis of this design is included.

Chapter V combines the summary, conclusions, and recommendations.

CHAPTER II

REVIEW OF THE LITERATURE

The review of related literature is intended to justify the need for an investigation of the effectiveness of a speech improvement program for preschool children. The important question is whether a given child benefits from speech training after he has reached a specific level of physiological development. Children tend to develop feelings of inadequacy when they have a speech handicap. McCarthy (1954) observed in her article, entitled, Language Disorders and Parent-Child Relationships. Because parents also are inclined to react emotionally to such defects, it may be desirable to give speech help to young preschool and early school-age children with non-organic articulatory defects so that it may hasten the attainment of better speech and forestall undesirable attitudes (Van Riper, 1954).

Effectiveness of Speech Improvement Programs

Research has attempted to determine the effectiveness of speech correction (Reid, 1946; Carter and Buck, 1958; Durante, 1960; and Stoia, 1961), speech improvement (Wilson,

1954; Byrne, 1962; and Wilcox, 1959), and some have collated the comparative efficacy of both kinds of treatment (Sommer, et al., 1961; 1962; and 1967). These experimental findings indicate the young school-age child can attain a significant degree of correction in articulation through these corrective speech services. However, a study by Irwin (1962) indicated that 25 second-grade children did not make significant gain in articulation following a seven-month therapy program. Irwin (1963) disclosed this same finding in a study of 22 first-grade children who had therapy for seven months. A study, in which speech stimulation practices were used among 75 mothers of preschool children between the ages of two and five years, was conducted by Goda (1959). He found that the amount and kind of speech stimulation the child receives from his environment will affect the perceived need the child has for speech. Stoia (1967) supports Goda by a study in which 41 Head Start children and 38 children not in Head Start were given pre- and post-screening test from the Templin-Darley Articulation Diagnostic Screening test. Differences were obtained after eight weeks in favor of the Head Start group. Leading to the conclusion that inadequate or extreme lack of stimulation may cause slow development in speech.

Wilson (1954) did a study on the development and evaluation of speech improvement programs for kindergarten children using the consonant sounds (p, b, m, n, t, d, k, g, f, l, r, and s). The control group consisted of 114 children and the experimental group had 128 children involved for a 12-week period. The results of the study strongly supports the hypothesis that children who receive speech improvement lessons will commit fewer articulation errors on the sounds included in the program and on certain sounds not included in the program, than children who do not receive such lessons. Byrne, (1962) and Wilcox's (1959) investigations support these findings by Wilson (1954).

Articulation and Auditory Discrimination Ability

Because there is an obvious unity between speech and hearing (Davis, 1951), a significant amount of all articulation problems are increased because of the inability to discriminate between sounds; therefore, prior to articulation therapy, sound discrimination should be taught (Van Riper, 1958). Obviously, unless the subject is perfectly clear as to the sound toward which his therapy is being directed, observes Spriestersbach (1951), he cannot work effectively

to overcome his errors; thus, some measure of auditory discrimination is necessary.

Winitz (1963) used 200 first- and second-grade children in his study to determine the effects of pre-training on sound discrimination learning and found that speech-sound discrimination may be a function of either correct or incorrect learning of sounds, and that sound discrimination is developed fairly early in the life of a child. Echoic behavior or verbal imitation has been utilized as an important antecedent to successful language development by such writers as Bandura (1962) and Lewis (1967), although, Bricker (1967) found that auditory stimulation alone is not enough to elicit echoic behavior.

Anderson (1951) discovered a fairly close correlation between the phonetic contexts of misarticulation and mis-discrimination. Failure of earlier research to disclose this is not always a sign of its lack of validity.

The evidence strongly supports the hypothesis that children of kindergarten age who do not coincide with the norms of the Templin-Darley Speech Sound Discrimination Test also do not coincide with the norms in articulation ability when causal factors other than speech-sound discrimination

are eliminated. The supposition is that low speech-sound discrimination ability is causally related to poor articulation (Locke, 1968). Locke states that:

> Another possibility is that discrimination problems are the result of the articulation defect not the cause of it. We know they are "causally related" (Sherman and Geirth, 1967) but we do not know which causes which (p. 432).

Although the literature is somewhat chaotic, it has been stated that a child who has articulatory defects also has faulty speech-sound discrimination as well and therefore, will not perform as well as the normal child (Kronvall and Diehl, 1954; Cohn and Diehl, 1963).

In Support of Preschool Speech Programs

We must carefully tread the path of not making too heavy and too early demands on the speech skills of the preschool child, Barbara (1960) observed. At the same time, speech skills must be taught as soon as the child is physically ready for them.

Barbara (1960) went on to relate that the three-year-old child is on the way to becoming a good listener. To cultivate his receptivity is an important way to help him develop good listening habits.

At four, the child is becoming very much the conversationalist and as he talks, he improves his vocabulary, sentences, and articulation. He should be able to produce three-fourths of all speech sounds correctly. However, it is still completely normal for him to regress occasionally into some infantile language (Barbara, 1960).

If the child articulates speech sounds correctly, he is apt to speak in good sentences. If he articulates speech sounds poorly, he is apt to speak in poor sentences. For the greater the preschool child's success with one aspect of speech and language, the greater is the probability that he will have success in other aspects as well. Good speech and language are not ornaments, but are, on the contrary, the very framework of the child's personality (Barbara, 1960).

CHAPTER III

METHOD OF PROCEDURE

It was the purpose of the study to investigate the effectiveness of a speech improvement program for preschool children. The following methods were used to collect the data.

Sample

The sample was obtained by public announcements made over the local radio stations, KEPR, KORD, and KSMK, and a notice was put in the local newspaper, The Tri-City Herald.

These two public services informed the residents of Richland about the annual Preschool Speech Program. The parents responded by bringing their children into the Special Education Department for a speech evaluation. The 50 Screening Test items from the Templin-Darley Articulation and Diagnostic Test were used for the evaluation. The children who displayed lower than average speech development for their particular age level as designated by Poole's Norms (1934)were selected for the study.

Of thirty-one children evaluated, ranging in age from

three to five years old, fourteen were found to possess lower-than-average speech development for their age level. On a random basis, these fourteen were divided into the control group and the experimental group.

The experimental group was given auditory training over a three-month period, four days a week, and thirty minutes each session. The control group was dismissed and retested three months later with the experimental group.

Instruments Used

The Templin-Darley's 50 Screening Test items from the Templin-Darley Articulation and Diagnostic Test were used only because of its selection of pictures which were found best to discriminate between good and poor articulation of preschool children.

Templin reported the test-retest reliability of the 50 Screening Test items. These items were elicited in test words and test sentences twice within eight days from 57 nursery school and kindergarten children. She reported that "the test-retest reliability coefficients. . . ranged from .93 to .99 on single age groups between two and five years for both tests. The coefficients between the scores on the

word and sentences tests obtained at a single session ranged from .97 to .99." The lowest correlation at any single age level between the 50 and 176 items of the Diagnostic Test is .94 (Templin-Darley, 1960).

Poole's Norms were obtained from a study continuing over a three-year period and involving 140 preschool children. It was conducted to study their ability to articulate consonant sounds in words. Simple short tests were used consisting of isolated words evoked as responses to stimuli of objects, pictures, and questions. The twenty-three consonant sounds considered in this study were: p, b, m, w, wh, v, f, t, d, n, th as in the, th as in thin, zh, sh, z, s, l, r, y, g, k, ng, and h. Poole concluded that for most of these sounds, there is definite and regular progression toward efficiency of articulation from two and one-half, to five and one-half years of age.

Because the two groups used were small the nonparametric Mann-Whitney U test was used to test whether two independent groups had been taken from the same population. The Mann-Whitney U test is an excellent alternative to the paramatric t test when the measurement in the research is weaker than interval scaling and it does not have the restrictive

assumptions and requirements associated with the t test (Siegel, 1956).

Procedure Used

The experimental group was first made conscious of sounds in their environment. Secondly, they were aided in the development of the ability to recognize and classify sounds using gross sounds first and then sounds which were more difficult to recognize or classify, e.g., proceed from distinguishing the sound of the bell from the sound of a drum to the point at which different bells or different sounding drums were distinguished one from another by sound alone. Finally, fine sound discrimination was taught. Again, procedures were from simple to complex. Counting, learning simple jingles which have rhythm patterns, recognizing and rhyming words, and recognizing words beginning with the same sound was the final step (see Appendix).

CHAPTER IV

RESULTS OF THE STUDY

The study was designed to investigate the effectiveness of a speech improvement program for preschool children. The important question was whether a given child benefits from speech training after he has reached a specific level of physiological development.

Because the two groups used were small, the nonparametric Mann-Whitney U test was used to test whether two independent groups had been taken from the same population. Because of the number of ties, the corrected formula for ties was used (see Table 2). The Mann-Whitney U test is an excellent alternative to the parametric t test when the measurement in the research is weaker than interval scaling, and it does not have the restrictive assumptions and requirements associated with the t test (Siegel, 1956).

The scores in Table 1 indicate the number of defective sounds that were corrected over a three-month period. All children involved in this study corrected their particular sounds that had fallen below Poole's Norms for their particular age range, with the exception of one 3½ year

old boy.

When examining cursorilly Table 1, R_1 does indicate a trend in favor of those who received speech training although no significant difference was observed. Further computations resulted in a z score of 1.04. The significant levels for .05 is 1.64, therefore, if there are differences between those who received speech training and those who did not, they were not large enough to show up in this sample (see Table 2).

Table 1. The number of corrected sounds and relative rank scores within the total group.

Experimental Scores	Rank	Control Scores	Rank
13	14.0	9	13.0
7	11.0	8	12.0
6	9.5	5	6.5
6	9.5	5	6.5
5	6.5	2	3.5
5	6.5	1	2.0
2	3.5	0	1.0
TOTAL	R_1 60.5		R_2 44.5

Table 2. Computation of the Mann-Whitney U for the ranked data in Table 1.

$$U = n_1 n_2 + \frac{n_1 (n_1+1)}{2} - R_1$$

$$= (7)(7) + \frac{7(7+1)}{2} - 60.5$$

$$= 16.5$$

$$Z = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\left(\frac{n_1 n_2}{N(N-1)}\right)\left(\frac{N^3 - N}{12} - \Sigma T\right)}}$$

$$Z = \frac{16.5 - \frac{(7)(7)}{2}}{\sqrt{\left(\frac{(7)(7)}{14(14-1)}\right)\left(\frac{(14)^3 - 14}{12} - 6.0\right)}}$$

$$= 1.04 \qquad P=.1492$$

Ties

2 scores of two

4 scores of five

2 scores of six

$$\Sigma T = \frac{(2)^3-2}{12} + \frac{(4)^3=4}{12} + \frac{(2)^3-2}{12} = 6.0$$

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The study was designed to investigate the effectiveness of a speech improvement program for preschool children. Authorities in the field of speech correction and public school speech therapists all have conflicting opinions on the subject. Parents and children express concern in their own manner in a world that puts more and more emphasis on oral communication. Few studies, pertaining to speech improvement at the preschool level have been recorded.

Only preschool children were used in the study and Poole's Norms were used as the criterion for their speech developmental level. Fourteen children were involved in the study, seven in the experimental group that received auditory training for three months and seven in the control group that received the pre-test post-test only.

Most literature reviewed was related literature, owing to the fact that very few studies were actually conducted on preschool children that pertained to their speech improvement.

The Templin-Darley 50 Screening Test items were used as a word stimulator only and the pre-test post-test method was utilized to determine growth in both the control and experimental groups.

Conclusions

Using the Mann-Whitney U test it was concluded that, statistically, no significant differences were observable between the experimental and the control groups. However, as indicated by the Mann-Whitney U, the 1.04 level of significance probability is approximately 15% which indicated that there was some difference related to something other than random chance. The results suggested that a larger sampling might uncover different results.

Recommendations

It is felt that this research shows excellent promise and the results should be held in abeyance until further studies of this nature can be carried out.

It is recommended that these fourteen children involved in this study be followed through the second grade and periodic records made of all speech deviate sounds during this time.

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APPENDIX

APPENDIX

Daily record of Auditory Training Program beginning October 23, 1968, and terminating February 6, 1969.

October 23, 1968

. Introduce lip, tongue, and jaw exercises by telling the story of Peter Pony where your tongue is the pony. (Always use mirror with this exercise)

October 24, 1968

. Listening to gross sounds such as bell, drum, frog clicker, whistle, etc. First play with these noise makers then place them on a table and have the children hid their eyes. Make a sound with one of these noise makers and have the children identify the source of the sound.

. Review Peter Pony story and tongue exercises using the mirror

October 28, 1968

. Review tongue exercises
. Review Listening and identifying sounds
. Introduce instruments that make similar sounds such as a large and small bell, a two sided drum and a one sided drum, etc. Use same approach as using the noise makers.

October 29, 1968

. Review sound identification exercises
. Introduce different rhythms by clapping hands. First the clinician claps a beat then the children imitate the beat.
. Introduce different rhythms by hiting objects with the metal end of a pencil. See if the children can copy the sequence by the sound each object makes.

October 30, 1968

- Review tongue exercises
- Review clapping to beat and with different sounding objects.

October 31, 1968

- Review identifying sounds
- Introduce exercise of following orders. First one order then two, then three. E.g., stamp your feet, turn around, jump up and down, etc.
- Introduce rhyming by using the child's name. Exposing the child to many rhyming words that rhyme with objects they know. E.g., chair-hair, bed-red, cat-hat, etc.

November 4, 1968

- Review tongue exercises
- While mirror is being used rhyme nonsense sounds using exaggerated mouth movements and funny faces. E. g., moo, too, boo/ bee, mee, see,/ etc.
- Review rhyming names and familiar objects

November 5, 1968

- Review clapping with a beat
- Review rhyming nonsense sounds in mirror
- Introduce 9 picture cards. Each group of 3 pictures rhymed (Cat, hat, bat - goat, coat, boat-cake, snake, rake, were used.) A word was given such as "rat" and the children were to find the three pictures that rhymed with that word. Other words were thought of that rhymed with the pictures.

November 6, 1968

- Review following commands
- Review matching pictures that rhyme using new pictures and more of them.
- Introduce rhyming game on the order of Bingo using pictures rather than numbers and rhyming pictures to match it with. E.g., if you want the children to put a button on "Boy" you say "Toy" and they have to find the rhyming picture and put a button on it.

November 7, 1968

- Review Peter Pony story with mirror
- Review rhyming nonsense sounds in mirror
- Introduce mimeograph paper and have children find pictures on the paper that rhyme.
- Review Rhyming Bingo game

November 12, 1968

- Review rhyming nonsense sounds in mirror
- Have children imitate isolated sounds produced by therapist in mirror. E.g. B, K, M, T, S, P, F, O, Etc.
- Review matching pictures that rhyme using more pictures each time.

November 13, 1968

- Mouth letter like "L," that is, don't give it a sound. Have the children put the sound to it. (use mirror)
- Review imitation of isolated sounds produced by the therapist
- Review Rhyming Bingo game

November 14, 1968

- Introduce notebook that they will begin working on. The therapist will give each child a folder with their name on it. They will be given a new sound every Thursday (the last day of school each week for them) and they, with the help of their parents will cut out five pictures that begin with that sound and bring these pictures to school on Monday on a plain sheet of typing paper in their notebook for the therapist to inspect. These notebooks will be kept at home the remainder of the week.
- Introduce the "L" sound by using a mirror. Showing children pictures that begin with this sound, and asking them to say the pictures name and begin the name by lifting the tongue high and touching the back of the top front teeth.

November 18, 1968

- Review pictures that begin with the "L" sound using the mirror
- Imitate nonsense sounds beginning with the "L" sound using the mirror, (le, le/li, li/lo, lo/ etc.)
- Six picture cards beginning with "L" were put on the table face up. After the children took a good look they were turned over but left in the same place. The children were to say the name of the card they remembered and point to it, before picking it up to look at it. They have to have the correct card and they have to attempted the correct "L" sound. If they are wrong on either counts they are to turn the card over and leave it where it was. The next child will then take his turn. (This game will be referred to as concentration.)

November 19, 1968

- Louise the Lazy Listener story was told to emphasize the importance of listening and to expose them to the "L" sound with a different approach.
- Go Mo cards were used that had the "L" sound in the initial position.

November 20, 1968

- Review the game of Concentration using the "L" sound.
- Identifying picture cards that begin with the "L" sound.
- Have children tell the story of Louise the Lazy Listener with attempts made to use the correct "L" sound.

November 21, 1968

- Review "L" sound in nonsense sounds using the mirror
- Review the game of trying to find pictures that begin with the "L" sound.
- Introduce the "M" sound for the weekend.

The same program was continued from November 18, to November 21, 1968, that is, intorducing a new sound every Thursday, cutting out pictures over the weekend that begin with that particular sound, and reviewing that sound until the following Thursday with minimal changes in sequence and approach.

The sounds practiced were:

November 25-27 and December 2-5	M
December 9-12	K
December 16-19 and January 6-9	S
January 13-16	F
January 20-23	P
January 27-30	SH
February 3-6	Review all sounds