

AN EXPERIMENTAL PROGRAM DESIGNED TO ENHANCE
THE LANGUAGE DEVELOPMENT OF
KINDERGARTEN CHILDREN

By

DAVID LELAND NORRID

Bachelor of Arts

Northeastern State College

Tahlequah, Oklahoma

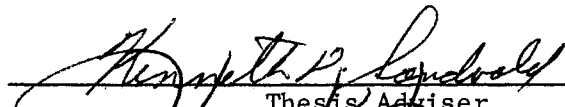
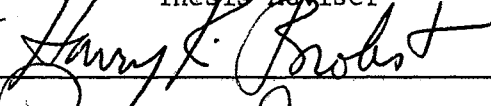
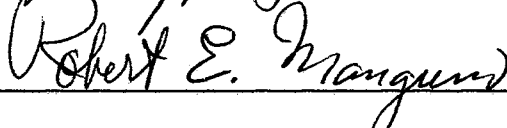

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Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
Master of Science
May, 1972

NOV 13 1972

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Thesis Approved


Thesis Adviser



Dean of the Graduate College

ACKNOWLEDGMENTS

I wish to acknowledge all those in the Psychology Department who offered guidance and advice. In every case I encountered sincere enthusiasm and encouragement. I wish to express my gratitude to Dr. Kenneth Sandvold for sharing with me his interest for this subject. To Dr. Robert Mangum and Dr. Harry Brobst, I would like to express my appreciation for their interest, advice and guidance.

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CHAPTER I

THE PROBLEM

Educators and psychologists, working in an educational setting, have become increasingly concerned with the various components of developing language. It is possible that by defining these components an avenue for remediating specific deficiencies will be provided. An instrument currently designed for specific language remediation is the "1968 Revised Edition of the Illinois Test of Psycholinguistic Abilities" (ITPA) (McCarthy and Kirk, 1968).

Since various studies have questioned the validity of the ITPA as an instrument that purports to diagnose specific psycholinguistic areas, the ITPA will be reviewed in terms of its theoretical foundations and empirical outcome. Three of the available nine subtests were used in the present study, Auditory Reception (Decoding)¹, Auditory (Vocal) Association, and Grammatic Closure (Auditory-Vocal Automatic).

Theoretical Model

The ITPA is based on a communication model postulated by Osgood (1957). The instrument consists of three levels, and two stages between stimulus and response. The first level is the projection level

¹The terms in parenthesis are those terms used in the 1961 Edition of the ITPA.

of organization, which is determined by "wired-in" neural mechanisms. The second level is the integrative level, which is concerned with organizing and sequencing neural events--both incoming and outgoing. The third level is the representation level, which exists at that point whereby the incoming neural events are terminated and outgoing neural events are initiated. The two stages are decoding and encoding, and are applicable to the three levels. The decoding processes appear concerned with interpreting environmental stimuli. The encoding processes seem to express the intentions of the organism.

From the above model, Kirk and McCarthy (1961) developed the clinical model of the ITPA. It is presented in three dimensions: (1) channels of communication; (2) levels of organization; and (3) psycholinguistic processes.

The first dimension, channels of communication, consists of auditory input, vocal output, visual input and motor output. The second dimension consists of two levels of organization. The first level of organization consists of the representational level which is sufficiently organized to mediate the meaning or significance of symbols. The second level of organization is the automatic-sequential level which is concerned with activities of a more habitual nature, including acquisition of symbol sequences, response chains, closure, and the ability to predict future outcomes from past events. The third dimension, psycholinguistic processes, consists of three processes which are based on habits required for normal language development. The first habit required is decoding, then associations, and then encoding. Decoding is the receptive ability to obtain meaning from linguistic stimuli. Association is the internal manipulation of

linguistic symbols. Encoding is the ability required for expression.

From the above theoretical model, nine clinical subtests were subsequently derived. The clinical model of the ITPA is presented in Figure 1. As is noted, the three subtests used in the present study are numbered 1, 3, and 7.

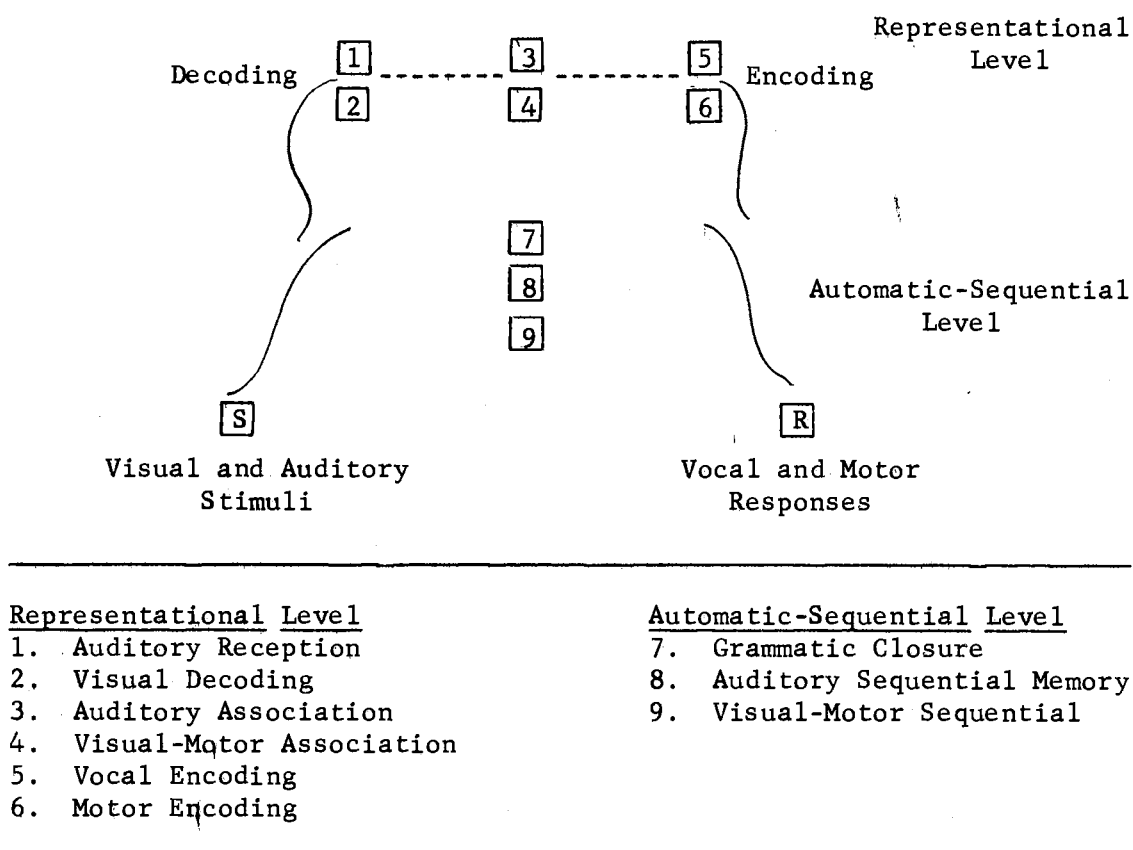


Figure 1. The clinical model for the Illinois Test of Psycholinguistic Abilities. (Kirk and McCarthy, 1961, p. 402)

Standardization of the ITPA

The ITPA was administered to 700Ss. Fifty Ss (25 male and 25 female) were used at each six month interval from age 2-6 and 9-0 years. Only those Ss who fell within two months of the full year or half-year birthday were used. Weener, et al., (1967) reported less intrasubject variability using the above selection procedure. Ss were relatively homogeneous. Children who obtained an IQ between 80 to 120, as measured by the 1937 revision of the Stanford Binet, were used in the study. Weener, et al., (1967) cited this procedure as offering a spuriously low estimate of variability. Mittler and Ward (1970) asserted that the IQ restrictions may partially account for the low correlation coefficients found between subtests.

Organically handicapped Ss and black Ss were systematically excluded from the standardization sample. A small number of Ss from rural areas were included in the standardization sample. Sigel and Perry (1968), studied 25 black children from a "culturally deprived area" ranging in age from 2-2 to 6-0 years using the ITPA. The results indicated that there was little basis in referring to a group of "culturally deprived" black children as being a homogeneous group. The authors found intersubject variability among black Ss to be greater than in the standardization sample. The Ss averaged lower than the ITPA norms on 7 of the 9 subtests. The two exceptions were auditory vocal sequencing and auditory decoding.

In the standardization population McCarthy and Kirk (1963) found the internal consistency correlation coefficients per subtest, across all ages, to range from .89 to .95. Other studies have also shown the

reliability to be acceptably high. (Mittler and Ward, 1970; Weener et al., 1967)

Most studies have shown the ITPA to have low validity coefficients. Weener et al., (1967) offer a few possible explanations. 1. Lack of adequate criterion tests which tap the same abilities as the ITPA subtests, 2. The validity coefficients would tend to be depressed due to the relative homogeneity of the sample and the restricted nature of the test. 3. The subtests may not be measuring what they purport to measure.

Ryckman and Wiegerink (1969) did a comparison of 18 factor analysis studies involving the ITPA. Their results show an age trend with the younger ages having less factors than the older age groups. At ages 2-6 and 3-0 there were only two factors whereas all succeeding age groups had from three to five factors.

The ability of the ITPA to differentiate communication channels was shown. There was at least one strong auditory-vocal factor in 15 of the 18 groups studied and 13 of the 18 groups expressed at least one visual-motor factor.

An attempt to discern communication levels in the factor studies met with less success. Neither the representational nor the automatic sequential level presented a significant amount of homogeneity of factor loadings.

In an inspection of the communication processes, it was found that neither the decoding nor the association-memory processes were single unitary dimensions. However, two encoding subtests were found to measure similar dimensions.

Summary

A review of the literature does not lend much support to the proposition that the ITPA discerns discrete factors in accordance with the theoretical model it is based upon.

Factor analytic studies did reflect a fairly strong auditory-vocal channel as well as a visual-motor channel. However, neither communication levels, nor communication processes were identified by factor analysis.

The low validity may be due to a number of factors. First, the lack of criterion tests. That is, other accepted tests, or measurements that would provide a point of comparison. Second, the validity coefficients may be considered spuriously high due to the homogeneity of the standardization sample. Third, there is the possibility that the tests may not be measuring what they purport to measure. That is, is a subtest such as auditory association really tapping the psycholinguistic process of auditory association.

CHAPTER II

METHOD

It was the intent of the present investigation to measure the effects of a remedial program designed to attempt the remediation of a group of kindergarten children who had experienced difficulties in general language development during the regular school year. The hypothesis being that the Ss would make significantly greater average monthly gains in LA during the experimental summer program than their average monthly gains during the regular school year.

In order to ascertain in what particular area the children were deficient, three subtests of the "1968 Revised Edition of the Illinois Test of Psycholinguistic Abilities Test" (ITPA) (McCarthy and Kirk, 1968) were used. This instrument was chosen for two reasons. Firstly, though in need of further validation studies, the ITPA appears to be a promising and much needed diagnostic tool. Secondly, there is a programmed remedial text by Valett (1967) "The Remediation of Learning Disabilities" that is specific to the ITPA.

McCarthy (1963) reported that in order to develop adequate language usage one must gain a command of the receptive, inner, and expressive use of language. The present study addresses itself to these processes, but is confined to the auditory and vocal channels. The receptive process was tapped by the auditory reception subtest; the inner process by the auditory association subtest; and the expressive

process by the grammatic closure subtest.

The auditory sequential memory subtest was administered to provide a supplementary insight into the child's potential anxiety interference and as a tool for discerning the possibility of organic damage in the subject.

The Peabody Picture Vocabulary Test was also administered as a gross visual perception screening device and as a source of obtaining a visual language maturity index.

Subjects

The subjects consisted of 16 children ranging in chronological age from 5 years 8 months to 6 years 8 months. The average age was 6 years 2½ months. These Ss were chosen as a result of teacher recommendation and test results. The teacher recommendations were based on the assertion that the child was experiencing difficulties in general language development. Each S was then screened with the following considerations in mind: (1) the S must not be considered mentally retarded by the school psychologist; (2) the S's difficulties were not primarily related to the physical or sensory handicap; and (3) the S scored at least six months below his C.A. on any one or more of the following ITPA subtests: auditory reception, grammatic closure, or auditory association.

Procedure

The program was set up in cooperation with the North Fayette School District, West Union, Iowa. Three experienced teachers and one kindergarten classroom were provided. There were sixteen Ss in the

program which provided approximately a one to five teacher-pupil ratio. The Ss were in the classroom three hours per day for a period of six weeks.

The program was initiated by explaining to the classroom teachers the theoretical considerations of the particular ITPA subtests used. They were then introduced to "The Remediation of Learning Disabilities" (Valett, 1967), which is a programmed text based on the ITPA. It was then explained how the Peabody, Level II Kit might be used as an expressive supplement to "The Remediation of Learning Disabilities".

The result of the pre-testing on the Ss was then made available to the teachers. A discussion followed, which permitted the teachers to ask specific questions about particular Ss. The Ss were then grouped in terms of their expressed deficiencies on the ITPA. It was made clear to the teachers that these groupings would be initiated from test scores, however, after the first week, teachers were free to modify the groupings as needed. For example, if an S was doing poorly in auditory reception, so that he could not stay up with his peers, he was to be tutored individually. On the other hand, if an S had been placed in an auditory reception group and had made significant progress, then he was to be taken out of the former group and placed in a group that was at a higher level, or in a group that was emphasizing another area in which he might be deficient.

CHAPTER III

RESULTS

Both language age (LA) scores and standard scores were used in computing the results. These scores were obtained from tables provided in the ITPA Test Manual (McCarthy and Kirk, 1968). A summary of the raw data is shown in Tables II and III.

A comparison was made between the gains during the regular school year and gains during the experimental summer period for the 12 Ss who had been tested in the screening program the preceding fall. The hypothesis was that Ss would make significantly greater gains in the summer program than during the regular school year. The prediction was tested by taking three subtests (auditory reception, auditory association and grammatic closure) and thus deriving the average monthly gains in LA for both the summer program and regular school year. The average monthly gains in LA are presented in Table I. The mean gain differences were tested by a t test of differences between paired observations (Snedecor and Cochran, 1967). Monthly gains on the three subtests were in the predicted direction, but only auditory association reflected significance at the .05 level (t = 2.023; d.f. = 11; $p < .05$). Thus, the hypothesis that significantly greater gains would be made during the summer program as compared to gains made during the regular school year was partially supported.

TABLE I
AVERAGE MONTHLY GAINS IN LANGUAGE AGE FOR
THE REGULAR SCHOOL YEAR AND THE
EXPERIMENTAL SUMMER PROGRAM

	Auditory Reception	Grammatical Closure	Auditory Association
Regular school year	.83	1.18	1.71
Experimental summer program	3.78	1.53	2.00

TABLE II

LANGUAGE AGE (LA) SCORES OBTAINED DURING KINDERGARTEN INTRANCE SCREENING (Kdg Scr); PRE-TESTING FOR THE EXPERIMENTAL SUMMER PROGRAM (Pre T); AND POST-TESTING AT THE TERMINATION OF THE EXPERIMENTAL SUMMER PROGRAM (Post T). Ss 14 THROUGH 16 WERE NOT AVAILABLE FOR THE SCREENING

<u>S</u>		Auditory Reception	Grammatical Closure	Auditory Association
1.	Kdg Scr	6-0	4-10	5-3
	Pre T	6-3	5-6	6-0
	Post T	6-5	5-6	6-2
2.	Kdg Scr	4-10	4-2	4-7
	Pre T	4-5	4-5	5-5
	Post T	4-7	4-5	5-3
3.	Kdg Scr	5-0	3-10	4-5
	Pre T	5-0	4-2	6-9
	Post T	6-8	5-4	6-2
4.	Kdg Scr	4-5	4-10	5-1
	Pre T	4-1	5-10	5-7
	Post T	5-8	6-0	5-3
5.	Kdg Scr	4-1	4-5	3-11
	Pre T	6-3	5-2	5-3
	Post T	6-3	5-2	6-0
6.	Kdg Scr	4-5	5-2	4-7
	Pre T	8-7	6-2	6-0
	Post T	7-3	6-0	6-2
7.	Kdg Scr	5-6	5-4	4-7
	Pre T	4-7	6-5	6-2
	Post T	5-4	6-8	6-6
8.	Kdg Scr	4-10	4-5	5-5
	Pre T	6-10	5-10	6-0
	Post T	7-0	6-2	7-8
9.	Kdg Scr	6-3	4-10	5-7
	Pre T	5-10	6-0	6-0
	Post T	7-6	6-0	7-8
10.	Kdg Scr	3-6	4-8	4-9
	Pre T	4-5	4-5	5-7
	Post T	5-6	5-2	5-5
11.	Kdg Scr	4-7	4-2	4-9
	Pre T	5-0	5-6	5-7
	Post T	6-0	5-6	6-6
12.	Kdg Scr	6-3	5-2	5-7
	Pre T	4-3	4-8	6-2
	Post T	6-10	6-0	6-9

TABLE II (Continued)

<u>S</u>		Auditory Reception	Grammatical Closure	Auditory Association
13.	Pre T	4-7	5-6	6-2
	Post T	6-3	5-8	6-2
14.	Pre T	4-1	5-6	5-9
	Post T	5-10	5-6	6-0
15.	Pre T	4-7	5-4	4-3
	Post T	4-7	5-0	5-5
16.	Pre T	4-10	6-2	5-5
	Post T	6-0	6-2	5-3

TABLE III

STANDARD SCORES DERIVED FROM PRE-TESTING (Pre T) AND
 POST-TESTING (Post T). THE SCORES ARE BASED UPON
 A MEAN OF 36 AND A STANDARD DEVIATION OF 6

<u>S</u>		Auditory Reception	Grammatic Closure	Auditory Association
1.	Pre T	34	28	31
	Post T	35	28	32
2.	Pre T	27	20	28
	Post T	26	19	25
3.	Pre T	31	20	39
	Post T	38	28	34
4.	Pre T	27	36	34
	Post T	36	38	30
5.	Pre T	38	28	28
	Post T	38	28	35
6.	Pre T	46	36	33
	Post T	29	32	32
7.	Pre T	30	42	38
	Post T	33	41	38
8.	Pre T	39	32	33
	Post T	38	34	41
9.	Pre T	34	34	33
	Post T	42	34	43
10.	Pre T	27	20	30
	Post T	30	25	26
11.	Pre T	27	28	28
	Post T	33	28	34
12.	Pre T	26	22	34
	Post T	39	34	38
13.	Pre T	30	33	38
	Post T	38	32	36
14.	Pre T	27	33	35
	Post T	35	31	35
15.	Pre T	30	32	20
	Post T	30	28	32
16.	Pre T	30	37	30
	Post T	35	36	26

Secondly, consideration was also given to the hypothesis that after the summer treatment program, an increase in relative standing in LA as compared to the normal population would be observed.

The above prediction was tested by using Ss standard scores on the subtests of auditory reception, auditory association, and grammatic closure. A t test of differences between paired observations was applied to the above data. A summary of the standard scores before and after the summer program is shown in Table II.

The analysis of the results of the standard scores indicated that the changes in scores on the auditory reception subtest were found to be significant at the .05 level ($t = 1.784$; d.f. = 15; $p < .05$). Pre to post scores on the auditory association and grammatic closure did not reach statistical significance ($p < .05$). The second hypothesis was only partially supported.

The difference in the results on the LA data and the standard scores data may possibly be due to the fact that the LA data was based on only 12 Ss whereas the standard score data was derived from 16 Ss.

CHAPTER IV

DISCUSSION

The results of the present study lend partial support to the hypothesis that significantly greater gains in average monthly language age would be observed during the experimental program than during the regular school year. Auditory association, a critical feature of language development, significantly increased during the experimental program. Auditory reception and grammatic closure probably failed to reach statistical significance due to the apparently expanded LA scores derived from the ITPA Test Manual (McCarthy and Kirk, 1968). For example, a raw score of 17 on the grammatic closure subtest yielded an LA score of 6-0 years, but a raw score of 21 (an increase of only four correct responses) yielded an LA score of 7-0 years. Thus, an average increase of 3 months per correct response is shown. Auditory reception and auditory association scores showed a range of a 2-5 month increase in LA per correct response. Therefore, had all Ss obtained an increase in LA at each of the consecutive testings, the larger LA increments might have possibly served to intensify the statistical significance of the results. This was not the case, however. For example, one subject showed an average monthly gain in auditory reception of approximately 7 months during the school year. However, during the summer program he showed an average monthly loss of 7 months. Thus, the possibility exists that intrasubject variability and a small

N served to weaken the statistical results. Also, each S was tested by the same examiner in the same room on all three occasions. Thus, it appears that the concurrent validity of the ITPA subtests may require further examination.

An analysis of the data showed that after the summer treatment program an increase in relative standing in auditory reception in comparison to a normal population was observed. The hypothesis was partially supported. Auditory association and grammatic closure probably failed to reach statistical significance due to the apparent expanded standard scores derived from the ITPA Test Manual. For example, an increase of four raw score points (from 17 to 21) on grammatic closure yields a six or seven point increase in standard score. Intersubject variability is shown as dependent upon the S's age group. The standard scores are based on the mean of 36 and a standard deviation of 6. Thus, if the age groups studied showed an increase in raw score from 17 to 21 then an increase of one standard deviation would result. Therefore, the possibility exists that the intrasubject variability and a small N served to weaken the results here also.

Since auditory association showed a significant increase in LA score, and since auditory reception showed a significant increase in standard score it can be tentatively concluded that significant gains in language development occurred as a result of an experimental summer treatment program.

CHAPTER V

SUMMARY

The present study investigated the effects of a concentrated short term program on the enhancement of language development in 16 post-kindergarten children. It was predicted that the average monthly gains in language age during the summer program would be greater than the average monthly gains in language age during the regular school year for the experimental Ss. The Ss were chosen on the bases of teacher recommendations, and scores of at least six months below his C.A. on at least one of three subtests of the ITPA. Subtests used were auditory reception, auditory association, and grammatic closure. Ss were enrolled in a six week, half-day program aimed at remediating their specific difficulties as reflected by the testing results. There were three experienced teachers working directly with the Ss.

The first hypothesis was partially supported by the results. Comparative gains were found to be significant in auditory association, but not in auditory reception or grammatic closure. The second hypothesis was partially supported by the finding of significant gains in the auditory reception area, but not in auditory association, or grammatic closure areas. The results were discussed in terms of the individual variability and the expanded LA scores and standard scores derived from the ITPA Test Manual.

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VITA

David Leland Norrid

Candidate for the Degree of

Master of Science

Thesis: AN EXPERIMENTAL PROGRAM DESIGNED TO ENHANCE THE LANGUAGE
DEVELOPMENT OF KINDERGARTEN CHILDREN

Major Field: Psychology

Biographical:

Personal Data: Born in Tulsa, Oklahoma, March 28, 1943, the son
of Mr. and Mrs. Leland Norrid.

Education: Graduated from High School, Tulsa, Oklahoma, in 1961;
attended the University of Maryland, Far Eastern Division,
Yokohama, Japan; attended Central State College, Edmond,
Oklahoma; received the Bachelor of Arts degree from
Northeastern State College, Tahlequah, Oklahoma, August,
1967; completed requirements for the Master of Science
degree from Oklahoma State University, May, 1972.

Professional Experience: Psychiatric Technition Trainee,
Metropolitan State Hospital, Norwalk, California, September
1964 to December 1964; half-time teaching assistant,
Department of Psychology, Oklahoma State University,
academic years, 1967-1969; Psychological Technician, Eastern
State Hospital, Vinita, Oklahoma, summer, 1968; School
Psychologist, Chickasaw and Fayette Counties, West Union,
Iowa, August, 1969 to present.