

A Preliminary Investigation Into the Application Of an Auditory Approach Using Non-Variable Materials In The Treatment of Aphasia: Two Case Studies

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Introduction

Fifty-six year-old post-CVA Patient A had received speech and language therapy at the San Bernardino Community Hospital Rehabilitation Center for 14 months and had shown only minimal gains. Patient B, also 56 years old, had been receiving therapy for four months, and although he was making some gains, appeared to be repeating the pattern which Patient A had followed. If so, he would soon plateau and progress would cease or become minimal. Up to this point, treatment time had been divided between work on auditory and on verbal skills. Both patients had learned to imitate short phrases fairly well but had shown little improvement in any other areas of speech and language. At one month post-CVA, both patients had failed all subtests on Schuell's Short Examination for Aphasia.

At one month post-stroke, both Patient A and Patient B could be described as Group I in Schuell's classification system, viz, "patients make errors pointing to common objects named by the examiner. These patients have no functional speech, reading, or writing. They cannot name objects, answer questions, read, or write, although they can sometimes match simple words to pictures (Schuell, 1974, P. 352)."

Since both patients were young, a new program based on intensive auditory training was designed in an attempt to further increase their language abilities.

Purpose of Study

- A. To determine the validity of a total auditory approach to the treatment of severely involved aphasic individuals.
- B. To determine if the auditory nature of tasks is more important than the use of a variety of stimulus materials. In this study, only ten stimulus pictures or portions thereof were used throughout the entire program.

Procedure

Two months prior to the beginning of the project, both subjects were administered the Porch Index of Communicative Ability. The PICA was presented again at the time the study was started. As both patients showed some gains in two months, in order to demonstrate treatment effects, each patient had to demonstrate significantly greater improvement on the PICA between the start of the study and two months later, than between the pre-test and the test given at the beginning of the study.

A series of ten action pictures which could be described by subject-verb-object (present progressive tense) constructions were selected to be used throughout the project. All pictures were from the MOTIVATION AND LEARNING-CENTERED TRAINING PROGRAMS FOR LANGUAGE DELAYED CHILDREN by Mecham. They were chosen because of their simplicity and uncomplicated backgrounds.

However, they were child-oriented and, although they worked well in this program, we would suggest that simple adult-type stimulus pictures be used, if possible. Both patients received one hour per day of language stimulation in the home. The experimental treatment program was followed at home and the wives of both patients were instructed with regard to presentation and timing of the tasks. Tasks were set up and progress was charted using La Pointe's Base 10 form. The project started with the first three tasks and the patient was not allowed to progress to the next task until he met a criterion of 100% correct three consecutive times. Treatment sessions were conducted three times weekly.

The program moved through a hierarchy from simple to complex auditory tasks. These varied from basic auditory recognition to more difficult auditory retention tasks. The patients were required to give a verbal response only at the end of each auditory task.

The tasks were set up as follows:

1. Locate BOY and GIRL from field of 10 pictures (all nouns removed from the basic stimulus pictures). Pictures of boy and girl were placed with 8 other pictures. All pictures were verbally requested but success on locating the BOY and GIRL was the only response charted. The task was repeated 5 times in order to record 10 responses for BOY and GIRL. At the end of the task, the pictures of BOY and GIRL were shown randomly with other nouns and the number of times the patient correctly named BOY and GIRL was charted.
2. Locate other nouns (ball, apple, milk, money, box, tooth, tree, dolls, book, shirt) from a field of ten pictures. This task was repeated five times and the patient's response was recorded on the fifth trial. At the end of the procedure, the patient was requested to name each picture and his verbal responses were recorded. (If the patient exhibits noise build-up, it is recommended that his responses be recorded first, with practice times following)
3. Locate the verbs from a field of ten pictures (is kicking, is picking, is drinking, is counting, is opening, is pulling, is climbing, is cutting, is reading, is washing). This task was repeated five times and the patient's responses were recorded on the fifth trial. At the end of the procedure, the patient was requested to name each verb and his responses were recorded.
4. (Presented after the completion of the criterion set for #2)
Locate two nouns serially upon request from a field of ten. Ask for the item listed on the score sheet plus one other item selected randomly. Again the task was repeated five times and the patient's response was recorded for the fifth trial. At the end of this procedure, the patient was requested to name each picture and his responses were recorded.
5. (Presented after the completion of the criterion set for #3)
Locate two verbs serially upon request from a field of ten. This was done in the same manner as #4. At the completion of the task, the patient was requested to name each verb and his responses were recorded.
6. After the patient could accomplish Task #4 (locating two nouns serially), he was requested to locate three nouns serially from a field of ten. He was asked for the item listed on the score sheet plus two other items selected randomly. The patient was required to locate the item in the order given to be scored correct. As always, the task was repeated five times and the fifth trial was scored. When the task was completed each day, the patient was requested to name the nouns and responses were recorded.
7. When the patient could accomplish Task #5 (locating two verbs serially), he was requested to locate three verbs serially from a field of ten. This was done in the same manner as #6. When the task was completed, the patient was requested to name each verb and his responses were recorded.

8. All words which were needed for constructing sentences which described the stimulus pictures were placed on the table. A sheet with WHO-VERB-WHAT was set beside the patient along with the stimulus pictures. The patient was requested to construct sentences regarding the stimulus pictures as named by selecting the correct words and placing them under the proper category (WHO-VERB-WHAT). Half of the pictures were used at a time to prevent cluttering of the field. After completion of the task, the patient was requested to say the sentence and the response was recorded. The rationale behind these scrambled sentence tasks was to teach a strategy for constructing a basic sentence (patient hears a sentence and then constructs it).

9. The patient was requested to construct sentences regarding the stimulus pictures using scrambled words without the WHO-VERB-WHAT aid.

10. The patient was requested to locate all action pictures upon request. This task was begun after the criterion (100% correct three times) for #9 had been met. Then he was presented with action pictures and requested to say a sentence regarding each one. His verbal responses were recorded.

Throughout the entire study, the patient was required to verbalize only at the end of auditory tasks, but spontaneous speech was not discouraged.

Results

- A. Learning of tasks: After a 4-month period, both patients had learned all tasks, although Patient B moved at a more rapid rate than Patient A.
- B. Degree of overall improvement in language function as indicated by percentile scores on the Porch Index of Communicative Ability:

<u>PATIENT A</u>	<u>OVERALL</u>	<u>GESTURAL</u>	<u>VERBAL</u>	<u>GRAPHIC</u>
First test (2 months pre-study)	37	45	28	44
Second test (beginning of project)	41	57	31	49
Third test (2 months following onset of project)	50	73	40	57
Fourth test (4 months after onset of project)	59	87	45	62
Fifth test (2 months following return to more varied therapeutic approach)	61	91	46	62

<u>PATIENT B</u>	<u>OVERALL</u>	<u>GESTURAL</u>	<u>VERBAL</u>	<u>GRAPHIC</u>
First test (2 months pre-study)	42	60	33	46
Second test (beginning of project)	51	76	42	53
Third test (2 months following onset of project)	67	89	57	62
Fourth test (4 months after onset of project)	84	96	73	83
Fifth test (2 months after return to more varied therapeutic approach)	81	96	68	79

An analysis of the above results shows that both patients exhibited overall increases in Tests 3 and 4 (during the auditory program) that far surpassed their improvement between Tests 1 and 2. Much improvement was demonstrated in their verbal scores, although verbalization was not emphasized during the program. The total auditory project was abandoned after 4 months and the program returned to a combination of vocabulary recall and sentence construction activities plus auditory training. As can be observed on Test 5, both patients showed no significant improvement (one patient's performance was lowered) during this period. Thus a strict auditory program was resumed.

Conclusions

Since only two patients were used for this project, no statistical analysis can be made. However, these preliminary findings are promising. Although Patient A moved more slowly than Patient B, both patients were capable of learning the tasks and the tasks appeared to generalize into other areas of language. Thus this study suggests that work on the auditory system is more important than the variety of material usually employed with severely aphasic patients. There has been concern among professionals regarding what aspect of auditory processing is most important. This program was directed toward auditory sequencing, yet results demonstrated that auditory comprehension improved, along with reading, speaking, and writing.

An advantage of this program is that it can be taught easily to the family, whereas, otherwise, even carefully instructed families often move aimlessly from one activity to another in their attempts to assist the patient at home. Admittedly, a disadvantage of this program is that it is a somewhat monotonous procedure for the patient and therapist. However, during this project neither patient complained about the tasks and both cooperated fully. They actually appeared more relaxed, and some earlier-observed fist-clenching, and facial grimacing behaviors seemed to disappear.

It should be noted that some minimally varied words were used in this project (picking, kicking, spilling, pulling, book, box, ball, doll). No error increases were observed on these items, but these words should be more carefully controlled, as people vary in their ability to handle these types of units. Also, the patients in the program exhibited slow rise time and performed best after practice periods. A patient with noise build-up should be scored first, with a practice period following.

As both patients were withdrawn from the program before the PICA could be administered following the re-introduction of the auditory program, we cannot make any statements regarding final progress. However, even if these patients progressed no further on the auditory program, it demonstrated that it is possible to demonstrate improved patient performance using such a procedure. We do not believe that this type of program is itself sufficient to move a patient from beginning to end of therapy. Rather, the evidence suggests that it can be a useful aid in establishing the groundwork from which oral language can be built.

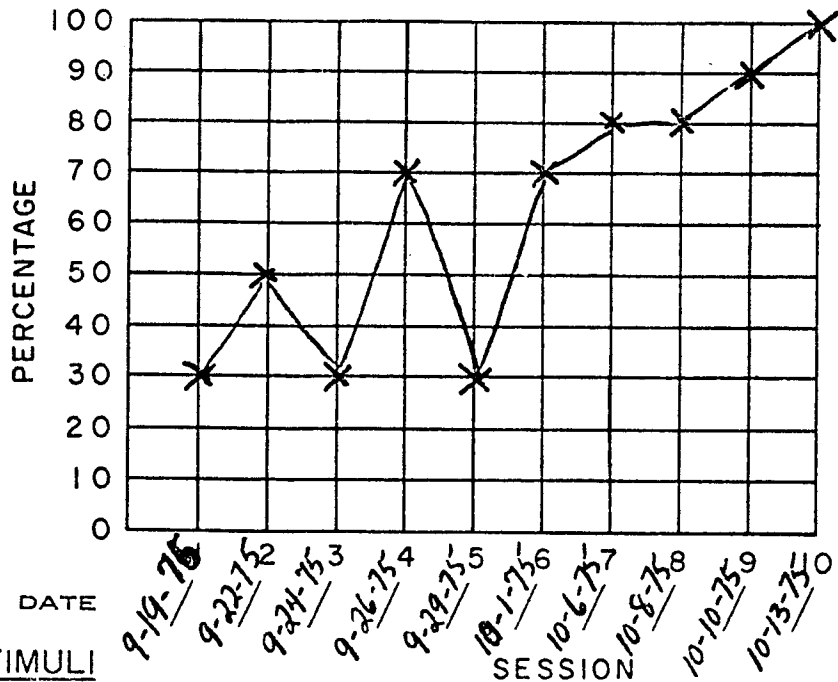
Summary of Discussion which Followed:

Most discussants expressed satisfaction with the study, emphasizing that research of this nature was greatly needed and encouraged other professionals to attempt a similar project. One criticism of the program was the fact that the Porch Index of Communicative Ability had been administered by the same clinician who performed the study, thus making it difficult to rule out the possibility of clinician bias. It was suggested that, in future studies, an independent examiner who has no previous knowledge of the program be requested to perform the necessary testing. However, another participant argued that the project could still be considered valid by comparing the patient's various PICA scores within his test. Additionally, the program was commended as an excellent means of documenting progress within treatment sessions.

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Auditory-locate Boy and Girl from field of 10 pictures.
 CRITERION 100% + SCORING + -



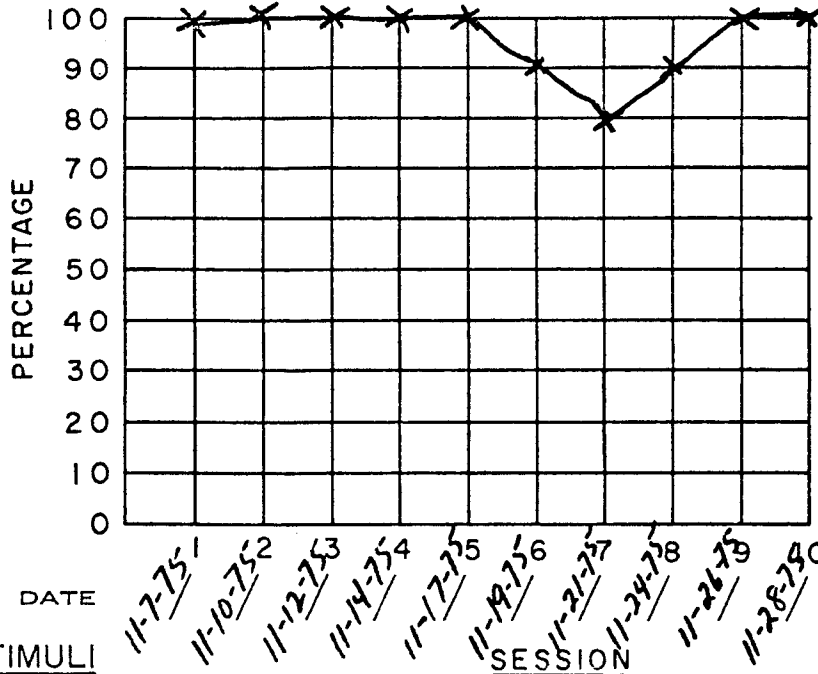
	DATE	STIMULI	1	2	3	4	5	6	7	8	9	10	MEANS
1.	<u>Boy</u>		-	+	-	-	+	+	+	+	+	+	
2.	<u>Girl</u>		-	+	+	+	-	+	-	+	+	+	
3.	<u>Boy</u>		-	-	-	-	-	-	-	-	+	+	
4.	<u>Girl</u>		+	+	-	+	-	+	+	+	+	+	
5.	<u>Boy</u>		-	-	+	+	-	-	+	+	+	+	
6.	<u>Girl</u>		+	-	-	+	-	+	+	+	-	+	
7.	<u>Boy</u>		-	-	-	+	-	-	+	+	+	+	
8.	<u>Girl</u>		-	+	+	-	+	-	+	+	+	+	
9.	<u>Boy</u>		-	+	-	+	-	+	+	-	+	+	
10.	<u>Girl</u>		+	-	-	+	+	+	-	+	+	+	
	<u>MEANS</u>		<u>3</u>	<u>5</u>	<u>3</u>	<u>7</u>	<u>3</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Auditory - locate 10 nouns from field of 10

CRITERION 100% + 3 consec. times SCORING +, -



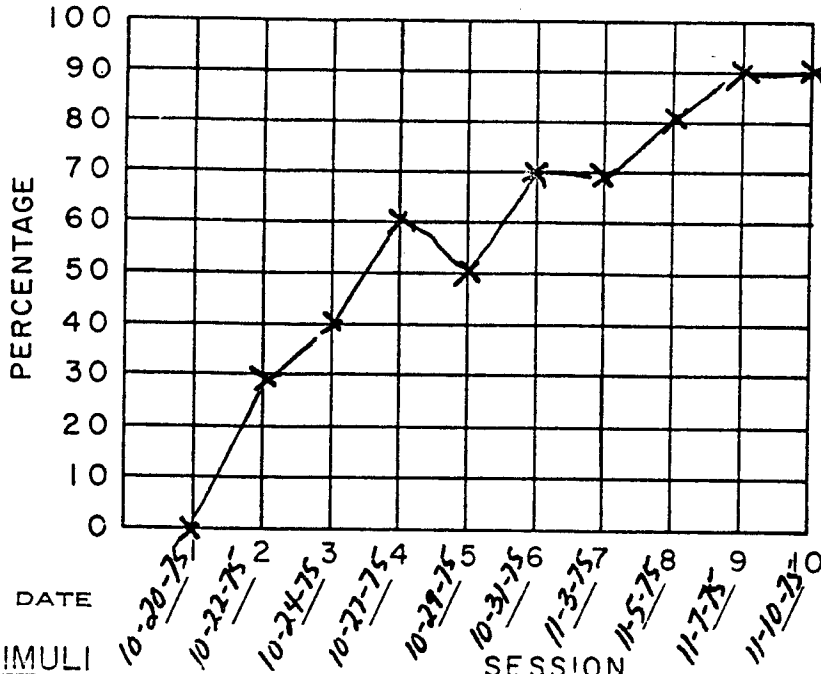
STIMULI	SESSION										MEANS
	1	2	3	4	5	6	7	8	9	10	
1. <u>Ball</u>	+	+	+	+	+	+	-	+	+	+	<u>9</u>
2. <u>Apple</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
3. <u>Milk</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
4. <u>Money</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
5. <u>Box</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
6. <u>Tooth</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
7. <u>Tree</u>	+	+	+	+	+	+	-	-	+	+	<u>8</u>
8. <u>Dolls</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
9. <u>Book</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
10. <u>Shirt</u>	+	+	+	+	+	+	+	+	+	+	<u>10</u>
<u>MEANS</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>10</u>	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Auditory - locate 2 nouns serially from field of 10

CRITERION 100% + 3 consec. times SCORING +, -



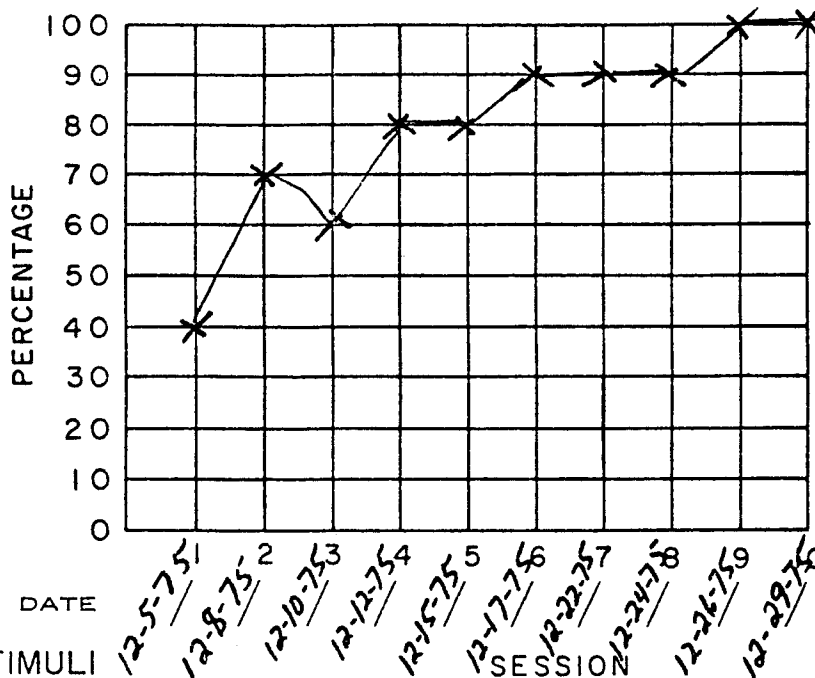
STIMULI	SESSION										MEANS
	1	2	3	4	5	6	7	8	9	10	
1. <u>Ball + -</u>	-	-	-	+	+	+	+	+	+	+	7
2. <u>Apple + -</u>	-	+	+	+	-	+	+	-	+	+	7
3. <u>Milk + -</u>	-	-	-	-	+	-	+	+	+	+	5
4. <u>Money + -</u>	-	+	-	+	+	+	-	+	+	+	7
5. <u>Box + -</u>	-	-	+	-	-	+	-	+	+	+	5
6. <u>Tooth + -</u>	-	+	+	+	+	-	+	+	+	+	8
7. <u>Tree + -</u>	-	-	-	+	+	+	-	+	+	-	5
8. <u>Dolls + -</u>	-	-	-	-	-	+	+	+	+	+	5
9. <u>Book + -</u>	-	-	-	-	-	-	+	-	-	+	2
10. <u>Shirt + -</u>	-	-	+	+	-	+	+	+	+	+	7
<u>MEANS</u>	<u>0</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>5</u>	<u>7</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>9</u>	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Auditory - locate 3 nouns serially from field of 10

CRITERION 100% + 3 consec. times SCORING +, -



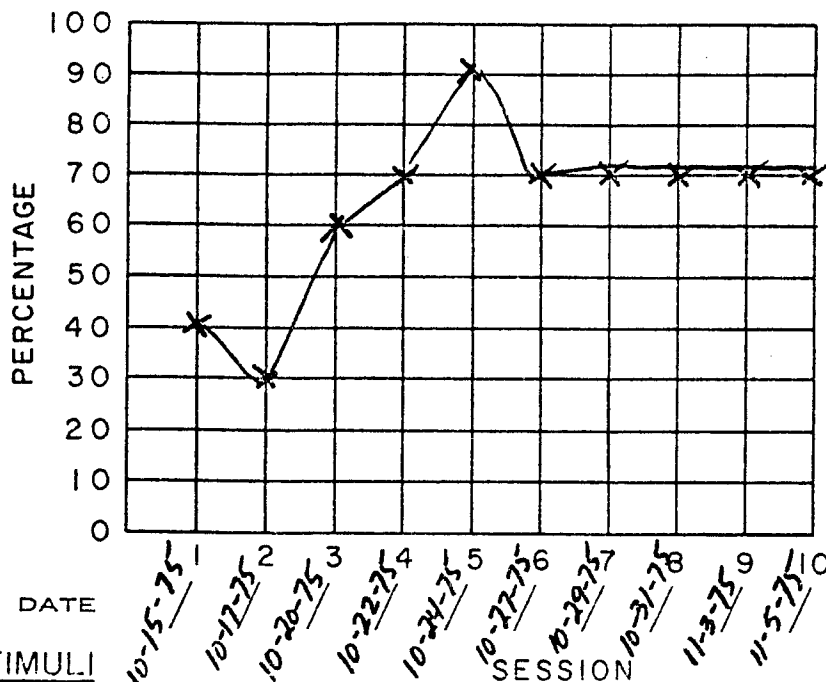
STIMULI	1	2	3	4	5	6	7	8	9	10	MEANS
1. <u>Ball</u> + - + -	-	+	+	+	+	+	+	+	+	+	_____
2. <u>Apple</u> + - + -	+	+	-	+	+	+	+	+	+	+	_____
3. <u>Milk</u> + - + -	-	+	-	-	+	+	+	+	+	+	_____
4. <u>Money</u> + - + -	+	+	-	+	-	+	+	+	+	+	_____
5. <u>Box</u> + - + -	-	-	+	-	+	+	+	+	+	+	_____
6. <u>Tooth</u> + - + -	-	-	+	+	+	+	+	-	+	+	_____
7. <u>Tree</u> + - + -	+	+	+	+	+	+	+	+	+	+	_____
8. <u>Dolls</u> + - + -	-	+	+	+	+	+	+	+	+	+	_____
9. <u>Book</u> + - + -	-	-	-	+	+	+	-	+	+	+	_____
10. <u>Shirt</u> + - + -	+	+	+	+	-	-	+	+	+	+	_____
<u>MEANS</u>	<u>4</u>	<u>7</u>	<u>6</u>	<u>8</u>	<u>8</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>10</u>	<u>10</u>	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Verbal - Name 10 nouns spontaneously

CRITERION 100% + SCORING +, -

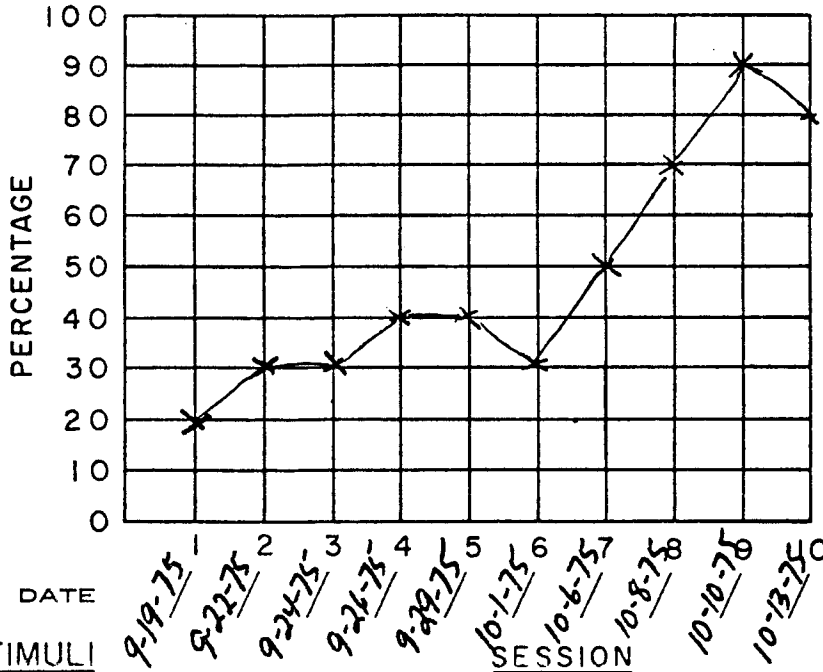


STIMULI	SESSION										MEANS
	1	2	3	4	5	6	7	8	9	10	
1. <u>Ball</u>	+	-	+	+	+	+	+	+	+	+	9
2. <u>Apple</u>	-	+	-	-	+	+	+	+	+	+	7
3. <u>Milk</u>	-	-	-	+	+	-	-	-	-	-	2
4. <u>Money</u>	+	+	+	+	+	+	+	+	+	+	10
5. <u>Box</u>	-	-	-	-	+	+	-	+	-	-	3
6. <u>Tooth</u>	+	-	+	+	+	+	+	+	+	+	9
7. <u>Tree</u>	+	-	+	+	+	+	+	+	+	+	9
8. <u>Dolls</u>	-	-	+	+	+	-	-	-	-	-	3
9. <u>Book</u>	-	-	-	+	-	-	+	-	+	+	4
10. <u>shirt</u>	-	+	+	-	+	+	+	+	+	+	8
<u>MEANS</u>	4	3	6	7	9	7	7	7	7	7	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Auditory-locate 10 verbs upon request from
 CRITERION 100% + 3 consec. times SCORING +, - field of 10



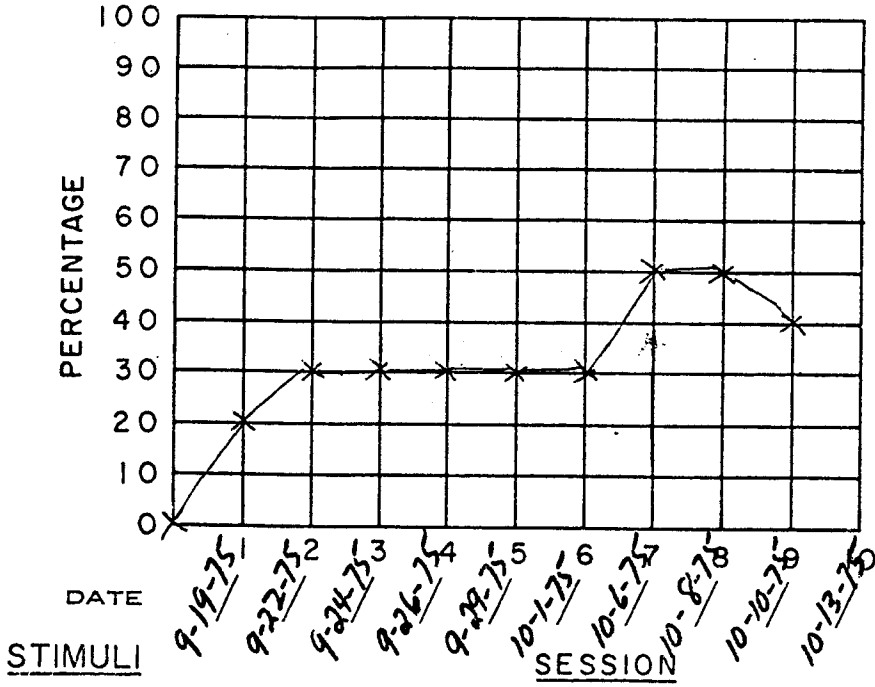
STIMULI	SESSION										MEANS
	1	2	3	4	5	6	7	8	9	10	
1. <u>is Kicking</u>	-	-	-	-	-	-	-	-	+	+	<u>2</u>
2. <u>is picking</u>	-	-	-	-	-	-	-	-	+	+	<u>2</u>
3. <u>is spilling</u>	-	-	-	-	-	-	+	+	+	+	<u>4</u>
4. <u>is counting</u>	-	-	-	+	-	-	+	+	+	-	<u>4</u>
5. <u>is opening</u>	-	+	+	+	+	+	-	+	+	+	<u>8</u>
6. <u>is pulling</u>	-	-	-	-	+	+	+	+	+	+	<u>6</u>
7. <u>is climbing</u>	-	-	-	-	-	-	-	-	-	+	<u>1</u>
8. <u>is cutting</u>	-	-	+	-	-	-	-	+	+	+	<u>4</u>
9. <u>is reading</u>	+	+	-	+	+	-	+	+	+	+	<u>8</u>
10. <u>is washing</u>	+	+	+	+	+	+	+	+	+	-	<u>9</u>
<u>MEANS</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>4</u>	<u>4</u>	<u>3</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>8</u>	

PROGRAMMED SPEECH-LANGUAGE STIMULATION

BASE 10 RESPONSE FORM

TASK Verbal - Name the verb in each picture.

CRITERION 100% + SCORING +, -



	1	2	3	4	5	6	7	8	9	10	MEANS
1. <u>is kicking</u>	-	-	-	+	-	+	+	+	+	+	
2. <u>is picking</u>	-	+	+	+	+	-	+	+	+	+	
3. <u>is spilling</u>	-	-	-	-	-	-	-	-	-	-	
4. <u>is counting</u>	-	-	+	-	-	-	-	+	+	+	
5. <u>is opening</u>	-	-	-	-	+	-	-	-	-	-	
6. <u>is pulling</u>	-	-	-	-	-	-	-	-	-	-	
7. <u>is climbing</u>	-	-	-	+	-	+	-	-	+	-	
8. <u>is cutting</u>	-	-	-	-	-	-	-	+	+	+	
9. <u>is reading</u>	-	+	+	-	+	-	+	+	-	-	
10. <u>is washing</u>	-	-	-	-	-	+	-	-	-	-	
<u>MEANS</u>	0	2	3	3	3	3	3	5	5	4	