

A SHORT SCREENING TEST
FOR IDENTIFICATION OF EXPRESSIVE SYNTACTIC
PROBLEMS OF KINDERGARTEN CHILDREN

by

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CHAPTER I

STATEMENT OF THE PROBLEM

The speech pathologist is responsible for the evaluation and remediation of the phonologic, semantic, and syntactic problems of his clients. Speech pathologists

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This writer interprets phonologic to refer to speech sounds, semantic to refer to vocabulary, and syntactic to refer to the grammar of the language (Lee, 1969). Specifically, syntax involves "the grammatical relationships underlying kernel sentence constructions and transformational operations" (Lee, 1970).

Tests for identification of these problems must be able to be administered rapidly. This writer's clinical experience in the schools indicates that such tests should take no longer than from one to two minutes to administer. In most school settings, several hundred children need to be evaluated. Tests taking longer than one or two minutes are simply not practical when dealing with this many children.

CHAPTER I

STATEMENT OF THE PROBLEM

The speech pathologist is responsible for the evaluation and remediation of the phonologic, semantic, and syntactic problems of his clients. Speech pathologists employed by school systems are also responsible for the identification of children with these problems as they enter school.

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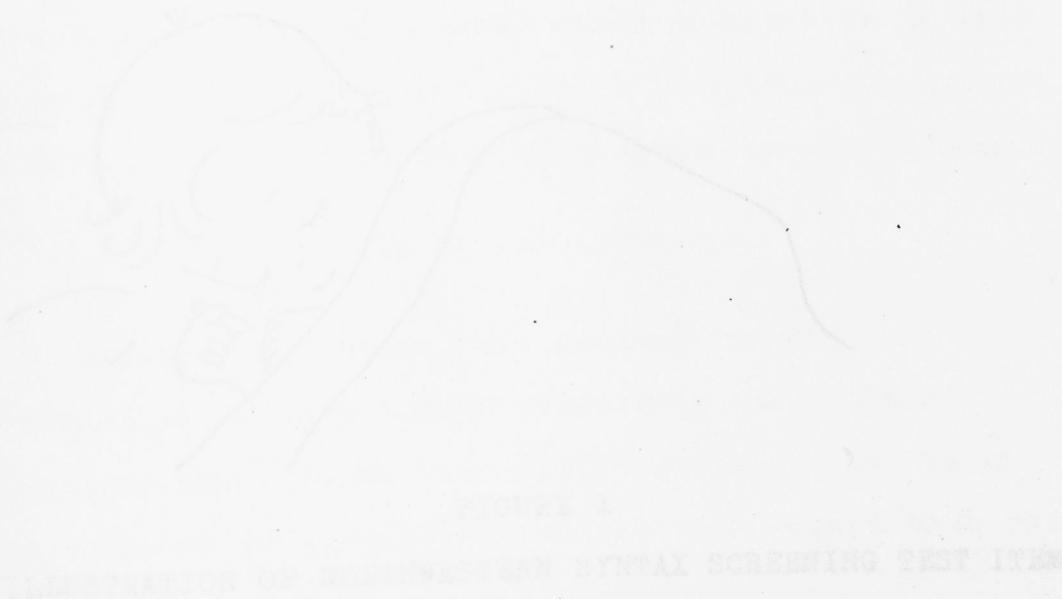
Tests for identification of these problems must be able to be administered rapidly. This writer's clinical experience in the schools indicates that such tests should take no longer than from one to two minutes to administer. In most school settings, several hundred children need to be evaluated. Tests taking longer than one or two minutes are simply not practical when dealing with this many children.

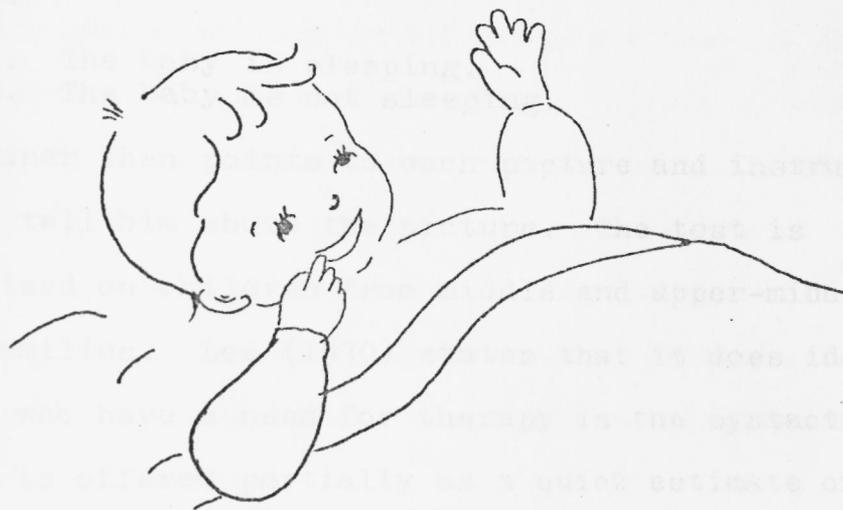
A review of instruments presently available indicates that such a test is not available for the identification of children with expressive syntactic problems. One example of present instruments is the Northwestern Syntax Screening Test (Lee, 1969) which measures expressive and receptive syntax. In the expressive section of this test,¹ the child is shown two pictures representing contrasting syntactic items. The following two picture descriptions are an example:

- Picture 1: A baby sleeping.
- Picture 2: A baby not sleeping.

Figure 1 presents the illustrations for these items.

¹See Appendix A for introduction and expressive section of Northwestern Syntax Screening Test.





a



FIGURE 1

ILLUSTRATION OF NORTHWESTERN SYNTAX SCREENING TEST ITEM

b

The examiner repeats two sentences representing the pictures:

1. The baby is sleeping.
2. The baby is not sleeping.

The examiner then points to each picture and instructs the child to tell him about the picture. The test is first standardized on children from middle and upper-middle income families. Lee (1970) states that it does identify children who have a need for therapy in the syntactic area. The test is offered partially as a quick estimate of syntactic development for screening large numbers of children for therapists in a public school setting. However, there are twenty sets of two sentences in the expressive section of the test, which takes a minimum of seven and a half minutes to administer (Lee, 1970). Accordingly, the test simply does not meet the criterion of being a rapid identification device for most school settings where several hundred children may have to be evaluated. The administration of a test taking seven and a half minutes to several hundred children is not practical.

REVIEW OF THE LITERATURE

Studies have shown that sentence repetition activities yield information concerning the child's syntactic competencies. Lee (1970) supports the use of this technique to elicit information with regard to a subject's knowledge of syntactic rules.

McNeil (1968) illustrates the supporting principle behind the sentence repetition technique when he discusses "the relative impenetrability of the child's grammar to adult models." He states that "even when the child makes a deliberate effort to copy adult speech, he may at first fail." He gives the example of a child who, while developing the negative transformation, produces seven incorrect imitations before correctly producing a sentence on the eighth attempt.

A study of imitation as a measure of linguistic competence is provided by Rodd and Braine (1971). Their study of the imitative responses of three children ranging in age from 21 to 28 months supports the concept that imitation is not merely a process of echoing the stimulus, but that it is an "active process of assimilating and reorganizing the utterance and reproducing it" in accord to one's grammatical competence. They question if children older than their subjects would imitate in a like manner, but do not state that imitation does not yield information concerning the older child's syntactic competency.

Odom, Liebert, and Hill (1969) studied the question of imitation being limited by or assimilated to present grammar by older children. They asked second grade children to imitate ungrammatical sentences. They inferred that responses were being affected by present grammar when they concluded that rules, not specific words, were being

abstracted from the stimulus sentences by the children in their study.

Menyuk (1963) studied the grammatical capacity of children using the sentence repetition technique. Her subjects were fourteen nursery school children and fifty kindergarten children coming from middle class families. The IQ's of both groups were above average. A language sample was taken and analyzed. Menyuk then tested the subjects' ability to repeat exactly a set of sentences of from two to nine words in length representing the rules of phrase structure, transformations, and morphology she had identified as being evident in the language samples of her subjects. She made several important generalizations. First, the length of the sentences was "not critical in determining the success of repetition. . . ." Second, given the aid of immediate recall of the sentences, the subjects reproduced a significant number of transformations not evident in their own corpus. The nursery school children modified their responses more than the kindergarten group, but Menyuk did state, "The differences in ability of children to repeat the various sentences seems to be dependent on the particular rules used to generate . . . sentences. . . ."

It is evident that there is support based on previous studies for sentence repetition tasks used to measure the child's expressive syntactic language competencies.

The degree to which immediate recall or short term memory affects the four- to six-year-old's ability to imitate is not clearly established. It has been this writer's clinical experience that, when a child is asked to give three consecutive sentence responses following one imitative stimulus, there is a reduction in the aid that immediate recall or short term memory offers. A study of this factor was not evident in the literature, nor has this writer conducted such a study, but the factor seemed apparent in the following typical conversation which this writer had with a six-year-old who consistently misused the pronoun "she":

Therapist: Say this next sentence three times.
She is going to the store.

Six year old: She is going to the store.
She her is going to the store.
Her is going to the store.

By the third repetition, the subject seemed to be relying less on immediate recall and to be reorganizing the sentence through her own system.

Menyuk (1964) compared the grammar of 10 children diagnosed as using infantile speech with that of 10 matched children using normal speech in an attempt to formalize the description of language characterized as infantile. The children in her study ranged in age from 3.0 years to 5.10 years. As part of the study, she made a comparison of the sentence repetition abilities of subjects in the two

groups, infantile and normal. A significant difference was noted between the incorrect repetitions of the two groups. The children in the infantile speech group "repeated with omissions or just repeated the last words of the sentence." The normal speech subjects seemed to depend on the structure of the sentence for repetition. Sentence length from two to nine words did not interfere with the normal child's ability to repeat sentences. Sentence length and non-repetitions were significantly correlated for the infantile speech group.

A review of the literature reveals that the past studies of children's sentence imitative abilities have controlled the complexity of the sentences to be reproduced to various degrees and in various ways. Lee and Canter (1971) have developed a system of Developmental Sentence Scoring which could be used for this purpose in future studies. It gives weighted scores to a developmental order of pronouns, verbs, negatives, conjunctions, yes-no questions, and wh-questions. Using this technique, the syntactic complexity of a given sentence can be measured.

SIGNIFICANCE OF THE PROBLEM

Freeman (1971) indicates that problems in development of verbal skills in children usually have implications for broad and long term educational needs. Because of this, identification of such problems should be made as soon as

possible. In most school settings, this is during the child's kindergarten year.

Marge (1971) reports an incidence of 6.53 percent of oral language disabilities in children. He notes that there are 3,633,500 children between the ages of 4 and 17 in the United States with oral language disabilities. To identify the 6.53 percent of children with oral language disabilities from the millions of children entering school for the first time each year is a significant task. A rapid identification screening test of expressive syntactic problems would be an important step toward the accomplishment of this important task.

ASSUMPTION OF THIS STUDY

This study assumes that the Northwestern Syntax Screening Test is valid.

STATEMENT OF HYPOTHESIS

It is hypothesized that the Nilmeier Expressive Syntactic Screening Test (hereafter referred to as the NESST), based upon a three repetition technique with sentence syntactic complexity controlled by the use of Developmental Sentence Scoring, will measure a kindergarten age child's expressive syntactic competencies as demonstrated by its significant positive correlation with the child's

test score on the expressive section of the Northwestern Syntax Screening Test.

As well as testing the hypothesis as stated, this study will also:

1. Increase the normative data on the Northwestern Syntax Screening Test.
2. Evaluate the effect of three consecutive sentence repetitions following one stimulus sentence.

PREVIEW OF REMAINING CHAPTERS

Chapter II will present the methods and procedures used. Chapter III will present the results. Chapter IV will contain a summary and conclusions.

²See Appendix A, Northwestern Syntax Screening Test Plates 2, 3, and 7, for examples of these items.

CHAPTER II

METHODS AND PROCEDURES
CONSTRUCTION OF THE NESST

The NESST was developed through analysis of the test items on the expressive section of the Northwestern Syntax Screening Test. The preposition, plural, and actor-action items on the Northwestern Syntax Screening Test,² which were judged visually stimulated, were eliminated from inclusion on the NESST because they could not be effectively measured by a sentence repetition test. The Developmental Sentence Scoring Points for the remaining Northwestern items were computed. As many of these syntactic items as possible were included in the six sentences constructed for the NESST. The NESST sentences are from 6 to 9 words in length, according to Menyuk's (1964) statement that sentences within this range do not seem to interfere with the normal child's ability to repeat sentences.

Previous studies have used various types and degrees of control over the complexity of the sentences used as

²See Appendix A, Northwestern Syntax Screening Test Plates 2, 5, and 7, for examples of these items.

stimulus items. Developmental Sentence Scoring (Lee and Canter, 1971) offers a scoring method which allows consistent and complete evaluation of sentence complexity. Developmental Sentence Scoring was used to control the sentence complexity variable on the NESST. Sentences with syntactic loads (score weights) of 7, 9, 11, 13, 15, and 17 Developmental Sentence Points were selected to allow for a range of complexity on the NESST from simple to complex.

The syntactic items measured by the NESST are listed in Table 1.³ The six NESST sentences are listed in Table 2.⁴ The letters above each sentence in Table 2 indicate the items measured on the NESST and correspond to the letters and items in Table 1. The numbers under each sentence in Table 2 indicate the Developmental Sentence Scoring Points (score weights) for each syntactic item measured on the NESST. The total Developmental Sentence Scoring Points (score weights) for each sentence is listed in the right hand column of Table 2.

SCORING PROCEDURES FOR THE NESST

The subject responds to each stimulus sentence on the NESST with three repetitions of that sentence.

³Derived by writer from Developmental Sentence Scoring (Lee and Canter, 1971).

⁴See Appendix B for copy of the NESST form used in testing.

TABLE 1
ITEMS MEASURED ON NESST

<u>LETTER</u>	<u>ITEM MEASURED</u>
A*	irregular past tense verb
B	is verbing
C	negative
D	<u>sentence point</u> for producing completely correct sentence
E	third person personal pronoun
F*	irregular past tense verb
G	plural pronoun
H	<u>sentence point</u>
I	regular past tense verb
J	reflexive pronoun
K	copula (is)
L	<u>sentence point</u>
M	question reversal
N	will plus verb
O	wh-pronoun
P	is verbing
Q	<u>sentence point</u>
R	"s" verb ending
S	wh-question
T	are verbing
U*	plural pronoun
V*	indefinite pronoun
W	<u>sentence point</u>
X	question reversal
Y*	irregular past tense verb
Z	wh-question
AA	has plus verb
BB	third person personal pronoun
CC	<u>sentence point</u>
DD	question reversal

*NESST items A, F, U, V, and Y are not included in the Northwestern Syntax Screening Test and were added to the NESST in order to allow for the creation of meaningful sentences.

TABLE 2

THE NESST SENTENCES

KEY: The letters above the items correspond to the letters and item descriptions in Table 1. For example, Item A measures an irregular past tense verb (said). The numbers under the items give the Developmental Sentence Scoring Points for each item. For example, Item A (said) has a score weight of 3 points.

		TOTAL DEVELOPMENTAL SENTENCE SCORING POINTS FOR SENTENCES			
SENTENCE 1:					
A*	B	C	D		
Jane said, "The boy is not coming."					
3	2	1	1		
SENTENCE 2:					
E	F*	G	H		
She saw their old gray car.					
2	3	3	1		
SENTENCE 3:					
I	J	K	L M		
Randy asked himself, "Is the ball in the room?"					
3	5	1	1 1		
SENTENCE 4:					
N	O	P	Q		
The old man will know who is running.					
4	6	2	1		
SENTENCE 5:					
R	S	T	U*	V*	W X
John says, "Where are they going with it?"					
3	2	3	3	1	1 2
SENTENCE 6:					
Y*	Z	AA	BB	CC	DD
The boy said, "What has he eaten?"					
3	1	6	2	1	4

*NESST items not included in Northwestern Syntax Screening Test.

The third repetition is scored. Each measured item is worth one point if it is correctly reproduced by the subject on the third sentence repetition. If the subject does not correctly reproduce a measured item on the third repetition, a point is not given. The points for each sentence are totaled. The points for all of the sentences are added together to give the NESST raw score.

SUBJECTS

The experimental population was composed of students from the kindergarten classes at Stephens School in Chowchilla, California. The 37 youngest students available during test dates were selected as subjects.⁵ The mean age of the 17 boys and 20 girls was 64.6 months. The range of the subjects' ages was 6 months, 19 days. The mean I.Q. of the subjects, as measured by the Peabody Picture Vocabulary Test--Form A, was 99.92.

PROCEDURES

Each subject was involved in two 15 minute test sessions to reduce the fatigue factor and to avoid the memory factor between the NESST and the Northwestern Syntax Screening Test. The NESST and the

⁵Forty subjects were initially selected, but one was removed from the study because of a selection error and two others were removed because of test administration errors.

Peabody Picture Vocabulary Test were administered during the first session and the expressive section of the Northwestern Syntax Screening Test was administered during the second. The tests were presented in this order so that the NESST would not be influenced by any other testing and to allow two to six days between the administration of the NESST and the Northwestern Syntax Screening Test.

The first test sessions were conducted in a 20' by 35' quiet room at Stephens School. A Wollensak tape recorder (model T-1515) with foot pedal control was placed out of sight to record the subject's responses on the NESST.⁶ This writer served as the examiner and brought each subject to the test site from his/her classroom. The subjects were familiar with the researcher.

The NESST was presented first in the following manner:

Examiner said: We're going to play a game. I'll say a sentence, then you say the same sentence three times after me.
Let's try one: The ball is green.

Subject responds (If subject responded correctly, the examiner presented the six test items. If the subject seemed hesitant, confused or made an error, a second demonstration item was presented as follows:)

Examiner said: Let's try another one: The water is cold.

⁶This writer has the tape recordings and they can be made available upon request to qualified investigators under appropriate arrangements for a period of five years.

Subject responds (Following the second demonstration item, the six test items were presented.)

The administration of the NESST was conducted in the following way:

1. If the subject responded without question, hesitation or confusion to a stimulus item, the following stimulus sentence was presented.
2. If the subject responded with question, hesitation, or confusion, a second (and, if necessary third and fourth) repetition was given.⁷
3. If the subject responded giving only a part of the stimulus sentence, one additional repetition of the stimulus sentence was given.

The Peabody Picture Vocabulary Test--Form A (Dunn, 1965) was administered according to instructions in the test book following the NESST.

The first test sessions were completed on February 1, 2, 3, 7, 1972.

The second test sessions were conducted in the same room as the first with the subjects brought to the test site by persons other than the researcher. The subjects were seen in the same order as in the initial test sessions, except in instances where subjects were absent or not available. The Northwestern Syntax Screening Test was administered according to instructions of the test. The second test sessions took place during February 8, 9, 10, 1972.

⁷This is consistent with the administration of the Northwestern Syntax Screening Test.

All tests were scored. The NESST scores were verified by the researcher comparing the scored sheets with the tape recordings of the test sessions. It should be noted that some of the responses were not audible on the recordings, but were observed by the researcher. The raw data was placed on index cards,⁸ transferred to IBM cards, and processed on the Fresno State College CDC 3150 computer using modified versions of the IBM Stat-Pack Programs.

Procedures described in Chapter II were piloted two weeks in advance of the study. As a result of the piloting, procedures in the study were set up.

⁸See Appendix C for copy of index cards and Appendix D for raw data.

Table 4 reports the Pearson correlation coefficients between the variables.

The criterion for acceptance of the hypothesis of a significant positive correlation between the NESST and the Northwestern Syntax Screening Test was achieved with a significant positive correlation significant at the .05 level of confidence. The correlation coefficient between the NESST and the Northwestern Syntax Screening Test was +.80.

The hypothesis under investigation in this study was accepted.

CHAPTER III

RESULTS

The hypothesis investigated as previously stated was:

The NESST, based upon a three repetition technique with sentence syntactic complexity controlled by the use of Developmental Sentence Scoring, will measure a kindergarten age child's expressive syntactic competencies as demonstrated by its significant positive correlation with the child's test score on the expressive section of the Northwestern Syntax Screening Test.

Table 3 reports the mean and standard deviation of variables 1 (age), 2 (Peabody Test Raw Score), 3 (Peabody Test Mental Age), 4 (Peabody Test I.Q. Score), 5 (NESST Score), and 6 (Northwestern Raw Scores) for all subjects.

Table 4 reports the Pearson correlation coefficients between the variables.

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The hypothesis under investigation in this study was accepted.

TABLE 3

MEAN AND STANDARD DEVIATION RESULTS

VARIABLE	MEAN	STANDARD DEVIATION
Age	64.59	2.47
Peabody Test Raw Score	52.24	7.19
Peabody Test Mental Age	66.73	11.53
Peabody Test I.Q. Score	99.91	15.10
NESST	19.90	5.20
Northwestern Syntax Screening Test	25.68	6.19

N = 37

It should be noted that the correlation coefficient between the Peabody I.Q. Scores and the NESST and Northwestern Spelling Test was +.40 and +.48.

TABLE 4

PEARSON CORRELATION COEFFICIENTS BETWEEN SELECTED VARIABLES

	Peabody Raw Score	Peabody Mental Age	Peabody I.Q. Score	NESST	Northwestern Test
Age	-0.10	-0.13	-0.34	-0.03	.01
Peabody Raw Score		.98	.94	.41	.52
Peabody Mental Age			.93	.38	.46
Peabody I.Q. Score				.40	.48
NESST					.80

It should be noted that the correlation coefficient between the Peabody I.Q. Scores and the NESST and Northwestern Syntax Screening Test was $+.40$ and $+.48$.

DISCUSSION AND CONCLUSIONS

The problem of this research grew out of this investigator's concern over the lack of a rapid screening instrument for the identification of children with expressive syntactic problems. The data obtained indicates that there is a desirable, almost reliable, degree of positive relationship between the NESST and the Northwestern Syntax Screening Test. This data yields the acceptance of the experiential hypothesis.

This writer suggests that an item analysis of the NESST and the Northwestern Syntax Screening Test may result in further modification and refinement of the NESST. For example, this writer notes that measured items A (said), B (says), and Y (says) on the NESST seemed confusing to many subjects and may not have added to information concerning their syntactic competencies. An item analysis was not within the scope of this study, but such an analysis is indicated for further research and should result in an even higher correlation between the two tests.

This study has provided information on the effect of three consecutive sentence repetitions following one

CHAPTER IV

SUMMARY, AND CONCLUSIONS

The problem of this research grew out of this investigator's concern over the lack of a rapid screening instrument for the identification of children with expressive syntactic problems. The data obtained indicates that there is a dependable, almost reliable, degree of positive relationship between the NESST and the Northwestern Syntax Screening Test. This data yields the acceptance of the experimental hypothesis.

This writer is aware that an item analysis of the NESST and the Northwestern Syntax Screening Test may result in further modification and refinement of the NESST. For example, this writer noted that measured items A (said), R (says), and Y (said) on the NESST seemed confusing to many subjects and may not have added to information concerning their syntactic competencies. An item analysis was not within the scope of this study, but such an analysis is indicated for further research and should result in an even higher correlation between the two tests.

This study has yielded information on the effect of three consecutive sentence repetitions following one

stimulus sentence. The following examples, representative of many of the test responses, seem to illustrate that the three repetition technique produced information concerning a child's syntactic competencies:

Subject 37's responses to sentence 1:⁹

Sentence: Jane said, "The boy is not coming."

Response 1: Jane said, "The boy is not coming."

Response 2: Jane said, "The boy ain't coming."

Response 3: Jane said, "The boy ain't coming."

Subject 36's responses to sentence 2:

Sentence: She saw their old gray car.

Response 1: She saw the old gray car.

Response 2: Her saw the gray old car.

Response 3: Her saw the gray old car.

Subject 10's responses to sentence 3:

Sentence: Randy asked himself, "Is the ball in the room?"

Response 1: Randy asked himself, "Is the ball in the room?"

Response 2: Randy asked hissself, "Is the ball in the room?"

Response 3: Randy asked hissself, "Is the ball in the room?"

Subject 8's responses to sentence 4:

Sentence: The old man will know who is running.

Response 1: The old man will know who is running.

Response 2: The old man will know who is running.

Response 3: The old man will knows who is running.

⁹Underlined items are changes each subject made on NESST measured items. Omitted items are not underlined.

Subject 9's responses to sentence 5:

Sentence: John says, "Where are they going with it?"

Response 1: John says, "Where are they going with it?"

Response 2: John says, "Where are they going with it?"

Response 3: John says, "Where they going with it?"

Subject 18's responses to sentence 6:

Sentence: The boy said, "What has he eaten?"

Response 1: The boy said, "What has he eaten?"

Response 2: The boy said, "What is he eaten?"

Response 3: The boy said, "What is he eaten?"

Regression to the subject's syntactic competency level seems apparent in the previous examples and was evident throughout the test, but there were also a few examples in the test responses where this effect would be questioned. Two examples are:

Subject 14's responses to sentence 1:

Sentence: Jane said, "The boy is not coming."

Response 1: Jane said, "The boy ain't coming."

Response 2: Jane said, "The boy ain't coming."

Response 3: Jane said, "The boy is not coming."

Subject 4's responses to sentence 5:

Sentence: John said, "Where are they going with it?"

Response 1: John said, "Where is they going with it?"

Response 2: John said, "Where are they going with it?"

Response 3: John said, "Where are they going with it?"

The largest part of the responses evidenced on the NESST were either correct responses on all three items,

incorrect responses on all three items, or responses indicative of the regression factor.

Further study into the effect of three sentence repetitions would seem to be indicated, but the results of this study demonstrate that the technique seems to yield information concerning the test subjects' syntactic competencies.

The limited amount of literature in the field of communicative disorders relative to identifying and remediating children's syntactic disorders was notable. The need for further study in this area was evident.

This study resulted from this writer's concern over the lack of a rapid screening instrument to identify children with expressive syntactic problems. This study has demonstrated that a rapid screening instrument, taking from one to two minutes to administer, can be effectively used to identify children with expressive syntactic problems, as demonstrated by the significant positive correlation between the NESST and the Northwestern Syntax Screening Test. Insofar as the Northwestern Syntax Screening Test is valid, the NESST can be regarded as an addition to the instruments available to the speech pathologist.

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