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A Correlative Analysis of
CID's Grammatical Analysis of
Elicited Language with
the Carrow Elicited Language Inventory

Independent Study
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May 2, 1980

I. Introduction

A. The CID Grammatical Analysis of Elicited Language-Complex Sentence Level (GAEL) is a test of expressive language. Eighty-eight specific target sentences are elicited from the child through game-like activities. Each activity provides an appropriate contrived situation to make the target sentence seem a natural response to the stimuli presented. The child is given the opportunity to produce a prompted (cued by the activity) response and an imitated response from the examiner's model of the target sentence. Thus, each target sentence is elicited twice: once in response to the situation and once in imitation.

The language structures sampled in this test were based on the model developed by Morehead and Ingram (1973). The Complex-Level GAEL contains structures which have a weighting of three or above in the Lee procedure and those above three in the Ingram model (Geers and Moog, 1979).

The examiner models the specific structure for the child at the beginning of each activity or by taking turns throughout the activity using different vocabulary. The child is then expected to produce the target sentence himself in response to the situation. After each prompted production by the child, the examiner models the sentence and the child imitates it. The opportunity for the child to imitate is included for two reasons: 1) to determine whether any learning occurs between the first target sentence of the specific activity to the last and 2) to examine the gaps between the child's performance on both the prompted and imitated tasks.

All the errors made in prompted and imitated productions are recorded on a transcription sheet first and then on a score sheet. The score sheet contains an analysis of the sixteen grammatical categories. They are Articles (96), Noun Modifiers (29), Subject Nouns (44), Object Nouns (109), Plurals (28), Personal Pronouns (83), Indefinite and Reflexive Pronouns (20), Conjunctions (33), Auxiliary Verbs (58), First Clause Verbs (84), Other Verbs (27), Verb Inflections (31), Infinitives, Participles and Gerunds (25), Prepositions (45), Negatives (21), Wh- Question Words (21). Sentence points are also calculated on the score sheet (Geers and Moog, 1979).

B. The Carrow Elicited Language Inventory (Carrow, 1974) is a sentence imitation task. Sentence imitation has been found to be a fruitful source of information relative to the development of language comprehension and expression in children (Menyuk, 1964, 1969; McNeill, 1970; Lenneburg, 1967). The child imitates a set of sentences which include a sample of sentence structures at various levels of complexity. It is a means for measuring a child's productive control of grammar. This test samples the child's use of a wide variety of syntactic structures and compares his performance with other children on the same task and at the same age.

The CELI consists of fifty-two samples (fifty-one sentences and one phrase). The stimuli range in length from two to ten words. The sentences to be modeled by the examiner are pre-printed on a transcription sheet. The errors made by the child are simply recorded onto this sheet. Transcribing is fairly easy because the examiner is aware of

what the child is trying to produce.

An analysis of the CELI shows 47 sentences are in the active voice and 4 are in the passive voice; 37 are affirmative and 14 are negative; 37 are declarative, 12 are interrogative, and 2 are imperative. The grammatical categories and features covered by the test include:

Articles (41), Adjectives (9), Nouns (59), Noun Plurals (8), Pronouns (41), Verbs (103), Negatives (13), Contractions (12), Adverbs (12), Prepositions (14), Demonstratives (2), and Conjunctions (7). Within each of these categories the items range from simple to complex forms (Carrow, 1973).

C. This study examines the following hypotheses: (1) Children with low scores on the CELI will have low scores on the GAEL-Complex Level. (2) The children's ranks on the CELI will correlate positively with their ranks on the GAEL-Complex Level. (3) Children who are deficient in reading skills will achieve lower scores on the GAEL-Complex Level and the CELI.

II. Method

A. Seventy-three children were tested with the CELI as a screening device in order to select a sample to use for a correlative analysis with the GAEL-Complex Level. The children were tested while attending a state-funded summer school program in St. Louis, Missouri. The children had all completed at least one year of first grade. They had all experienced some difficulty throughout the previous school year in reading and language skills and were enrolled in this summer program to

receive more intensive instruction. The children were referred to as "learning disabled." According to Kirk (1972), learning disabled generally refers to the problems of children, who are normal in sensory, emotional and intellectual abilities but exhibit disorders in spoken and written language, including disorders in perception, listening, thinking, talking, reading, writing or arithmetic.

Thirteen boys and nine girls between the ages of six years ten months and eight years were selected to take the GAEL-Complex Level based on their scores on the CELI (Table I). The sample was divided into three groups. The first group consisted of three children that had a raw score (the total number wrong) between zero and five. The second group consisted of three children with raw scores between fifteen and twenty. Sixteen children, with raw scores of more than twenty-one, were selected for the third group.

B. The Complex-Sentence Level of the GAEL and the CELI were administered individually by the same trained examiner to all subjects. The CELI took about fifteen to thirty minutes to administer to each child. The test was transcribed at the same time it was administered.

The GAEL required approximately a one hour testing session. The entire testing period was tape-recorded; a transcription was made of the child's utterances and the utterances were scored according to the sixteen different grammatical categories, sentence points and total score.

C. The types of scores obtained for the CELI were computed from the subjects raw score (number wrong). The percentile rank was recorded.

GAEL scores for prompted productions were obtained for each subject within each grammatical category. The number correct, percent correct and standard scores were computed. These same scores were computed for sentence points and total score. A mean standard score was also computed to obtain a group score within each grammatical category.

Reading scores from the Stanford Achievement Test were also obtained and an educational quotient was computed from grade equivalent scores.

In order to compare the test scores a Spearman rank-difference correlation was computed.

III. Results

The results for the three hypotheses will be reported separately.

A. The mean standard scores from the GAEL are presented in Figure 1 and Table 2 for the sixteen children in Group 3. The mean standard score in each grammatical category except Wh- Questions fell at or below 5.64 which is more than one standard deviation below the mean (10 ± 3) obtained on a sample of hearing children with normal language.

B. In order to determine if the children's ranks on the GAEL correlated positively with their scores on the CELI, a Spearman rank-difference correlation coefficient was obtained. To compute this correlation each child was ranked according to his scores on each test. The subject with the lowest score was assigned the lowest ranking and the subject with the highest score the highest ranking.

The Spearman rank-difference correlation obtained between the GAEL and the CELI was significant (.807). These results are presented in Table 3 and 4.

C. Reading scores were obtained by administering the Stanford Achievement Test. This test was administered to all twenty-two subjects. Spearman rank-difference correlation coefficients were obtained between reading scores and the GAEL (.530) and reading scores and the CELI (.280). Both of these correlations were insignificant (Table 4).

IV. Discussion

The three hypotheses stated earlier in the introduction of this study were: (1) that children with low scores on the CELI will have low scores on the GAEL (2) the children's ranks on the CELI will correlate positively with their ranks on the GAEL and (3) children who are deficient in reading skills will achieve lower scores on the GAEL and the CELI.

Of these hypotheses, the first two received support from the results, while the last was contradicted.

With respect to the first hypothesis, the subjects with poor scores on the CELI (group 3) did not score within the normal range (10 ± 3) in any of the grammatical categories on the GAEL except Wh- Questions. This data is presented in Figure 1 and Table 2 based on the mean standard scores of the group. These results did indicate that the children who score

poorly on the CELI (21 errors) will also score below the normal range on the GAEL.

The Spearman rank-difference correlation that was obtained, showed significant correlation (.807) between the subjects' rank on the CELI and their rank on the GAEL. It appears, therefore, that the GAEL has congruent validity.

The correlation between reading achievement scores and the GAEL (.530) and reading scores and the CELI (.280) were insignificant. Reading skill, therefore, does not seem to be indicative of a child's performance on the CELI or the GAEL.

Table 1

Mean Test Scores For Each Age Group.

<u>C.A.</u>	<u>No. of Subjects</u>	<u>Average Reading Scores</u> <u>Educational Quotient</u>	<u>CELI</u> <u>% Rank</u>
6.5-7.0	4	29.5	24.1
7.]-7.5	10	28.9	9.7
7.6-8.0	8	22.9	10.7

MEAN STANDARD SCORE IN EACH GRAMMATICAL CATEGORY

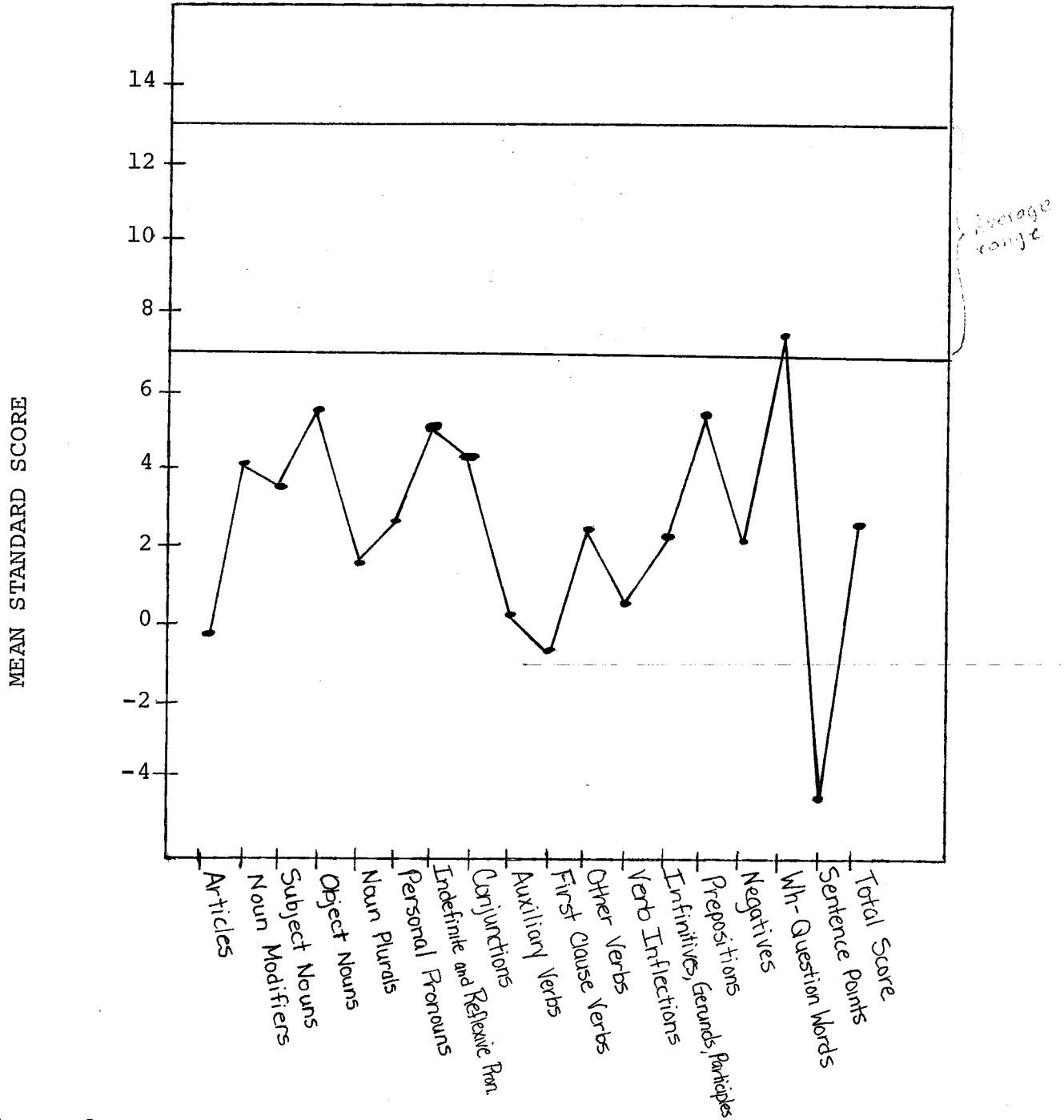


Figure 1. A Summary Profile of the Standard Scores for all subjects in Group 3 on the GAEL - prompted productions.

Table 2

Mean Standard Scores For Each Grammatical Category on the GAEL.*

<u>Category</u>	<u>Mean Standard Score</u> Group 3: N=16
Articles	-0.02
Noun Modifiers	4.21
Subject Nouns	3.72
Object Nouns	5.64
Noun Plurals	1.54
Personal Pronouns	2.87
Indefinite & Reflexive Pronouns	5.15
Conjunctions	4.04
Auxiliary Verbs	.39
First Clause Verbs	-0.65
Other Verbs	2.50
Verb Inflections	0.79
Infinitives, Gerunds & Participles	2.29
Prepositions	5.51
Negatives	2.09
Wh- Question Words	7.76
Sentence Points	-4.50
Total Score	2.84

* $\bar{x} = 10$ $\sigma = 3$

Table 3

Subject's Ranks on Test Performances.

<u>Subject</u>	<u>GAEL</u>	<u>CELI</u>	<u>Reading Achievement</u>
A.	3	3	3
B.	1	1	1
C.	2	2	2
D.	9	5	20
E.	5.5	4	10
F.	10	6	21
G.	17	17	19
H.	19	11	16
I.	20.5	19	7
J.	7	15.5	6
K.	4	8.3	12
L.	22	20	18
M.	13	8.3	17
N.	5.5	7	8
O.	14.5	18	22
P.	12	15.5	5
Q.	8	12	9
R.	20.5	22	11
S.	14.5	13	15
T.	11	14	4
U.	18	21	14
V.	16	8.3	13

Table 4

Spearman Rank- Difference Correlation

<u>Tests</u>	<u>Correlation Coefficient</u>
1. GAEL and CELI	.807
2. GAEL and Reading Achievement	.530
3. CELI and Reading Achievement	.280

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