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ABSTRACT

This test was designed to measure awareness of the relationship existing between sentences that are similar in specific semantic content but different in syntactic structure. The test consists of twenty-five items of the three-option multiple-response type, with the stem of each item being a "pattern" sentence to be matched with one of the three options. A variety of syntactic structures and alternatives is involved, including options among infinitive, gerund, and noun clause constructions or among relative clause, adjective, participle, and appositive constructions; deletion or retention of optional elements; initial or final order of elements; and active or passive constructions. Some option sentences differ from pattern sentences in respect to one structural feature, while others differ in respect to several features. Although the "Agnate Sentences Test" appears to have acceptable validity and reliability, a more refined instrument should be developed which focuses on the types of syntactic constructions and the quality of the option sentences. Tables of findings, a brief bibliography, and an appendix containing the complete test are included. (JM)

A TEST OF
PERCEPTION OF AGNATE SENTENCE RELATIONSHIPS

by

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There is a long-standing need for valid instruments to measure perception of various aspects of linguistic structure. Recognition of the fact that previous attempts to develop such instruments have been only partially successful motivated the further effort to that end reported here.

Related Instruments

O'Donnell (1973) reviews four instruments designed to measure sensitivity to aspects of grammatical structure without reliance on grammatical terminology. These tests include the CARROLL-SAPON MODERN LANGUAGE APTITUDE TEST (1959), the Woodard (1968) "Nonsense Test of Structural Meaning," and the Simons (1970) "Deep Structure Recovery Test." The other test reviewed is the O'Donnell (1961) "Test of Recognition of Structural Relationships in English."

Following the brief reviews of these instruments, O'Donnell (1973) presents descriptive data on his "Perception of Alternate Structures Test" (p.3). This test consists of thirty items of the three-option multiple-response type. Like the earlier test developed by O'Donnell, it employs nonsense vocabulary to force reliance on syntactic rather than lexical cues to structure. Like the Simons test, it has two sentences in each item that are supposed to be similar in underlying structure. In responding to the test items, subjects are to indicate the one sentence in each item that is <u>least</u> like the other two sentences in "meaning." In the following illustrative item the desired response is indicated by an asterisk:

a. The birtle scared the ilbid.

b. The ilbid was scared by the birtle.

*c. The ilbid scared the birtle.

Only face validity is claimed for the "Perception of Alternate Structures Test," but a reliability coefficient of .816 was computed by Kuder-Richardson

Formula 20. Test scores used in reliability computation and in item analysis were obtained from 87 ninth grade students in Banks County (Georgia) High School in 1972.

Descriptive Data

The O'Donnell "Agnate Sentences Test" was designed to measure awareness of the relationship that exists between sentences that are similar in specific semantic content but different in syntactic structure. The term agnate is taken from the discussion of relation and process in Gleason (1965). He uses the terms enation and agnation to denote two kinds of relations which he says exist "...between sentences or other constructions and /are/ basic to the grammatical system of the language" (p. 196).

The relationship of enation is illustrated by these two sentences:

(1) The dog bit the man.
(2) The cat ate the canary.

The same grammatical description would apply to both sentences, that is, what can be said about parts of speech, syntactic relationships, and structure signals for one sentence can be said about the other. The differences between the two sentences are lexical rather than syntactic.

The relationship of agnation is illustrated by the following sentences:

(1) The dog bit the man.
(3) The man was bitten by the dog.

Gleason thinks the relationship which a native speaker senses between these two sentences can be accounted for neither by similarity in meaning nor similarity in vocabulary alone. He says. "It has a grammatical relation, that is, a relation between two grammatical structures. Derivative from it is a grammatical process, a manipulation which works on the grammatical structure and converts one member of the pair into the other....This process is called a transformation" (p. 198).

Using the terminology of transformational-generative grammar, one might say that agnate sentences are sentences that have essentially the same deep structure but differ in surface structure. Thus, the test developed by Simons (1970) which claims to measure ability to recover deep structure might more accurately be described as a test of ability to perceive the relation of agnation. The phrase "more accurately" is used here because it could be asserted that ability to recover deep structure is synonymous with ability to comprehend linguistic communication. Therefore, any test which depends on sentence comprehension would be a test of ability to recover deep structure.

The instrument described here is similar to the Simons test in that it requires the ability to see the similarity between two sentences. It is unlike the Simons test in that it includes a greater variety of sentence types and involves a greater degree of syntactic complexity. It is also unlike the Simons instrument in the format of items, that is, each item consists of a pattern sentence and three option sentences. Thus, to make a correct response the subject must reject two options. In this latter respect, the "Agnate Sentences Test" is similar to the earlier "Test of Recognition of Structural Relationships in English."

The "Agnate Sentences Test" consists of twenty-five items of the three-option multiple-response type. The stem of each item is a "pattern" sentence to be matched with one of the three options. In the following example, the correct option is indicated by an asterisk:

The boy brought a bone to the dog.
*a. The boy brought the dog a bone.
b. A bone was brought to the boy by the dog.
c. The dog brought the boy a bone.

In the pattern sentence and in sentence a, the boy brings the bone to the dog; in sentences b and c, the dog brings the bone to the boy.

Pattern sentences and correct responses in the various items involve a variety of syntactic structures and alternatives, including options among infinitive, gerund and noun clause constructions; options among relative clause, adjective, participle, and appositive constructions; deletion or retention of optional elements; initial or final order of elements; and active or passive constructions. Some option sentences differ from pattern sentences in respect to one structural feature; others differ in respect to several features.

Using the terminology of transformational grammar employed in several current textbooks, in two items the pattern sentence can be broken down into a matrix sentence and three constituent sentences; in four items it can be broken down into a matrix and two constituents; in eighteen items it can be broken down into a matrix and one constituent; in only one item does the pattern sentence consist of a single base sentence.

The entire test is reproduced in the Appendix of this report.

A preliminary version of the test was administered to several high school students in Lawrenceville, Georgia in the Spring of 1973. After the obviously faulty items were revised, the test was administered to sixty-five eighth-graders in North Madison Middle School, Danielsville, Georgia, in the winter of 1974. Three intact classes were selected to represent a range of scholastic ability. The median percentile on the ITBS Reading Test was 47; the lowest percentile was 1, and the highest was 98. Percentiles on the Vocabulary sub-test ranged from 3 to 94, with a median of 43. On the Composite Language scores, the percentiles ranged from 2 to 96, with a median of 39.

Scores of eighth-graders on the "Agnate Sentences Test" ranged from a low of 8 to a high of 24. The mean score was 17.18 with a standard deviation

of 3.66. The median score was 17.

The test was also administered to sixty-six eleventh graders in North Madison High School and to sixty-three fourth graders in North Madison Elementary School. The eleventh grade mean score was 18.4 with a standard deviation of 3.98. The median score for the eleventh grade was 19. The fourth grade mean score was 10.9 with a standard deviation of 3.77. The fourth grade median was 11.

The only validity claimed for the "Agnate Sentences Test" is its face validity, that is, it appears to measure what it was designed to measure. The claim that it measures some kind of linguistic ability is supported to some degree by its correlation with composite language and reading scores on ITBS. Pearson product moment correlation coefficients were computed for the "Agnate Sentences Test" and composite language, vocabulary and reading scores. Correlation coefficients of .62, .56, and .65 respectively were obtained for the different measures.

The reliability index (Cronbach -- S Alpha stepped down to one element) computed from eighth grade data was .727. The index projected to a test of 100 items was .914. Point biserials for dichotomous items ranged from .07 to .54. Item difficulty indices ranged from .185 to .969, with a mean difficulty of .687. Detailed item analysis information is presented in Tables 1 and 2.

The high proportion of relatively easy items (13 items have a difficulty index of .75 or above) suggests that the test might be more appropriate for a slightly younger group. The fact that the eighth grade mean was less than two points below that of the eleventh grade but more than six points higher than the fourth grade suggests the sixth grade as an appropriate level for the test.

Examination of Table 1 reveals that several items had at least one unattractive option. Five items had one option that was totally unattractive. Five additional items had an option chosen by only one subject. Ten other items had an option chosen by five subjects or less. While these option sentences might be more attractive to younger subjects, indications are that they stand in need of further revision.

Although the "Agnate Sentences Test" appears to have acceptable validity and reliability, there is obvious need for a more refined instrument with carefull attention given to the types of syntactic constructions included and to the quality of the option sentences. The development of such an instrument appears to be both desirable and feasible.

TABLE 1

Agnate Sentences Test Item Information
Proportions of Subjects Selecting Each Response

Item Number	Difficulty	Option a	Option b	Option c
1	.97	.00	.97	.03
2	.92	.92	.06	.00
3	.75	.15	.75	.09
4	.75	.23	.02	.75
5	.18	.18	.82	.00
6	.35	.32	.35	.32
7	.83	.08	.09	.83
8	.86	.12	.86	.02
9	.85	.06	.09	.85
10	.46	.43	.11	.46
11	.69	.31	.69	.00
12	.35	.35	.17	.48
13	.72	.72	.18	.09
14	.97	.02	.97	.02
15	.83	.09	.83	.08
16	.95	.00	.05	.95
17	.89	.89	.05	.06
18	.85	.02	.85	.14
19	.74	.06	.74	.20
20	.60	.34	.60	.06
21	.25	.52	.23	.25
22	.37	.37	.26	.37
23	.77	.08	.15	.77
24	.74	.74	.06	.20
25	.51	.51	.34	.15

TABLE 2

Agnate Sentences Test Item Analysis Information

Item Number	Proportion Answering Correctly	Standard Deviation of Item	Point Biserial Correlation with Total Score
1	.969	.173	.18
2	.923	.266	.25
3	.754	.431	.54
4	.754	.431	.07
5	.185	.388	.30
6	.354	.478	.37
7	.831	.375	.41
8	.862	.345	.23
9	.846	.361	.53
10	.462	.499	.29
11	.692	.462	.53
12	.354	.478	.47
13	.723	.447	.22
14	.969	.173	.42
15	.831	.375	.42
16	.954	.210	.19
17	.892	.310	.42
18	.846	.361	.46
19	.738	.439	.42
20	.600	.490	.23
21	.246	.431	.47
22	.369	.483	.52
23	.769	.421	.47
24	.738	.439	.50
25	.508	.500	.25

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APPENDIX

AGNATE SENTENCES TEST

Directions: In each group of sentences, you are to select the sentence (a, or b, or c) which is most like the pattern sentence in meaning.

Example 1. The boy brought a bone to the dog.
- a. The boy brought the dog a bone.
- b. A bone was brought to the boy by the dog.
- c. The dog brought the boy a bone.

In the pattern sentence and in sentence a, the boy is the one who brings the bone; in sentence b and c the dog brings the bone. Sentence a, therefore, is the one that is most like the pattern sentence in meaning.

1. The paper was given to John by his friend.
   a. The paper was given his friend by John.
   b. John's friend gave him the paper.
   c. John has given the paper to his friend.

2. The boy was asked by the man to leave.
   a. The man asked the boy to leave.
   b. The boy was asked to leave the man.
   c. The boy asked the man to leave.

3. It was hard for Sam to learn grammar.
   a. It was hard grammar for Sam to learn.
   b. Learning grammar was hard for Sam.
   c. For Sam it was hard grammar to learn.

4. The strongest player won the prize.
   a. The player who won the prize was strongest.
   b. The player winning the prize was strongest.
   c. The prize was won by the player who was strongest.

5. It pleases Bill for Mary to sing.
   a. For Mary to sing pleases Bill.
   b. Bill is pleased when Mary sings.
   c. Mary sings in order to please Bill.

6. Peter Mason, who is a lawyer, wrote the letter.
   a. Peter Mason, who wrote the letter, is a lawyer.
   b. The letter was written by Peter Mason, a lawyer.
   c. Peter Mason is a lawyer, who wrote the letter.

7. Larry sang a song while he was taking a shower.
   a. Larry took a shower while he was singing a song.
   b. While Larry was singing a song, he took a shower.
   c. While taking a shower, Larry sang a song.

8. Bill thinks Jack won't finish his boat on time.
   a. Bill doesn't think that Jack won't finish his boat on time.
   b. Bill doesn't think Jack will finish his boat on time.
   c. It isn't thought by Bill that Jack's boat won't be finished on time.

9. We finished our game after the rain had stopped.
   a. After the rain had stopped our game, we finished.
   b. We finished after the rain had stopped our game.
   c. The rain having stopped, we finished our game.

10. Sally's singing irritates me.
    a. Sally irritates me with her singing.
    b. I am irritated when Sally sings.
    c. I am irritated by Sally's singing.

11. It was certain that Jim had won the prize.
    a. Jim was certain that he had won the prize.
    b. That Jim had won the prize was certain.
    c. That Jim had won the prize he was certain.

12. Daisy watched TV while she was doing her homework.
    a. While doing her homework , Daisy watched TV.
    b. While watching TV, Daisy was doing her homework.
    c. While Daisy watched TV, she was doing her homework.

13. That the book Tom lost was not his is certain.
    a. It is certain that the book Tom lost was not his.
    b. It is not certain that the book Tom lost was his.
    c. That the book Tom lost was his is not certain.

14. The man decided that he would read the book to the boy.
    a. It was decided by the man that the boy would read the book to him.
    b. The man decided to read the boy the book.
    c. The man decided the boy would read the book to him.

15. The bike was sold to the man by the boy.
    a. The boy was sold the bike by the man.
    b. The man was sold the bike by the boy.
    c. The man sold the boy the bike.

16. It is easy to get along with Jack.
    a. Getting along is easy for Jack.
    b. It is easy for Jack to get along.
    c. Getting along with Jack is easy.

17. Lucy told Linus that he should take the test.
    a. Linus was told by Lucy to take the test.
    b. Linus told Lucy to take the test.
    c. Lucy was told that Linus should take the test.

18. It was good that Lucy had read the lesson.
    a. Lucy had read that the lesson was good.
    b. That Lucy had read the lesson was good.
    c. The lesson was good that Lucy had read.

19. The girl was made angry by the noises Charlie made.
    a. Charlie made noises to make the girl angry.
    b. The noises Charlie made made the girl angry.
    c. It made the girl angry for Charlie to make noises.

20. Tom wanted the paper that was written by Mary.
    a. The paper Tom wanted was written by Mary.
    b. Tom wanted the paper Mary wrote.
    c. Mary wrote the paper that Tom wanted.

21. It was fortunate that the man who was kind saved the dog.
    a. It was fortunate that the man who saved the dog was kind.
    b. It was fortunate that the man was kind to save the dog.
    c. That the kind man saved the dog was fortunate.

22. We were pleased that the boy we met in the park kept his promise.
    a. That the boy whom we met in the park kept his promise pleased us.
    b. We were pleased that we met the boy in the park who kept his promise.
    c. It pleased us that we met the boy in the park who kept his promise.

23. We are happy that the man who was driving the car in which we were riding was careful.
    a. We are happy that the careful man was driving the car in which we were riding.
    b. We are happy that the man who was careful was driving the car we were riding in.
    c. We are happy that the man driving the car we were riding in was careful.

24. When a dog that runs fast chases a rabbit, anyone can guess how the race will end.
    a. When a rabbit is chased by a dog that runs fast, how the race will end can be guessed by anyone.
    b. Anyone can guess how the race will end when a rabbit that runs fast is chased by a dog.
    c. Anyone can guess how the race will end when a dog chases a rabbit that runs fast.

25. It was fortunate that Jane did not read the letter that Sally wrote.
    a. Fortunately, the letter Sally wrote was not read by Jane.
    b. Jane was fortunate not to read the letter that Sally wrote.
    c. Fortunately, the letter Jane wrote was not read by Sally.