ABSTRACT
        The study examined whether an animal naming task
would discriminate between 286 normal students (grades K-9) and 123
language disordered students (5-16 years old). The task was of a free
and controlled association type for identifying word retrieval
problems. Each subject (S) was administered the task individually in
the school or clinic setting. The mean number of responses were
computed across grades for both groups. Steady increments in scores
were found for both groups through the fifth grade. Normal language
Ss produced more animal names than their language disordered
grademates in 8 of the 10 grades, although differences were not
significant at any grade level. It is concluded that three aspects of
lexical accessibility need to be explored to gain insight into the
results: word frequency, codability, and age of acquisition. (CL)

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Can Controlled Association Tasks Identify Word-Finding Problems in Children?

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INTRODUCTION

Word-finding problems are often exhibited by children with language or
learning problems. As a profession, speech-language pathologists seem to be
increasingly aware of this aspect of communication disorders in children. The
authors' work with language disordered children dictated a need for a reliable
method to identify children with word-finding problems, preferably a tool that
could be used in a language screening context.

The literature describes five different techniques which claim to assess
worↄ-retrieval skills. They are 1) observations of conversational speech, 2)
observations of seriatum speech, 3) a pair of tasks called the "auditory"
conditions, 4) confrontation naming and it's offspring called Rapid Automized
Naming, and finally 5) free and controlled associations. I'd like to briefly
describe each technique.

Observations of conversational speech is a technique in which spontaneous
speech is observed for evidence of word-finding problems. Johnson and
Myklebust advocated its use in their 1967 text on learning disabilities. The
Boston Diagnostic Aphasia Examination includes a Word-Finding Scale which
allows a clinical decision about whether word-finding is a significant part of
an aphasic's speech pattern. Most recently, Wiig and Semel have attempted to
formalize observations by specifying rules for analyzing a language sample
which then lead to both qualitative and quartative information.

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Observations of seriatim speech is a clinical technique in which the
ability to rapidly name automatic sequential series of words is analyzed.
Stimuli have included counting to 20 or 21, and listing items, such as the
alphabet, days of the week, and ~ ' ~ of the year. Subtests using seriatum
tasks are included in the Eisenson   ..iasia Test, Schuell's Minnesota Test for
Differential Diagnosis of Aphasia, the Boston ,the Stanford-Binet Intelligence
Scale, and the CELF.

The third assessment technique, the "auditory" conditions, was developed
in 1969 by Barton, et al. The technique requires the completion of two tasks,
the word needed to complete an open-ended sentence, and the naming of the word
implied by a description. Several subsequent researchers have used the
technique experimentally, but we have found no reports of clinical applications
of the technique.

Confrontation Naming is the fourth assessment technique, a technique which
was used initially with children by Rutherford and Telser in 1967. The task
involves the naming of common pictures or objects as soon as possible after the
stimulus item is shown to the subject. It has appeared in numerous tes.
instruments including Schuell's MTDDA, the PICA, the Spreen-Benton Aphasia
Tests, the Boston, the Western Aphasia Battery, the PICAC, and the CELF. An
offspring of Confrontation Naming, called Rapid Automized Naming, or RAN,
appeared in 1974 and involves the repeated presentations and naming of a very
limited number of stimuli. RAN was initially reported by Denckla and Rudel and
has been used in a limited number of studies since that time.

The fifth technique is Free and Controlled Associations, which requires
spontaneous generation of words within specific time periods. Test:
incorporating this procedure are the Detroit Tests of Learning Aptitude, the

Spreen-Benton Aphasia Tests, the Boston, the McCarthy Scales of Children's
Abilities, the Stanford-Binet, the Western Aphasia Battery, and the CELF.

Of the five techniques described, a Free or Controlled Association task
seemed the best suited for inclusion in a screening battery since the task is
of short duration, simple to administer, simple to score and requires a minimal
number of test materials. But, the four published tests using the technique
with children also seemed to present prob'-ms, such as dated norms, norms
covering a restricted age range, the citation of only a single passing
criteria, and psychometric difficulties.

However, a subtest in the Boston Diagnostic Aphasia Examination seemed to
hold some promise as a screening instrument for identifying word-finding
problems in school-age children. This was the Fluency in Controlled
Association, or Animal-Naming, subtest. The test manual stated that the naming
of 12 animals was the norm for 10-year old children on the subtest. The method
by which this norm was obtained isn't shared in the manual, but it seemed to
indicate that the task could be used with children.

METHODS

The Animal-Naming task is a simple one. We adapted the language of the
instructions to fit children as follows: "I want to see how many different
animals you can think of and name for about a minute while I count them. Any
animals will do; they can be from the farm, the jungle, the ocean or be house
pets. For instance you can start with dog." The responses are then recorded,
verbatim, in six 15-second segments.

We dealt with two groups of subjects for our study attempting to develop
normative information on this tool for identifying word-finding problems in
school-age children. The larger group of subjects consisted of 286 normal

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children in grades kindergarten through nine, living in either of two Iowa
communities. The children were identified by building principals and classroom
teachers as meeting the following criteria:

1) doing at least average academic work

2) having no history of communication problems, and

3) having no history of remedial assistance for academic problems.

The second group of subjects were 123 language-disordered children ranging
in ages from 5 through 16 years of age. The subjects had met the criteria of:

1) normal hearing

2) performance intelligence quotient of 80 or above, and

3) a Language Severity Rating of L2, L3, or L4 on a minimum of two

   formal, normed language measures. This measure was developed by

   the Iowa Department of Public Instruction, and describes

   language delays from 6 to 18 or more months.

These subjects were identified by speech-language pathologists working in the
schools of the local Area Education Agency, or in two clinic facilities at the
University of Iowa.

Each subject was administered the Animal-Naming task individually, either
in the school or the clinic setting. Administration time, including the
instructions, took a total of approximately 2 1/2 minutes. When scoring the
test protocols, we chose to follow the scoring conventions developed by
Goodglass and Kap. n for the Boston Diagnostic Aphasia Examination. This
consists of computing the number of responses produced during the most
productive consecutive 60-seconds.

RESULTS

The mean number of responses were then computed across grades for both the normal language learning and the language-disordered subject groups. As can be seen in the graph, steady increments in scores were seen for both groups through the fifth grade. The normal language learners produced more animal names than did their language disordered grademates in 8 of the 10 grades, although the differences were not statistically significant between the two groups at any grade level.

The overlay illustrates the first standard deviations.

The normal subjects in this study performed at a higher level than the performance of children mentioned by Goodglass and Kaplan. The 12 items they cite as a norm for 10 year old children was typical of children in the first grade (6-7 year olds) in this study.

The Animal-Naming subtest was reported by Goodglass and Kaplan to identify word-finding problems in the adult aphasic population. Thus, it seemed important to validate this assumption in a population of language-disordered children by administering the task to children with known word-finding problems. The school or referring clinician of each of the 123 language disordered subjects was asked specifically if the child exhibited word-finding problems, based on their observations and interactions with that individual child. 16 of the language disordered children were so described. We then compared the performances of these 16 children to the mean score achieved by the normal group for their grade level. 7 of the language disordered children were below their grade mean, one was at the mean, and 8 were above the mean achieved by their normal grade-mates.

DISCUSSION

Can controlled association tasks identify word-finding problems in children? This study has shown that it does not, when using the category of animals as stimuli. Three parameters of lexical accessibility need to be explored to gain some insights into possible explanations for the results obtained in this study. These three parameters are Word Frequency, Codability, and Age of Acquisition.

Butterfield and Butterfield hypothesized that word frequency influenced an individual's vocabulary and meaning structure since they reflect what one hears in one's linguistic environment. Thus the frequently mentioned words and concepts are the ones most likely to be retrieved and used by the individual. Word frequency also is a factor in associative clustering which facilitates recall as found by Bousfield, Cohen and Whitmarsh.

Perhaps the category of animals contains enough high frequency words that it does not allow for clear differentiation of children with word-finding problems. Also, children's experiences with animal names in preschool and early elementary educational settings actively teaches thinking of animals as an associative cluster. As a result, our findings may reflect only the development of the associative cluster for the category of animals, and may not reflect word-retrieval in areas that have not been formally taught. Perhaps the task needs to be investigated using other categories.

Codability is the second parameter which needs to be considered when interpreting the results of this study. Codability is a sociolinguistic term used by Lachman, explaining why the labels given to stimuli by persons living in a particular language community are agreed upon. The more important words are

more highly agreed upon, used more frequently, acquired at an earlier age, and thus were more readily available for recall.

Codability may be a factor in this study because all subjects were from Iowa. Children raised in Iowa, whether developing language skills normally or not, and whether living in a rural or urban area, are frequently exposed to animals outside of the classroom. This exposure may be direct, by actual observation of animals or indirect via radio, TV, newspaper, and family discussions of the econimics of agriculture. Perhaps this ready availability of animals in the immediate environment heightens childrens' awareness of, and interest in, all types of animals. Perhaps this study should be replicated in a non-agricultural urban area of the country.

The age at which a word is acquired is the third parameter which may affect lexical accessibility. Carroll and White stated that high frequency words are ones acquired at a young age. The longer the word is in long-term memory the more accessible it is for recall. For reasons already discussed, animal names are probably words which are acquired early in life for children living in Iowa, and thus were accessible for recall when the child was confronted with the task of naming animals.

Can controlled association tasks identify word-finding problems in children? The jury is still out on this issue. However, our study has demonstrated that the task using the category of animals does not differentiate language-disordered Iowa children from their normal language learning grademates.

1. OBSERVATION OF CONVERSATIONAL SPEECH

2. OBSERVATION OF SERIATIM SPEECH

3. "AUDITORY" CONDITIONS

1. OBSERVATION OF CONVERSATIONAL SPEECH

2. OBSERVATION OF SERIATUM SPEECH

3. "AUDITORY" CONDITIONS

4. CONFRONTATION NAMING

(RAPID AUTOMIZED NAMING-RAN)

5. FREE AND CONTROLLED ASSOCIATIONS

CRITERIA
NORMAL SUBJECTS
(N=286)

1. AVERAGE OR BETTER ACADEMIC WORK

2. NO HISTORY OF COMMUNICATION PROBLEMS

CRITERIA
NORMAL SUBJECTS
(N=286)

3. NO HISTORY OF
REMEDIAL
ASSISTANCE
FOR
ACADEMIC
PROBLEMS

CRITERIA LANGUAGE DISORDERED SUBJECTS (N=123)

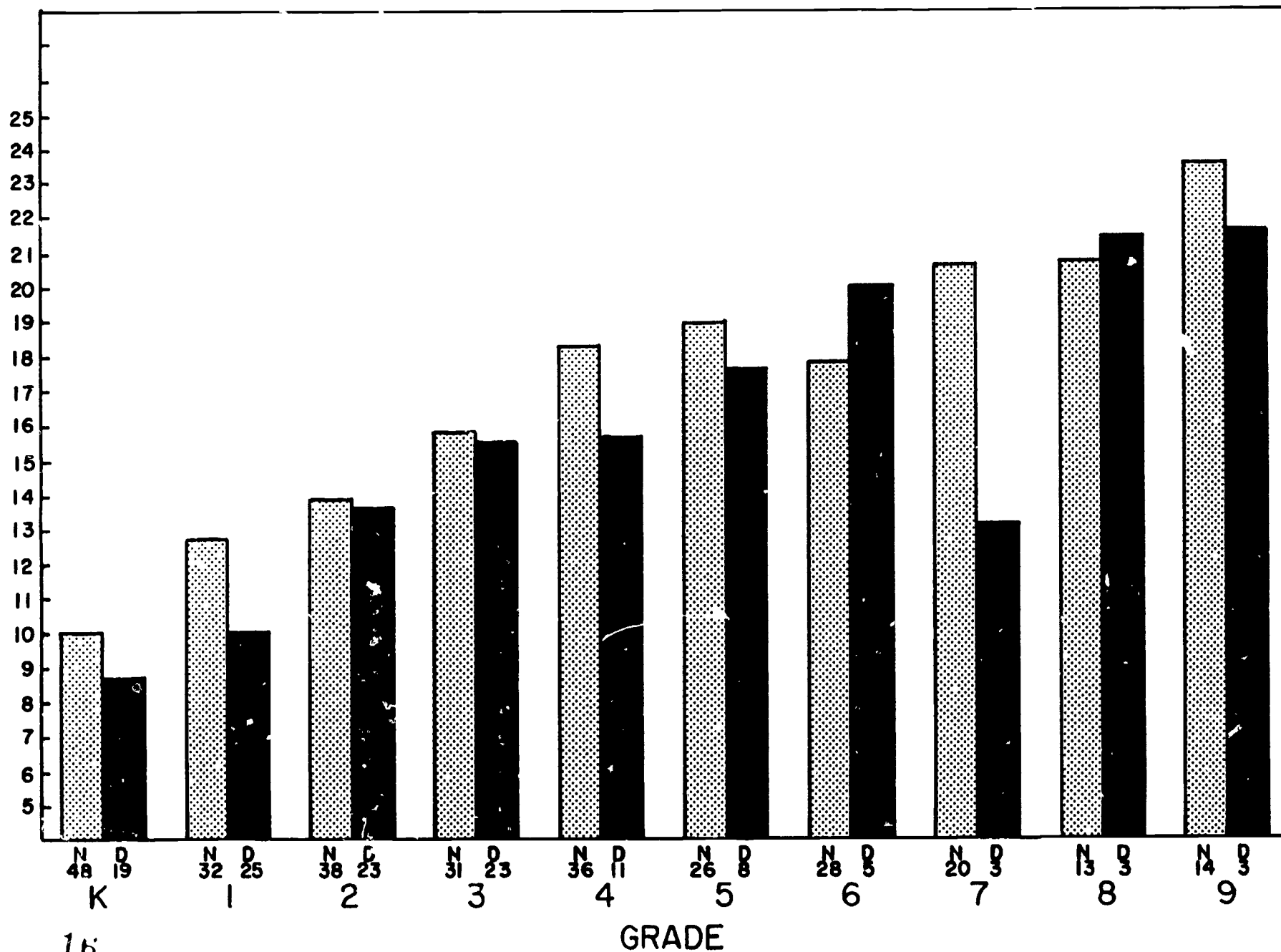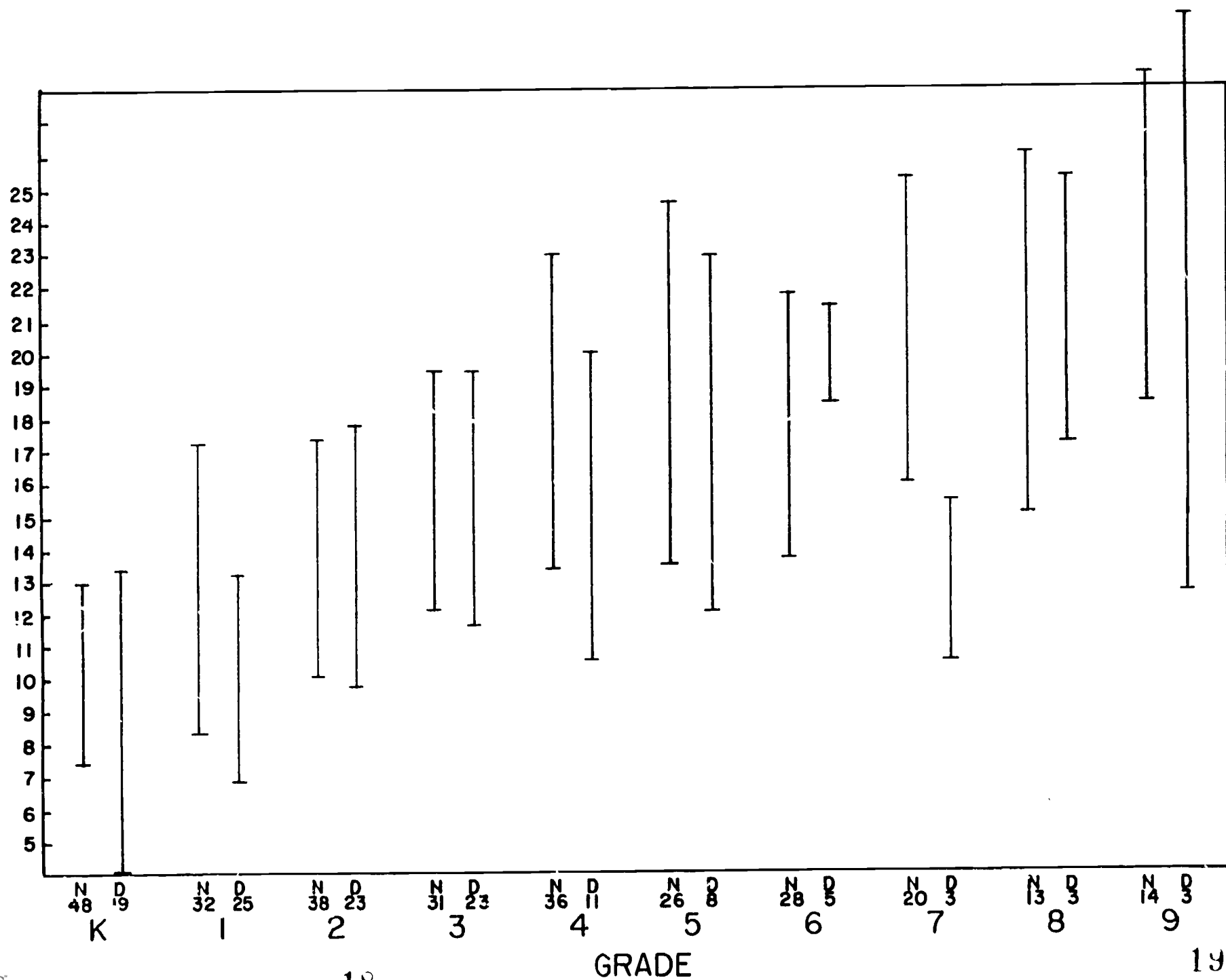## 1. NORMAL HEARING

2. PERFORMANCE I.Q. OF 80 OR ABOVE

CRITERIA LANGUAGE DISORDERED SUBJECTS (N=123)

3. LANGUAGE SEVERITY RATING OF L2, L3, OR L4

Mean Number of Animal–Name Responses During Most Productive 60 Seconds

GRADE

K — N 48, D 19
1 — N 32, D 25
2 — N 38, C 23
3 — N 31, D 23
4 — N 36, D 11
5 — N 26, D 8
6 — N 28, D 5
7 — N 20, D 3
8 — N 13, D 3
9 — N 14, D 3

16

17

WORD
FREQUENCY

CODABILITY

AGE OF
AQUISITION