

NOTES AND DISCUSSION

Performance of Normal Elderly on the Boston Naming Test

EMILY LABARGE

School of Medicine, Washington University

DOROTHY EDWARDS

I.W.J. Rehabilitation Institute

JOHN WM. KNESEVICH

School of Medicine, Washington University

The Boston Naming Test has enjoyed increasing use in many research studies since its introduction. However, there is little normative data on the age group above 60 years of age. This study presents data from a sample of 58 well-defined healthy elderly males and females between the ages of 60 and 85. In comparison with published normative data, our sample has higher means, smaller standard deviations, and narrower ranges. These results suggest that aging alone does not significantly alter recognition-cued word-finding ability as defined by the Boston Naming Test. Also there is remarkably consistent performance throughout our age range. © 1986 Academic Press, Inc.

INTRODUCTION

Problems of language with advancing age are associated in both the lore of the general public and the clinical literature (Kral, 1962). The condition described most frequently is the inability to retrieve a name quickly when desired. Because neurologic illness may initially be manifested by a language disturbance, the normal pattern of word-finding ability and its changes must be known (Kirshner, Webb, Kelly, & Wells, 1984). There is no standard battery of tests for examining language in aging. There has been a paucity of information about the performance of the

Send requests for reprints to Emily LaBarge, Memory & Aging Project, Box 8111, Washington University School of Medicine, 660 S. Euclid, St. Louis, MO 63110.

normal elderly. Proper diagnosis may be augmented by an accurate measure of remaining language ability. It is necessary to define "normal" behavior. "Norms" are derived from descriptive statistics that are compiled to permit the comparison of a particular score (mean) with the scores (or means) earned by the members of some defined population (Angoff, 1984).

Goodglass and Kaplan (1983) have developed a comprehensive testing procedure for delineating, examining, and quantifying aphasia in subjects ranging from kindergarten age to over 70 years of age called the Boston Diagnostic Aphasia Examination (BDAE). Subtests have been designed to elicit quantitative evidence of possible specific areas of deficit. An elaboration of one subtest of the Boston diagnostic examination, an extensive object-naming test, is called The Boston Naming Test (BNT) (Kaplan, Goodglass, & Weintraub, 1976). The BNT is thought to be particularly useful for detecting relatively mild word-retrieval problems, as in cases of dementia or in cases of children with developmental reading or speech problems.

Normative data for BNT has been reported by Borod, Goodglass, and Kaplan (1980). The test was administered to 147 normal adult males (no females), who were right-handed and native English-speaking, aged 20–85. Only 25 subjects were included in the 70–85 age bracket with varying educational levels. They were recruited from the community by advertisement and contacts with groups for the aged.

The purpose of this paper is to report on a larger sample of subjects both male and female taking the BNT as part of a longitudinal study designed to compare normal elderly adult performance to those who have been clinically diagnosed as having senile dementia of the Alzheimer type.

METHODS

Potential subjects were those who responded to a series of discussions of the research program in local newspapers and on local television and radio or were among those who had already willed their body to the Washington University School of Medicine.

Recruitment was limited to noninstitutionalized subjects aged 60 to 85 years with a mean of 71.7 years, SD 4.9. Years of education ranged from 7 to 20 with a mean of 12.8 years, SD 3.5. There were 28 males and 30 females in the sample. Table 1 presents a breakdown of subjects by age and education.

Each control subject was enrolled by being matched with a SDAT subject for age, sex, race, and social position. Controls were required to have good intellectual function in relation to their past and were rated as nondemented on a comprehensive clinical dementia rating scale (Hughes, Berg, Danziger, Cohen, & Martin, 1982; Berg, 1984). The 58 subjects had to have a normal physical examination, routine laboratory tests, and be free of illness listed in the exclusion criteria in Table 2 (Berg et al. 1982). All examinations and judgments were made by four experienced clinicians (neurologists and a psychiatrist, each certified by the American Board of Psychiatry and Neurology).

The Boston Naming Test is an 85-item test of line-drawn objects graded for difficulty.

TABLE 1
NUMBER OF SUBJECTS IN EACH AGE GROUP AND EDUCATIONAL LEVEL

Age	Education level				Total
	0-8	9-12	13-16	17-20	
60-64	0	1	1	1	3
65-69	3	6	6	2	17
70-74	2	12	5	4	23
75-79	2	3	3	2	10
80-85	1	3	0	1	5
Total	8	25	15	10	58

The subject is asked to name each object. The test was administered individually in a single session and scored by standard instructions (Kaplan et al., 1976).

RESULTS

Data from the 58 healthy elderly in the current study are presented in 5-year age groupings in Table 3. It should be noted that the scores show a decline as the age of the subjects increased. Correlations between BNT scores, education, and sex were not significant ($p > .05$) in each case.

DISCUSSION

Our sample differs from that of Borod et al. (1980) in three ways. First, it includes female subjects (30) in almost equal numbers to male (28) subjects. However, the correlations between Boston Naming scores and sex was not significant ($p > .05$). Second, 10 subjects had 17 or more years of education; whereas, Borod et al. had no subjects at that educational level. Third, the current sample had 20 subjects versus 31 for Borod et al. in the 60-69 year age range and 38 subjects versus 25 for Borod et al. in the 70-85 year age range. The cell sizes for the 60-

TABLE 2
EXCLUSION CRITERIA

- A. Neurologic disorders including senile dementia of the Alzheimer Type, Parkinsonism, Huntington's disease, communicating hydrocephalus, progressive supranuclear palsy, infection, brain tumor, subdural hematoma, multiple sclerosis, stroke, multi-infarct dementia, seizure disorder, and brain trauma
- B. Psychiatric disorders including primary affective disorder or major depression, schizophrenia, alcoholism or other substance abuse
- C. Other reversible dementias and other medical disorders that may reduce cognition, including overmedication, impaired function of lungs, heart, kidneys, or liver, anemia, hypothyroidism, vitamin B₁₂ or folate deficiency, malignancy, and diabetes mellitus (if insulin-dependent or if more than mild in degree)

TABLE 3
NORMS ON THE BOSTON NAMING TEST

Age	Mean	SD	Range
60-64 (<i>N</i> = 3)	71.0	4.6	67-76
65-69 (<i>N</i> = 17)	75.8	6.7	55-83
70-74 (<i>N</i> = 23)	70.3	7.0	55-83
75-79 (<i>N</i> = 10)	68.2	6.3	54-75
80-85 (<i>N</i> = 5) ^a	62.0	15.3	37-77
Total (<i>N</i> = 58)			

^a Includes one individual with a score of 37. If this individual were excluded, the mean would be 68.3, *SD* 7.2, range 61-77.

64 year age group and the 80-85 year age group were smaller than we desired. However, the data are comparable to that of the other three groupings. A comparison of means on the 70-85 year age range shows our means are higher, 66.8 versus 63.2; our standard deviations smaller, 9.5 versus 16.2; and ranges narrower, 37-77 versus 17-81.

A comparison of our data with that of Borod et al. (1980) demonstrates that word-finding ability is to a large degree retained in later life. When the performance of older adults is compared to that of younger subjects the range of scores is quite similar. The mean score for subjects under age 40-59 years in the Borod study was 76.1 (*SD* = 7.0). This can be compared to an overall mean of 69.4 (*SD* = 7.9) for the present study. Thus, there is a drop in naming ability of about 10 words from under the fourth to the ninth decade with larger standard deviations at the upper age ranges. Both samples show evidence for good word-finding ability well into the ninth decade on a recognition and retrieval task, a result consistent with prior research.

The present sample suggests that healthy older adults perform consistently and at a similar level to younger adults. The assumption that word finding drops precipitously at higher age ranges because of age alone is erroneous. A problem with word finding may be an indication of neuropathology and thus may signal to the clinician that future diagnostic evaluation is indicated. On the other hand, our findings should offer comfort to those who anticipate the frustration of the loss of word-finding ability as a normal accompaniment of longevity.

REFERENCES

- Angoff, W. H. 1984. *Scales, norms, and equivalent scores*. Princeton: Educational Testing Service.
- Berg, L. 1984. Clinical dementia rating (correspondence). *British Journal of Psychiatry*, 145, 339.

- Berg, L., Hughes, C. P., Coben, L. A., Danziger, W. L., Martin, R. L., & Knesevich, J. 1982. Mild senile dementia of Alzheimer type: Research diagnostic criteria, recruitment, and description of a study population. *Journal of Neurology, Neurosurgery, and Psychiatry*, **45**, 962-968.
- Borod, J. C., Goodglass, H., & Kaplan, E. 1980. Normative data on the Boston Diagnostic Aphasia Examination, Parietal Lobe Battery, and the Boston Naming Test. *Journal of Clinical Neuropsychology*, **2**, 209-215.
- Goodglass, H., & Kaplan, E. 1983. *The assessment of aphasia and related disorders*. Philadelphia: Lea & Febiger.
- Hughes, C. P., Berg, L., Danziger, W. L., Coben, L. A., & Martin, R. L. 1982. A new clinical scale for the staging of dementia. *British Journal of Psychiatry*, **140**, 566-572.
- Kaplan, E., Goodglass, H., & Weintraub, S. 1976. *Boston Naming Test, Experimental edition*. Boston: Veteran's Administration Hospital.
- Kirshner, H. S., Webb, W. G., Kelly, M. P., & Wells, C. H. 1984. Language disturbance an initial symptom of cortical degenerations and dementia. *Archives of Neurology*, **41**, 491-496.
- Kral, V. A. 1962. Senescent forgetfulness: Benign and malignant. *The Canadian Medical Association Journal*, **86**, 257-260.