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The Sir Frederic Bartlett Lectures: No. 1

Things, Words and the Brain

by R. C. Oldfield

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Alexander Lucin,
with very warm good wishes
from
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IMMEDIATE RECALL OF 'SENTENCES' BY
SUBJECTS WITH UNILATERAL CEREBRAL LESIONS

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Abstract - The abilities of men with unilateral cerebral lesions and of control subjects were studied in a sentence recall task. The experimental material had varied syntactic and semantic constraints. The overall performance of men with focal lesions in the right hemisphere was as efficient as that of the control subjects. Men with left hemisphere lesions, however, were generally impaired and showed a significant deficit when attempting to recall sentences with reduced semantic constraints.

1. INTRODUCTION

Tasks in which patients are asked to repeat sentences verbatim has traditionally been used to investigate memory and language impairments following cerebral lesions. Sets of sentences for immediate recall are included in most "Aphasia Scales" (EISENBERG (1); SCHUELL (2); WEISENBURG and McBRIDE (3); WEPMAN and JONES (4)). As far as can be ascertained, however, little emphasis has been placed on the types of sentences used in such tests and their usefulness in providing clues as to the nature of the disability.

With such considerations in mind, we have investigated the performance of patients with unilateral lesions of the left hemisphere (including residual dysphasic patients), patients with unilateral lesions of the right hemisphere and of a control group in a test of immediate recall of different types of linguistic

Object-naming by Dysphasic Patients

IN previous communications^{1,2} two of us reported that with normal subjects the time taken to name an object is inversely proportional to the logarithm of the frequency of the name-word in the language, as estimated by a standard word-count³. These experiments were originally undertaken to clarify the incapacity to name objects shown by individuals who have suffered some forms of brain injury, and the study has accordingly now been extended to subjects of this kind. The technique has necessarily been simplified and now comprises manual display of cards bearing the 26 pictures of objects originally used, and timing with a stopwatch (1/100 sec) in place of the optical projection and timing by voice-key and pen-recorder in the experiment previously reported.

The subjects were all men with penetrating gunshot head-wounds, the majority incurred in the Normandy campaign of 1944. Their ages ranged from 37 to 61, with a mean age of 44.5 years. The total number of cases tested was 102, but of these, 24 had bilateral lesions and these have been excluded for the present purpose as have those 4 who were not unquestionably right-handed. Fig. 1 shows the frequency-latency relationship for the remainder divided into the relevant lesion groups, having similar mean ages and verbal intelligence quotients. Also shown are results for the university group used in the previous experiment together with those for a hospital control group (patients of age and verbal level similar to the brain injured but with no ascertained neurological or psychiatric disorder). In the case of the dysphasics those results have been rejected in which, following presentation of the stimulus, two or more verbal interjections were made before the correct response. Once such an individual becomes involved in circumlocutory speech; the further period thus expended is somewhat random in amount.

With regard to Fig. 1, a linear relationship was found to subsist between mean latencies for the 26 objects and the logarithm of their frequencies, the coefficients of correlation ranging from - 0.80 to - 0.87 ($P < 0.001$). Analysis of variance confirmed the goodness of fit of these five linear regressions at $P < 0.001$. Analysis of variance showed the latencies for all sub-groups to differ from each other at $P < 0.01$ to $P < 0.001$, with the exception of the university subjects and the hospital control group, where the difference failed to reach significance.

A comparison of regression coefficients showed that the slopes of the three brain-damaged groups differed significantly from the hospital controls ($P < 0.01$ to $P < 0.001$), and the dysphasics versus