

## Cognitive Neuropsychological Analysis and Neuroanatomic Correlates in a Case of Acute Anomia

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We describe an analysis of lexical processing performed in a patient with the acute onset of an isolated anomia. Based on a model of lexical processing, we evaluated hypotheses as to the source of the naming deficit. We observed impairments in oral and written picture naming and oral naming to definition with relatively intact semantic processing across input modalities, suggesting that output from the semantic system was impaired. In contrast to previous reports, we propose that this pattern represents an impairment that arises late in semantic processing prior to accessing mode-specific verbal and graphemic output lexicons. These deficits were associated with a lesion in the posterior portion of the middle temporal gyrus or area 37, an area of supramodal association cortex that is uniquely suited as a substrate for the multimodal deficit in naming. © 1997 Academic Press

### INTRODUCTION

Impaired word retrieval or anomia is a common sign in patients with acquired aphasia (Kohn & Goodglass, 1985), and researchers focus much interest on understanding its basis. Recent investigations have incorporated a cognitive neuropsychological approach to analyze the naming deficits of aphasic patients. This approach posits a model of the functional processes involved in word retrieval and explains the anomia as a disruption at some point in the system (Ellis & Young, 1988; Rothi, Raymer, Maher, Greenwald, & Morris, 1991).

As shown in Fig. 1, the process of word retrieval presumably relies on a semantic system that contains meaning information for familiar words and

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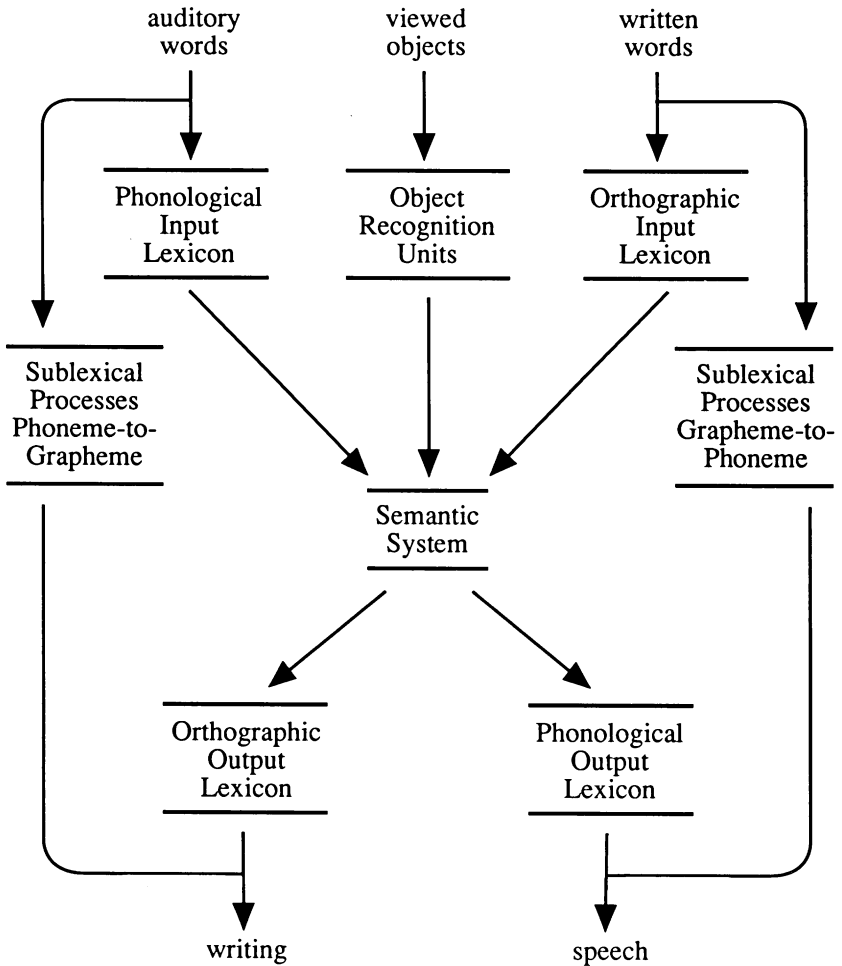


FIG. 1. Model of lexical processes involved in oral naming.

phonological and orthographic output lexicons storing the word forms for pronunciation and spelling of familiar words. Depending upon the task in which subjects name items, activation of input structural descriptions (phonological input lexicon, orthographic input lexicon, and object recognition system) for familiar words or pictures may be necessary to engage information in the semantic system. The coordinated functioning of these modular systems is necessary for performance of various lexical tasks, including oral and written picture naming, naming to auditory definitions, oral word reading, and writing to dictation. In addition, tasks of oral reading and writing to dictation presumably involve sublexical processes (grapheme-to-phoneme

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