

## The two-stage model of lexical retrieval: evidence from a case of anomia with selective preservation of grammatical gender

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### Abstract

The two-stage theory of lexical production distinguishes the retrieval of *lemmas* from the subsequent retrieval of the *forms* of words. The information made available by lemma retrieval includes semantic and grammatical details that are specific to a particular word, but not the direct specification of its phonological or orthographic form. This theory makes very strong predictions regarding the dissociability of these information types. In this report we present the case of an Italian anomic patient whose performance bears on these predictions. In various naming tasks this patient's intact ability to identify the grammatical gender of words that he cannot produce stands in stark contrast with his inability to provide any information regarding particular lexical forms. We document the reliability of this performance pattern, and we discuss the significance of this pattern both in terms of the support it provides for the two-stage theory of lexical retrieval and in terms of the evidence it furnishes regarding the mental specification of grammatical information.

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### 1. Introduction

Anomia has been cited as a fertile source of support for the two-stage theory of lexical retrieval. On this theory, non-verbal conceptual representations (*message level* representations, in the terminology of Garrett's model of production) map into modality neutral *lemmas* at the first stage of lexical

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selection, and *lexical forms* are retrieved at a separate stage on the basis of an address provided by the lemmas (Garrett, 1982, 1984, 1992; Levelt, 1989). According to this theory of lexical levels, a lemma is a lexical record that encodes a word's semantic and grammatical features (but not its phonological or orthographic properties). An anomic patient's ability to provide "definitional phrases" and pantomimic gestures when he or she cannot provide any information as to the phonology or orthography of the target has been taken as an indication that the retrieval of lexical semantics – lemma retrieval on this account – dissociates from the retrieval of lexical form. The critical part of the story is that the performance reflects access to lexical semantics (information encoded in the lemma), and not merely access to aspects of conceptual semantics (which may be part of "message level" representations). That is, the account assumes that the semantic information that the patient uses in order to demonstrate understanding constitutes word-specific (as opposed to object-specific) knowledge.

There is, however, an alternative interpretation of this characteristic "anomic state" based on the theory that production of a particular word involves access to a single and unique record in which all of the lexical information (semantic, grammatical, phonological and orthographic) is delineated. On this model, failure to access the phonology of a target reduces to failure of lexical retrieval, period. The capacity to provide definitional statements or fitting pantomimic gestures indicates that the patient's prelexical semantic representations are intact, but it does not require the retrieval of word-specific information. That is, if a patient's ability to correctly gesture the use of a pictured object only mandates that we posit access to a non-verbal conceptual representation, then no evidence for distinct lexical stages is forthcoming. What one needs instead is proof that, despite the fact that a patient cannot retrieve any information relating to the form of a target, he or she nevertheless has access to information that only word retrieval can provide. The meaning of a word is just a poor candidate for such information on anyone's model of lexical production, largely because it is so difficult to segregate the properties of lexical and non-lexical semantic representations.

In order to make an argument from anomia for the two-stage theory, then, one must first identify the variety of information attributed to a lemma that can be distinguished both from what is available from message level representations and from representations of lexical form. The strongest candidate would be information concerning word-specific grammatical features, and grammatical gender is a case in point. It is generally the case that morpho-syntactic lexical features such as grammatical gender will not be encoded in or otherwise immediately derivable from the non-lexical, conceptual representation of a planned utterance. So, while there are Italian nouns whose grammatical gender is determined straightforwardly by their referents (e.g., *padre* "father" and *madre* "mother"), the grammatical gender of nouns like *tavolo* (table, masc.) and *sedia* (chair, fem.) are not

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