

Morphological Paradigms in the Mental Lexicon

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A current debate in morphological theory is concerned with the status of paradigms. For Lieber (1992) paradigms are simply artifacts, parallel to lists of sentences. Similarly, in the framework of Distributed Morphology paradigms, like collections of related phrases or sentences, do not have any status as theoretical objects (Halle & Marantz 1993). In other frameworks, however, paradigms play an important role in organizing related word forms or affixes, for example in Minimalist Morphology (Wunderlich & Fabri 1995). In psycholinguistic terms, one can think of a paradigm as a rule-based index or access system for mapping grammatical information, i.e. morphosyntactic features, to their exponents or affixes. The question, then, is whether there is any empirical evidence that the human language processor makes use of such a rule-based system in the on-line processing of inflected words.

In this talk, we will present converging evidence from morphological processing studies and Specific Language Impairment in support of the central role of paradigms in the mental lexicon. Specifically, we will report three sets of empirical findings from our psycholinguistic studies of inflection:

- (i) According to Minimalist Morphology, the independent lexical representation of affixes is a necessary condition for the organization of inflectional paradigms. In order to examine whether affixes are separately stored in the mental lexicon, we carried out a lexical decision experiment on inflected adjective forms (such as *stumpfes* 'blunt-nom./akk.neut.sg.', *purem* 'pure-dat.masc./neut.sg.'). Lexical decision experiments are word/non-word discrimination tasks used to determine frequency effects. We found an affix-frequency effect for adjectives inflected with *-s* and *-m*, but no effect of word-form frequency: word forms with a high-frequency affix (*-s* 'nom./acc.neut.sg.') yielded shorter lexical decision times than word forms with a low-frequency affix (*-m* 'dat.masc./neut.sg.'), while the frequency of the whole inflected adjective form did not affect the subjects' response latencies. This indicates that regular inflectional affixes are stored separately from word stems.
- (ii) In a second set of experiments, we investigated regular verb inflections using the cross-modal immediate repetition priming technique (Marslen-Wilson et al. 1994). In this task, subjects hear a spoken prime which is immediately followed by a visually presented target to which subjects have to make a word/non-word decision, just as in the lexical decision task. Because the task involves two modalities, cross-modal priming effects are likely to tap lexical representations rather than modality-specific formal similarities. In the first experiment, subjects were tested on identical and morphologically related sets of verbs. The target was a 1st sg. form in each case.

Example Stimulus Set - Regularly Inflected Verbs

<i>Auditory Primes</i>	<i>Visual Targets</i>	Condition
<i>ich lackiere</i> 'I paint'	<i>lackiere</i> 'paint-1st sg.'	(i) identical
<i>du lackierst</i> 'you paint-2nd sg.'	<i>lackiere</i>	(ii) morphologically related
<i>er lackiert</i> 'he paints'	<i>lackiere</i>	
<i>ihr lackiert</i> 'you paint-2nd pl.'	<i>lackiere</i>	

The results show significant priming differences between the various person and number suffixes on regular verbs: Whereas the 2nd pl. suffix *-t* fully primes the 1st sg. form of a given verb, the 3rd sg. *-t* does not produce full priming, even though the form of the affix used as a prime is identical to the 2nd pl. condition (*-t* in both cases). This finding receives a straightforward explanation from the structure of the inflectional paradigm as suggested by Wunderlich & Fabri (1995): neighbouring cells that occupy a subparadigm, i.e. 1st sg. and 3rd sg., are competitors for one cell in the general paradigm and thus show inhibitory effects during lexical access. An additional control experiment with 2nd sg. forms as targets showed that priming from the 1st sg. or 2nd pl. towards the 2nd sg. proved to be as effective as priming from the 3rd sg. towards the 2nd sg. These findings indicate that the reduced priming effects for 3rd sg. forms in the main experiment is determined by the structure of the paradigm, and not by any surface properties of the affixes involved.

- (iii) We also investigated data from Specific Language Impairment in Greek. Examining person and number marking on verbs, we found that impaired children only produce a subset of the logically possible agreement errors and that most of the errors occur within a given paradigm dimension, rather than randomly across the paradigm. The children may produce, for example, a 1st sg. form instead of a 3rd sg. form and vice versa, but they do not produce 3rd pl. forms instead of 2nd sg. forms, indicating that inflectional errors are constrained by the structure of the paradigm.

We conclude from (i) and (ii) that morphological paradigms are used by the human language processor and that models of the mental lexicon which try to do without morphological paradigms are not supported. We conclude from (iii) that morphological paradigms are selectively impaired in SLI.

Taken together, the above findings support the view that paradigms are not just artifacts of linguistic theory but rather account for different kinds of psycholinguistic findings. Specifically, we want to argue that our results are best captured by the notion of paradigm as developed in the framework of Minimalist Morphology.

References

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