

W Apr 18

Discussion summary:

Havas et al. (2012)

Overview

- p 33: [emphasis added]
“The aim of the present study is to contribute to a better understanding of the lexical representation and processing of derived word forms. We specifically ask to what extent derived words show experimental effects that are characteristic of **lexical entries** and/or of **combinatorial** word forms.”
- What other labels have we seen for the categories being contrasted here?

Background on ERPs

- ERPs = event-related potentials
 - A measure of electrical activity on the scalp
 - Reflects electrical activity in the brain
 - Can look at time-course, location of effects
- Well-known effects in language processing
 - N400: negativity at ~400ms
 - P600: positivity at ~600ms
 - LAN: left anterior negativity (early)

N400

- Believed to indicate lexical processing, semantic integration
- Sensitive to:
 - word frequency
 - cloze probability (predictability in context)
 - semantic relatedness among words
- Not (typically) sensitive to:
 - morphosyntactic ungrammaticality

P600

- Believed to indicate syntactic processing and other combinatorial processes
- Sensitive to:
 - (morpho)syntactic violations such as those involving “e.g. subject-verb agreement violations, verb inflection errors, case inflection violations, etc.” (p 333)
- Sometimes also found with sentence-level semantic anomalies (such as theta-assignment mismatches)

LAN

- Believed to indicate morphological and morphosyntactic violations
- Potential problem: Distinguishing this from the N400 effect
 - both are relatively early
 - both are negative

The current study –

Derivational morphology in Spanish

- Testing two suffixes
 - Both form deadjectival nouns in Spanish
 - Both are easily segmentable morphemes (no allomorphs, no [orthographic] stem changes)

-ez(a)	-ura
<ul style="list-style-type: none">• more productive• can make novel forms	<ul style="list-style-type: none">• less productive
<ul style="list-style-type: none">• derived form has transparent, predictable semantics	<ul style="list-style-type: none">• derived form is likely to have additional, unpredictable meanings

Experiment 1

- Main point is to test claims about productivity of these two suffixes with native-speaker data
- Experiment 1 results: What did they find?
How do they interpret it? (see Fig 1, p 337)

Experiment 1

- Effect of word-form for the rhyme condition
 - Suggests lexical connections to/between existing nominalized forms
- Effect of productivity comes out in the non-rhyme condition
 - How big is the effect?

Experiment 2

- p 334:
“Experiment 2, the main experiment, employed the ERP violation paradigm to determine whether (incorrect) forms with -ez(a) and -ura produce ERP patterns typical of lexical/semantic violations and/or of combinatorial/grammatical violations.”
- What are these typical ERP patterns?

Experiment 2

- ERP violation paradigm:
 - Present context sentence
 - Present sentence with crucial word
 - Measure electrical signal at crucial word, compare across conditions

Experiment 2

- Sample stimulus:

(1) Real stem, expected *-ura*

(a) Las montañas estaban nevadas.

La **blancura** de la nieve era deslumbrante.

‘The mountains had snow. The whiteness of the snow was dazzling.’

(b) Pintaron de nuevo el edificio.

La **blanqueza** del edificio era muy notable.

‘They repainted the building. The (?)whiteness of the building was outstanding.’

ERP results

Incorrect forms with <i>-ura</i>	N400	P600
Incorrect forms with <i>-ez(a)</i>	—	P600
Unexpected forms with <i>-ura</i>	—	(?)
Unexpected forms with <i>-ez(a)</i>	—	P600

- What do they mean by ‘incorrect’ vs. ‘unexpected’?

ERP results

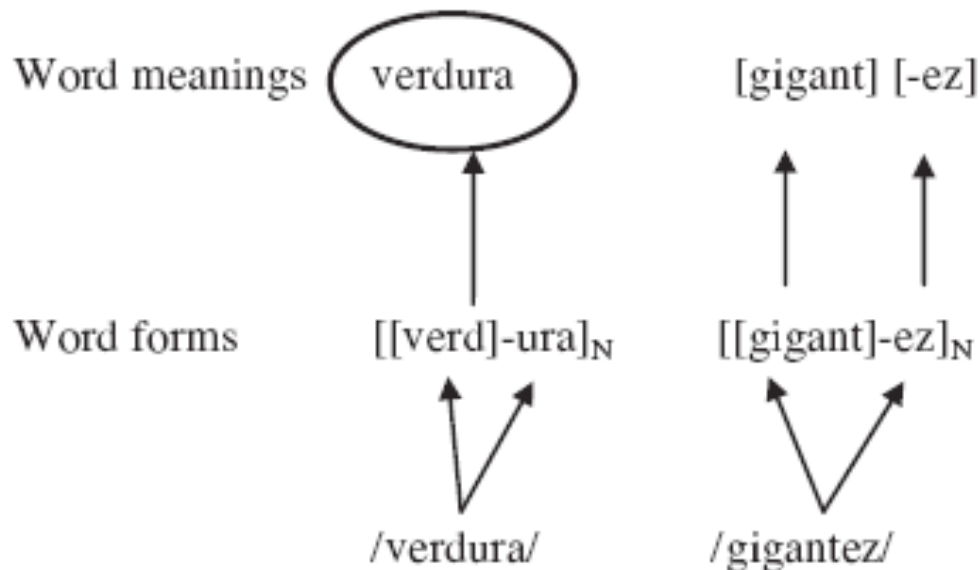
Interpretation: (p 341)

- N400 = “an index of word-level lexical-semantic processing”
 - How did they distinguish this from a LAN?
- P600 = “our results show that violations of derivational processes involve not only word-level but also combinatorial processing”

Proposal for structure of the lexicon

- Results are consistent with a model where the structural results of morphological processes are all stored in the lexicon, but only some of them also have meaning representations for the complex forms

(3) Lexical representations for *-ura* and *-ez(a)* forms:



Proposal for structure of the lexicon

- Both suffixes show effects of combinatorial structure → P600
- Only *-ura* forms lead to N400 (treated as non-words; lexical-semantic effects)
- P600 with both incorrect *-ura* and incorrect *-ez(a)* because both are seen as incorrect stem+suffix combinations
- P600 with ‘unexpected *-ez(a)*’ nonce forms only, because these have a recognizable suffix, while ‘unexpected *-ura*’ nonce forms may not have been so readily broken down