THE DYNAMICS OF SENSE-MAKING: ERP evidence of semantic involvement of words within words

Petra van Alphen & Jos van Berkum
1 MPI for Psycholinguistics 2. Donders Institute, Centre for Cognitive Neuroimaging

Introduction

In spoken language many words contain shorter words (e.g., pain in champagne). We know from word-recognition research that lexical and semantic representations of word-initial embedded words, e.g., the Dutch word snor (moustache) in snorkel (snorkel) are temporarily activated as the acoustic information unfolds. The evidence regarding the activation of word-final embeddings, e.g., the Dutch word meel (flour) in kameel (camel) is less conclusive. The aim of the present study is to examine the semantic involvement of embedded words during language comprehension and gain more insight into the dynamics of sense-making and its relation to lexical activation.

QUESTION

Do listeners briefly take into account the meaning of embedded words when making sense of spoken language?

Method

In two ERP experiments, listeners (n=28 per exp.) heard sentences in which the critical multisyllabic words contained either an initial or final embedding. The semantic fit of these carrier words and embedded words in the context was manipulated such that the semantic involvement of the embedded words should result in a modulation of the N400.

Results

When the context supports the meaning of the embedding and not that of the carrier word, listeners briefly take into account the meaning of both initial and final embedded words (EXP 1).

Surprisingly, listeners also take into account the meaning of final embeddings when the context supports the meaning of the carrier word and not that of the embedding, while initial embeddings are ignored in this situation (EXP 2).

Interpretation

- If σ is a strong syllable it may well be the onset of a word (metrical segmentation strategy).
- σ can be the beginning of only ONE word.
- If there are more possible lexical candidates with σ as beginning (given the speech input), the context strongly biases selection.

The sense-making system can pursue multiple interpretations for the same piece of signal (e.g., both kameel and meel are taken into account), except when the lexical candidates in question need the same piece of signal for their onset (e.g., initially only snor or snorkel is taken into account).