THE DYNAMICS OF SENSE-MAKING: ERP EVIDENCE OF WORDS WITHIN WORDS

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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.

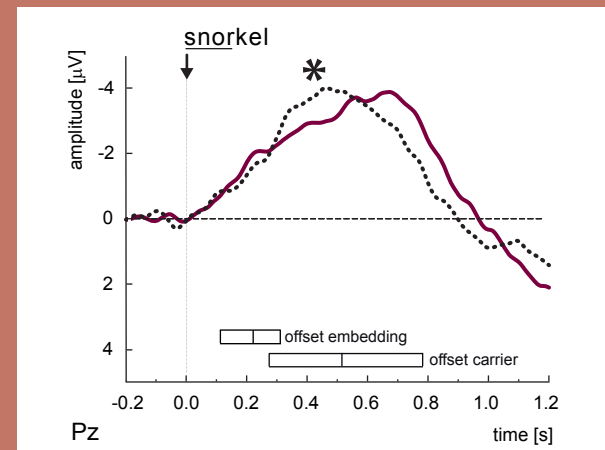## EXP 1 (carrier word not supported)

INITIAL EMBEDDINGS

Contextually unsupported embedding ·········
De man vroeg de zangeres of ze zijn **snor**kel op zolder had zien liggen
Lit. The man asked the singer whether she his [moustache]snorkel in the attic had seen

Contextually supported embedding ———
De man vroeg de kapster of ze zijn **snor**kel op zolder had zien liggen
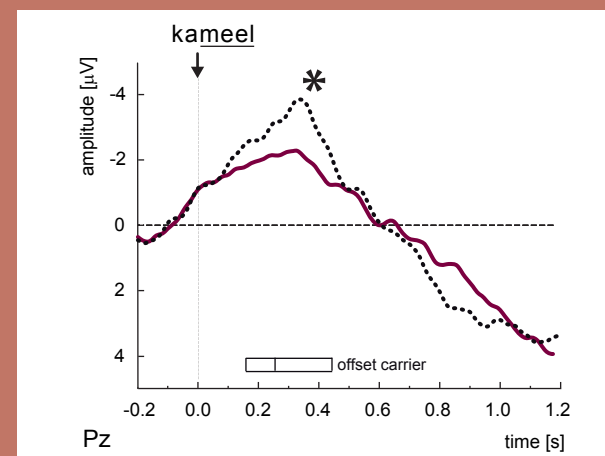*Lit. The man asked the hairdresser whether she his [moustache]snorkel in the attic had seen*

FINAL EMBEDDINGS

Contextually unsupported embedding ···········
Jane wilde een jurk kopen, maar zag dat er geen ka**meel** in de dierentuin was
Lit. Jane wanted to buy a dress, but saw that there no camel[flour] in the zoo was

Contextually supported embedding ———
Jane wilde een quiche bakken, maar zag dat er geen ka**meel** in de dierentuin was
Lit. Jane wanted to bake a pie, but saw that there no camel[flour] in the zoo was

When the context does not support the carrier word, the meaning of both initial and final embeddings are taken into account.
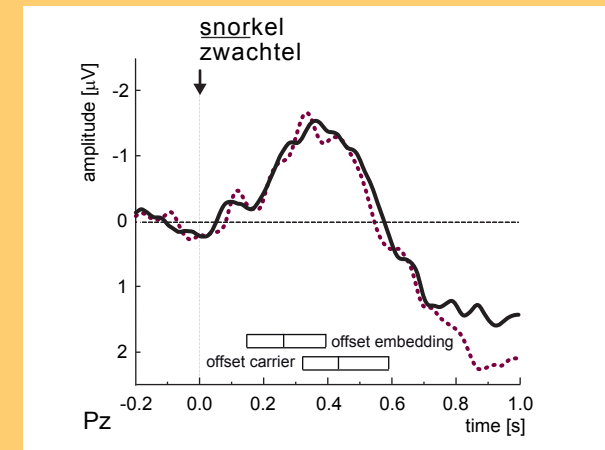
EXP 2 (carrier word supported)

INITIAL EMBEDDINGS

With (unsupported) embedding ·········
Toen Mark op vakantie naar Aruba ging, besloot hij een **snor**kel mee te nemen
Lit. When Mark went on holiday to Aruba, decided he a [moustache]snorkel to take

Without embedding ———
Toen Kees op het schoolplein gevallen was, kreeg hij een **zwachtel** om zijn enkel
Lit. When Kees fell on the playground, got he a bandage around his enkel
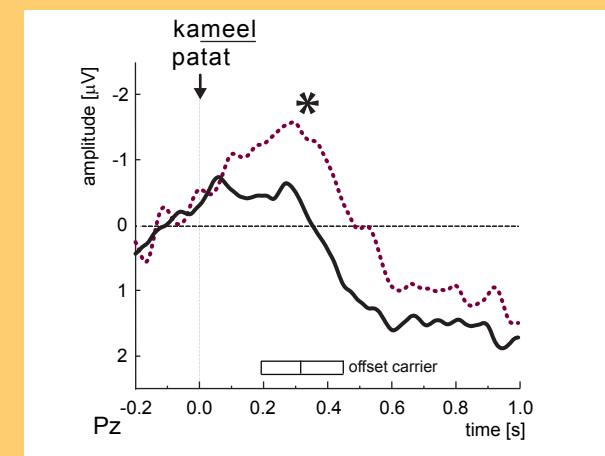

FINAL EMBEDDINGS

With (unsupported) embedding ·········
Toen Emma in de dierentuin was, had zij geen ka**meel** of dromedaris gezien
Lit. When Emma was in the zoo, had she no camel[flour] or dromedary seen

Without embedding ———
Toen Hanna haar tiende verjaardag vierde, wilde ze geen **patat** of pizza eten
Lit. When Hanna celebrated her tenth birthday, wanted she no fries or pizza to eat

When the context supports the carrier word, the meaning of only final embeddings is taken into account.

Results

When making sense of spoken language listeners also take into account the meaning of spurious words that are embedded in longer words, a least when the meaning of the carrier word is not supported by the context.

Surprisingly, listeners also take into account the meaning of final embeddings when the meaning of the carrier word is supported by the context, while initial embeddings are ignored in this situation.

Interpretation

- At the onset of the critical word the sense-making system is initiating only one interpretation, namely the most likely one given the contextual and lexical information at that moment.

- However, the system can start a second sense-making stream for the following (stressed) syllable of the word, in parallel to the first one.

CONCLUSION

Listeners make sense of the speech input in a measured and flexible fashion, taking into account both the context and the unfolding acoustic information.

The sense-making system operates partly in parallel; there may be a special role for the (stressed) syllable.