Speaking rate modulates lexical competition in online speech perception

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INTRODUCTION

Duration cues are used in online word recognition

The longer the [s] in "on(ce) (s)pot" the more likely the interpretation "once spot" rather than "once pot".

Perceived duration depends on speaking rate

Following a fast rate the duration of [s] sounds longer than following a slow rate context, so interpretation "once spot" should be more likely than "once pot".

• Immediate rate context is more important than distal context.

But these effects have only been shown in offline tasks.

Research questions:

1. **Do listeners use speaking rate information in online word recognition?**

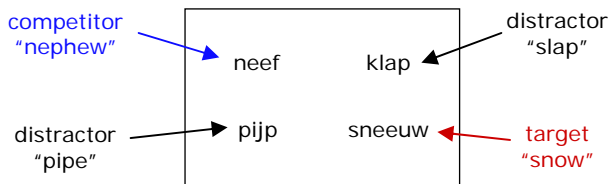2. **Do amount and relative location of the rate context matter?**

METHOD

Visual world paradigm with Dutch printed words

Rate manipulation: fast (66% of original)
slow (133% of original)

distal   immediate context

Ze heeft wel eens sneeuw gezegd.
"She said on**ce s**now".

competitor
"nephew"   neef   klap   distractor "slap"

distractor "pipe"   pijp   sneeuw   target "snow"

Exp. 1 Rate manipulation

distal context: ✓
immediate context: ✓

Ze heeft wel eens sneeuw gezegd.

Exp. 2 Rate manipulation

distal: ✓ (conflicting)
immediate: ✓

Ze heeft **wel eens s**neeuw gezegd.
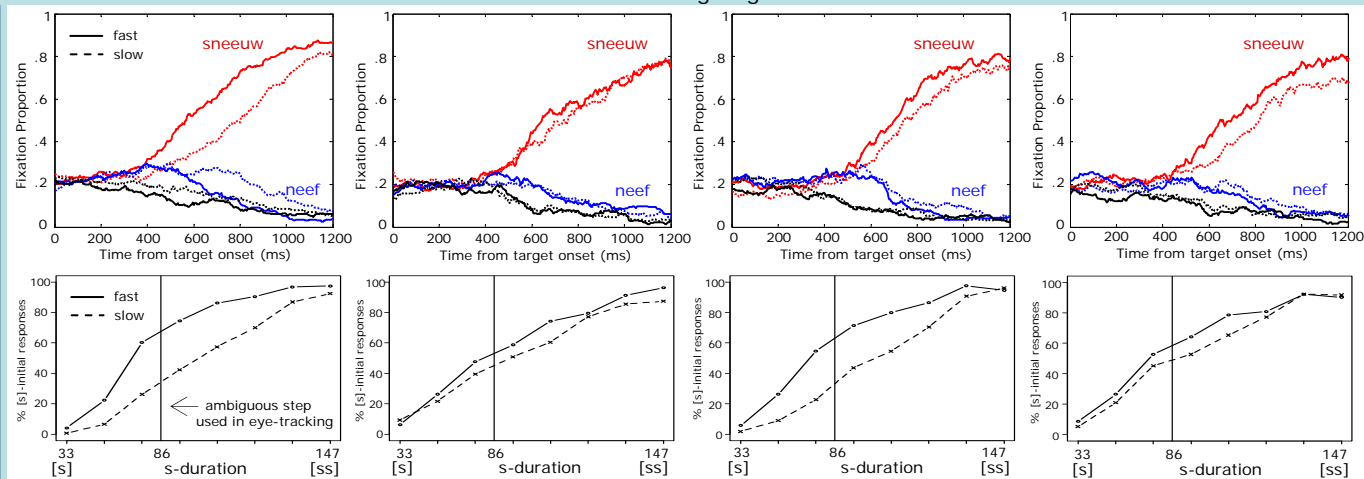
Exp. 3 Rate manipulation

distal: ✓ (long)
immediate: —

Tijdens de lange vergadering heeft ze wel een**s s**neeuw gezegd.

Exp. 4 Rate manipulation

distal: ✓ (short)
immediate: —

Ze heeft wel een**s s**neeuw gezegd.

Categorization experiment

8-step continuum: een**s s**peer – een**s** peer
"on**ce s**pear" – "on**ce** pear"

RESULTS

1. Online Use of Speaking Rate Context

• Fast rate => longer duration perceived => more looks to [s]-initial target and fewer looks to not-[s]-initial competitor

2. Amount and Location of Rate Context

• Effect of immediate context
• Distal context attenuates immediate context effect
• A longer context enhances the distal rate effect offline but not in online word recognition

CONCLUSION

Speaking rate is used to modulate lexical competition in online word recognition

• The **location** of rate context relative to a target word modulates the effect of rate: Rate of immediate context is more important

• The **amount** of distal rate context modulates the effect of rate offline but not online: Rate is evaluated continuously but late (offline) decisions allow for greater use of context