Examination of a Distributional Account of Recency Effects in Comprehension

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INTRODUCTION

Recency Effects

Many multi-site modification ambiguities display recency effects:
- Relative clause and PP modification of NPs; PP modification of VPs
  (Cueto & Mitchell, 1988; Gibson et al., 1996; Thornton et al., 2000)
- Adverbial and clausal modification of VPs
  (MacDonald, 1999; Pearlmutter & Gibson, 2001)

Comprehenders prefer modification of the more recent site over less recent sites. BUT the underlying source of the effects is unclear.

Activation Dynamics in Working Memory during Comprehension

(Pearlmutter & Gibson, 2001)

Phrasal elements’ activation levels change over time during processing.
- Longer phrases tend to be produced later in utterances when possible.
- More active elements are more accessible for modification/attachment.
- Less recently-processed elements are less active.

Phrasal elements’ activation levels change over time during processing.

Activation Dynamics in Working Memory during Comprehension

Method

Stimuli

24 sentence quadruples, varying in attachment recency and in attaching phrase length
- Attaching phrase: Infinitival purpose clause containing an anaphor (-self); must agree with subject NP of VP to which purpose clause is attached

Procedure

Experiments 1 & 2: Standard self-paced reading (all non-space characters replaced by dashes)
- Experiment 3: Reduced preview self-paced reading (all preceding words plus next word’s dashes visible)

Analysis

Length-regressed residual reading times trimmed at 4 SDs; trials included regardless of comprehension question response (same patterns if trials excluded based on question)

Participants

Experiment 1: 91 Ss
- Experiment 2: 98 Ss; 2 dropped for poor comprehension (at chance)
- Experiment 3: 49 Ss (in progress); 2 dropped for poor comprehension (at/near chance)

RESULTS

Experiment 1: Standard Self-Paced, Questions NOT about Ambiguity

Main effect of Attachment (High > Low), but no interaction at any region.
- Supports memory-activation account, suggests Exp. 1 distributional support was confounded.

Experiment 2: Standard Self-Paced, Questions Ask about Ambiguity

Main effect of Attachment (High > Low) but no interaction.
- Supports memory-activation account; suggests distributional account not sensitive to preview.

Experiment 3: Reduced Preview, Questions Ask about Ambiguity

Main effect of Attachment (High > Low), but no interaction.
- Supports memory-activation account; suggests distributional account not sensitive to preview.

CONCLUSIONS

No evidence for Attachment x Length interactions, except in Experiment 1, where comprehension questions did not force resolution of the ambiguity. Lack of resolution of anaphor seems more likely when antecedent is more distant (non-recent conditions).

Participants 2 & 3 suggest distributional account sensitive to estimated length of specific material being attached, or to estimated length based on visual preview, is not sufficient.

Memory-activation account can explain full pattern (with add’l assumptions for Experiment 1).

REFERENCES & ACKNOWLEDGMENTS


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