Individual Differences in the Use of Parafoveal Cues in Sentence Comprehension

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Background

Garden Path Sentences

Readers have a very hard time understanding the sentence:

The horse raced past the barn fell.

Why is this one so hard?

1. Temporary ambiguity resolved in non-preferred way (**Reduced Relative**)
2. Horses are good racers
3. Disambiguation arrives late

➤ The word *past* immediately after *raced* is no help

People don't have as hard a time understanding:

The professor confronted by the student was not ready for an argument.

➤ Easier partly because *by* after *confronted* does help

Early disambiguation clearly helps.

QUESTION
How quickly are disambiguating words used?

Individual Differences in Comprehension

Many studies have shown that readers differ in how much difficulty they have in garden path sentences.

The nature of the differences across people is controversial, but the basic phenomenon is not.

QUESTION
Do readers differ specifically in how quickly they can use disambiguating words to rule out incorrect alternatives?

References

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Methods

Sentences

48 Item Sets *(Only the results for the relative clause versions are reported here.)*

The professor (who was) confronted by the student was not ready for an argument.

The professor (had) confronted the student but was not ready for an argument.

All animate subject NPs
- Want bias toward main clause interpretations
- To make all sentences fairly hard
  - Better chance to see how much preview of *"by"* can help

All main verbs at least 8 characters long
- So eye fixations can be analyzed separately
  - By whether preview of *"by"* while still fixating on verb likely

If last fix was here, trial not used

The professor confronted by the student was not ready for …

If last fix was here, trial coded as **Preview Unlikely**

If last fix was here, trial coded as **Preview Likely**

Participants

- Tested with Daneman & Carpenter's (1980) Reading Span Test.
- 23 High-Span (>3.0, 13 F) + 20 Low-Span (<=3.0, 10 F)

Procedure

- 140 randomly ordered sentences
  - 48 experimental items + 92 distracters
  - Each person saw only 1 version of each experimental item
- Yes/No comprehension question after each sentence
- Eye position monitored with a Dual Purkinje eyetracker

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Results

First-Pass Times at *"by the student"*
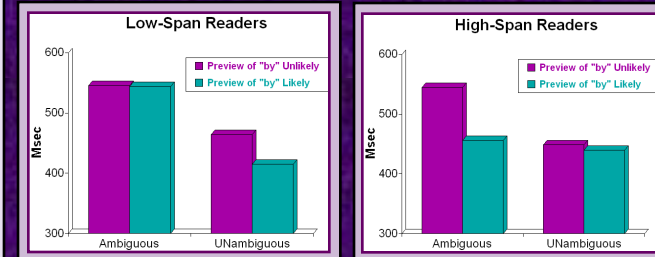
First-Pass Times at *"by the student"* in Temporarily Ambiguous Sentences, Compared to Other Studies
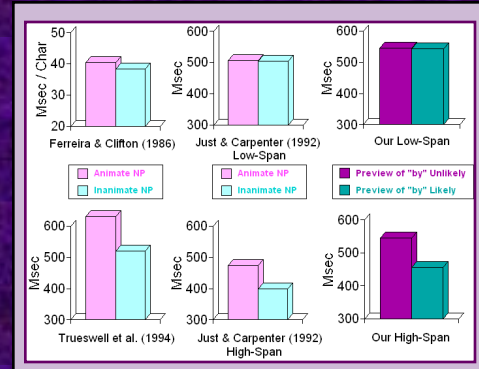
Conclusions

Readers who score high on the Reading Span test

- **Make better use of a peripherally visible disambiguating word**
- **To quickly rule out a preferred but incorrect interpretation**

NOTE:
Studies that present sentences without the possibility of parafoveal preview may produce somewhat distorted results, especially for highly skilled readers.