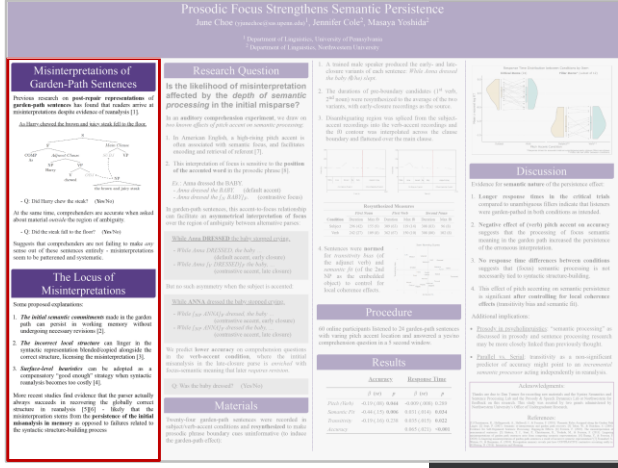
Prosodic Focus Strengthens Semantic Persistence

June Choe, Jennifer Cole, and Masaya Yoshida

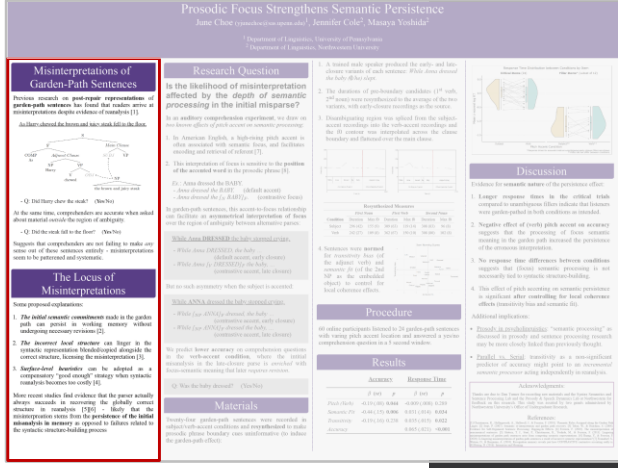
AMLaP 2020

Misinterpretations in the Garden-Path



Misinterpretations in the Garden-Path

As Harry chewed the brown and juicy steak fell to the floor.

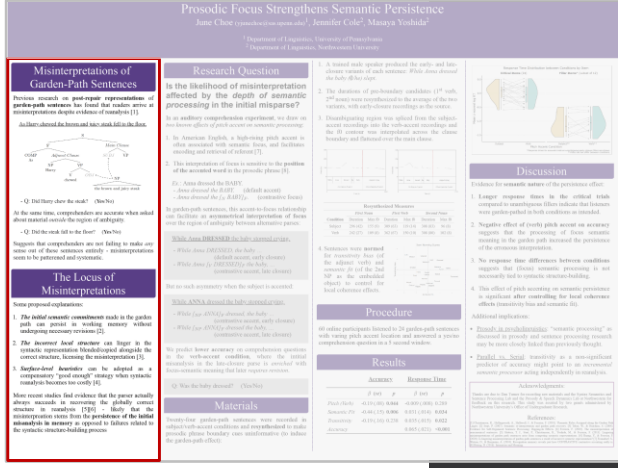


Misinterpretations in the Garden-Path

As Harry chewed the brown and juicy steak fell to the floor.

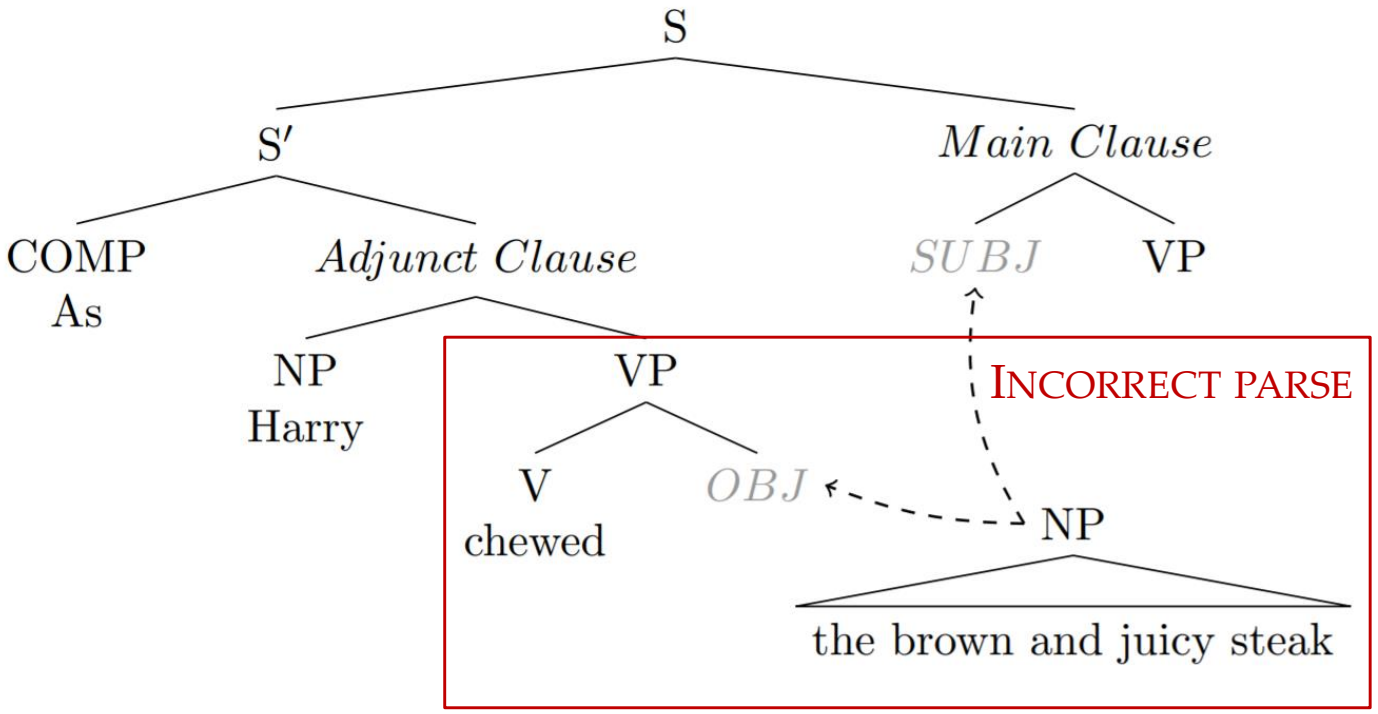
✘ Did Harry chew the steak?

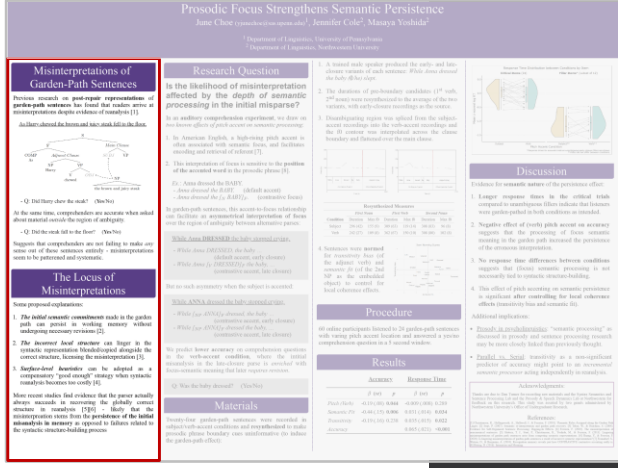
Yes No



Misinterpretations in the Garden-Path

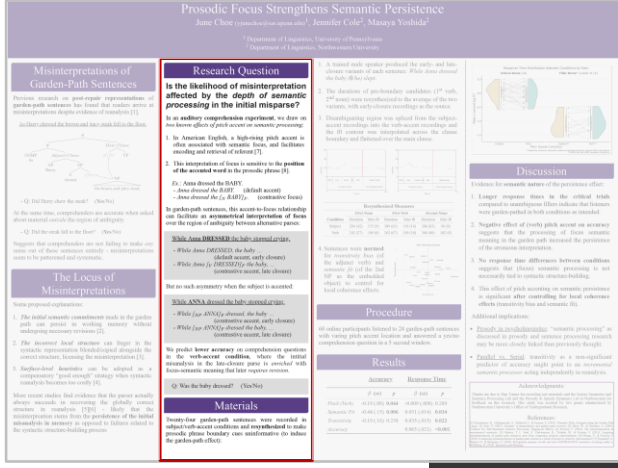
As Harry chewed the brown and juicy steak fell to the floor.



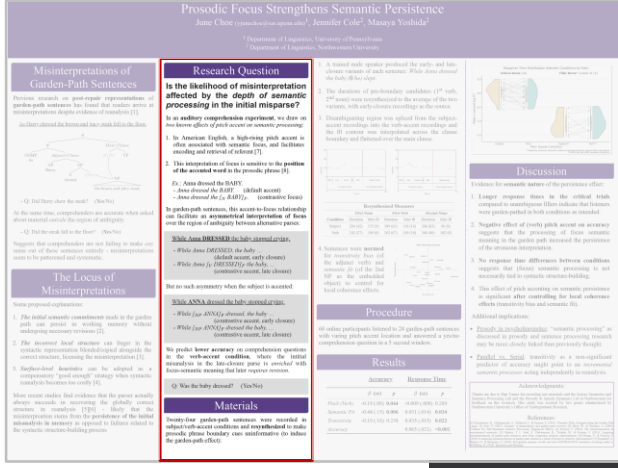


Syntactic or Semantic in Nature?

Hypothesis: The erroneous semantic interpretation *independently lingers* despite the success of *syntactic* reanalysis.



Syntactic or Semantic in Nature?


Prosodic Focus Strengthens Semantic Persistence

Misinterpretations of Garden-Path Sentences

Research Question

Is the likelihood of misinterpretation affected by the *depth of semantic processing* in the initial misparse?

The Locus of Misinterpretations

Materials

Procedure

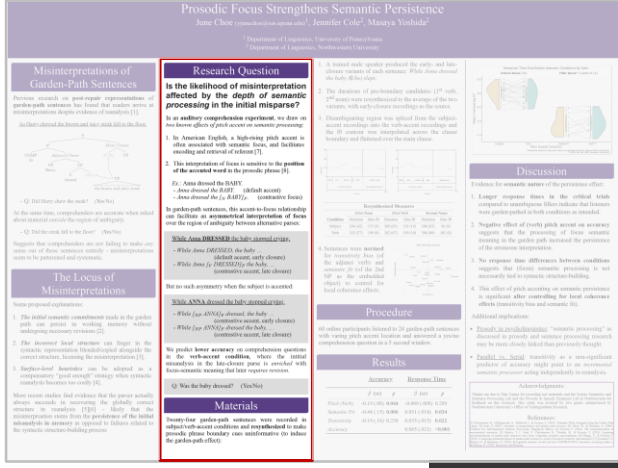
Results

Discussion

Hypothesis: The erroneous semantic interpretation *independently lingers* despite the success of *syntactic* reanalysis.

To disentangle the two, we draw on a well-known relationship between *pitch accent* and *semantic processing:*

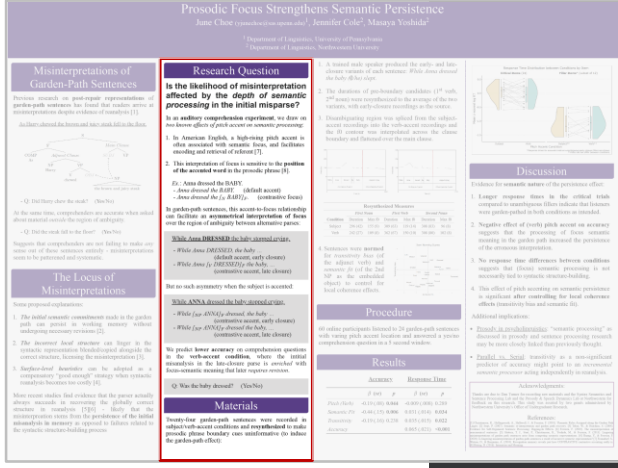
Syntactic or Semantic in Nature?



Hypothesis: The erroneous semantic interpretation *independently lingers* despite the success of *syntactic* reanalysis.

To disentangle the two, we draw on a well-known relationship between *pitch accent* and *semantic processing:*

> A rising pitch accent (H*) is a strong cue for FOCUS in phrase-medial positions but not so much in phrase-final positions.



Syntactic or Semantic in Nature?

Hypothesis: The erroneous semantic interpretation *independently lingers* despite the success of *syntactic* reanalysis.

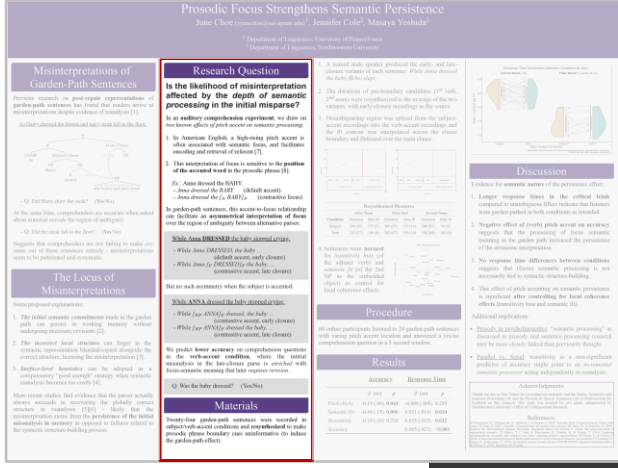
To disentangle the two, we draw on a well-known relationship between *pitch accent* and *semantic processing:*

> A rising pitch accent (H*) is a strong cue for FOCUS in phrase-medial positions but not so much in phrase-final positions.

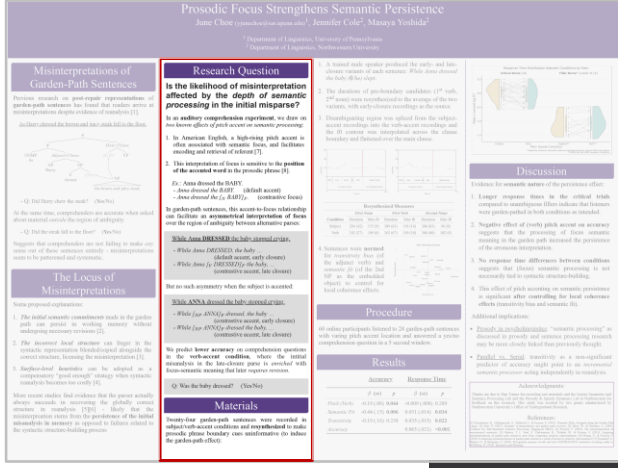
If prosodic focus facilitates deeper semantic processing in the incorrect local parse, we should observe a stronger lingering effect.

Auditory Comprehension Experiment

Design: Manipulate location of pitch accent to induce an asymmetrical interpretation of FOCUS between local parses.



Auditory Comprehension Experiment


Prosodic Focus Strengthens Semantic Persistence

Misinterpretations of Garden-Path Sentences

Research Question

Is the likelihood of misinterpretation affected by the *depth of semantic processing* in the initial misparse?

The Locus of Misinterpretations

Materials

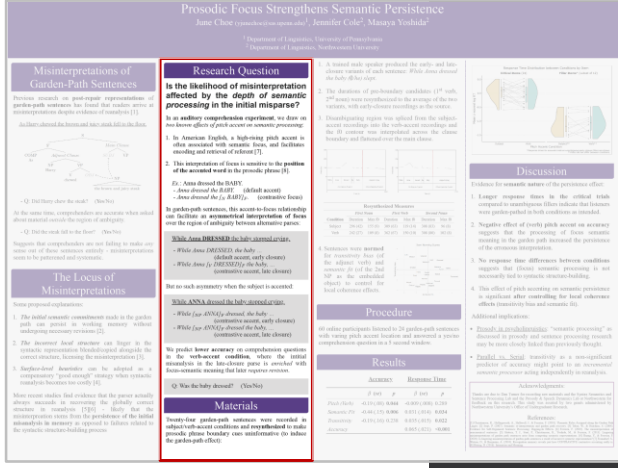
Procedure

Results

Discussion

Design: Manipulate location of pitch accent to induce an asymmetrical interpretation of FOCUS between local parses.

While Anna dressed the baby stopped crying.


Prosodic Focus Strengthens Semantic Persistence

Misinterpretations of Garden-Path Sentences

Research Question

Is the likelihood of misinterpretation affected by the *depth of semantic processing* in the initial misparse?

The Locus of Misinterpretations

Materials

Procedure

Results

Discussion

Auditory Comprehension Experiment

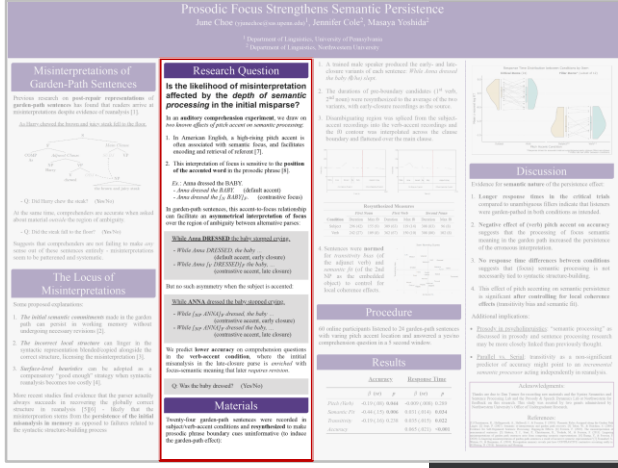
Design: Manipulate location of pitch accent to induce an asymmetrical interpretation of FOCUS between local parses.

While Anna dressed the baby stopped crying.

VERB ACCENT Condition:

While Anna *DRESSED* the baby stopped crying.

- While Anna [dressed]$_{FOCUS}$ the baby, … (late closure) ✘
- While Anna dressed, the baby … (early closure)



Auditory Comprehension Experiment

Design: Manipulate location of pitch accent to induce an asymmetrical interpretation of FOCUS between local parses.

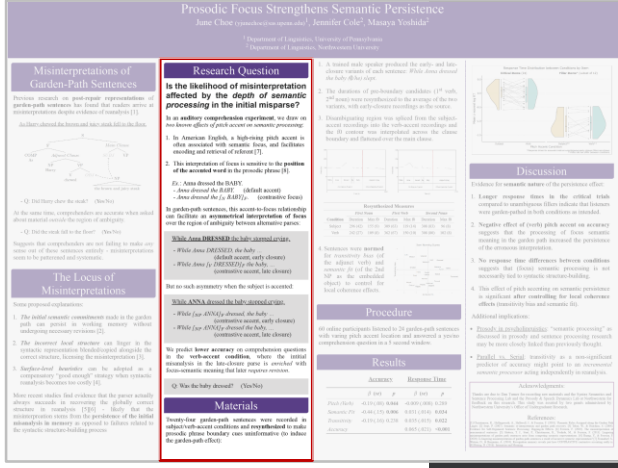
While Anna dressed the baby stopped crying.

SUBJECT ACCENT Condition:

While *ANNA* dressed the baby stopped crying.

- While [Anna]$_{FOCUS}$ dressed the baby, … (late closure) ✘
- While [Anna]$_{FOCUS}$ dressed, the baby … (early closure)

Prediction


Prosodic Focus Strengthens Semantic Persistence

Misinterpretations of Garden-Path Sentences

Research Question

Is the likelihood of misinterpretation affected by the *depth of semantic processing* in the initial misparse?

Materials

Procedure

Results

Discussion

Lower accuracy on comprehension questions in VERB ACCENT condition than in SUBJECT ACCENT condition.

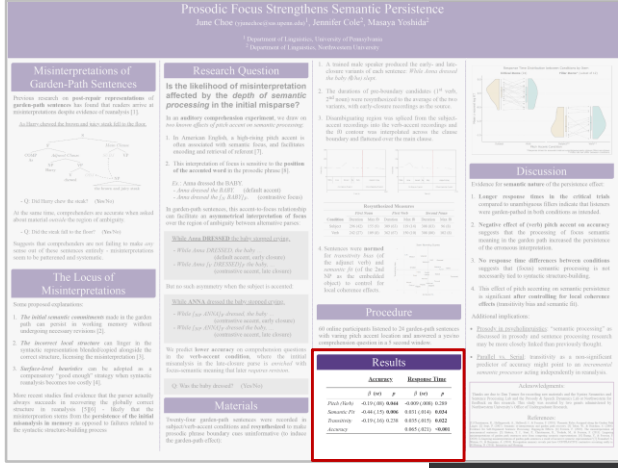
Was the baby dressed?

Yes No

Results

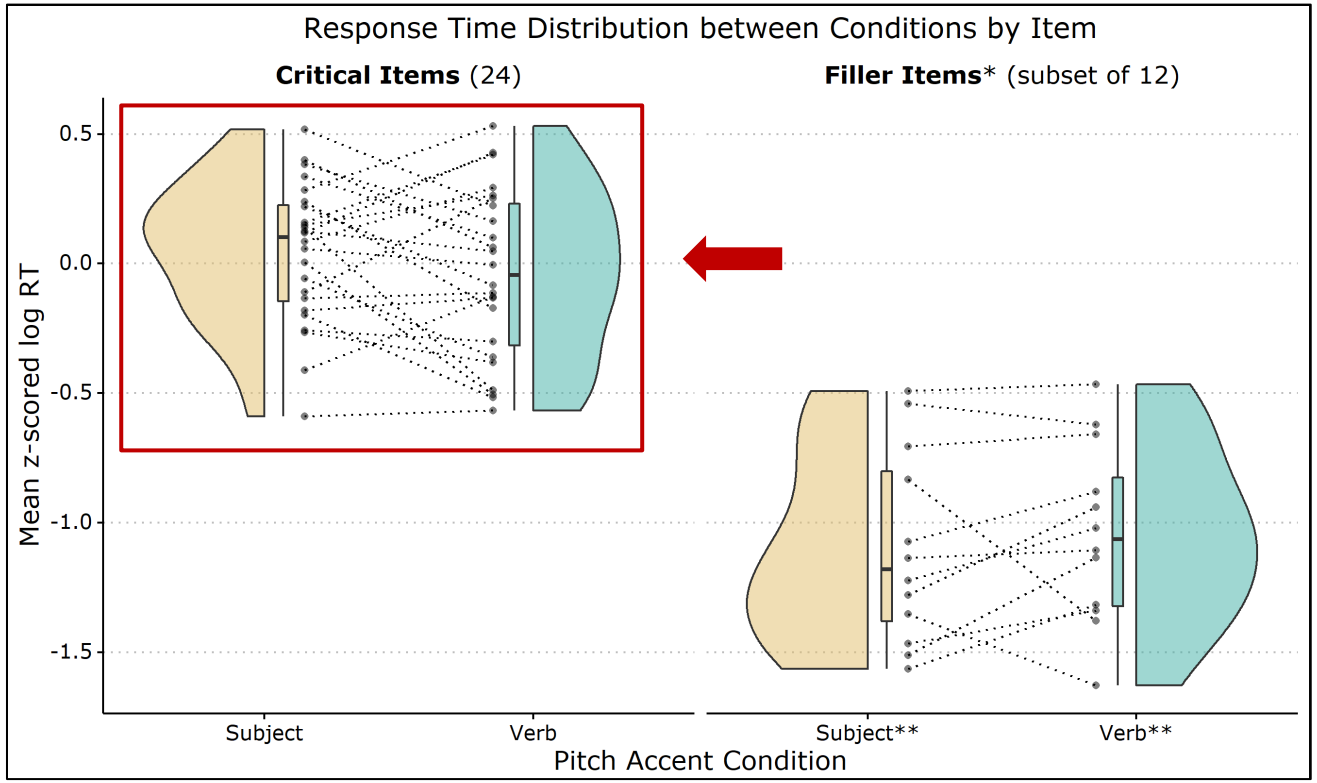
1. Significant negative effect of VERB ACCENT on **accuracy**:

	Estimate (SE)	χ^2	*p*
Pitch (Verb)	-0.19 (0.08)	6.23	**0.044**
Semantic Fit	-0.44 (0.15)	7.45	**0.006**
Transitivity	-0.19 (0.16)	1.39	0.238

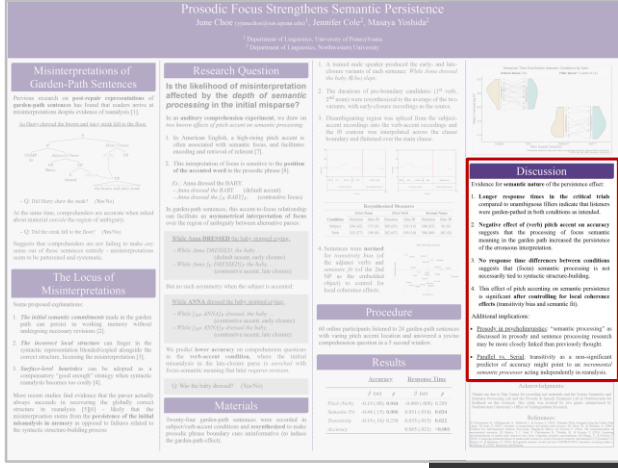


Results

2. No differences in **response time** between accent conditions:



Conclusion



Evidence for the **semantic nature of the lingering effect** & a model of an **independent semantic processor**

- Initial semantic commitments may fail to be revised, especially when it contains focused information.
- But syntactic reanalysis always succeeds, and the parser never builds an ungrammatical structure

… and more to discuss!