

## BACKGROUND AND MOTIVATION

### Pickering & Traxler (2004, CUNY)

- Tested the effects of syntactic priming in the processing of the MV / RR ambiguity with same / different verbs across the prime (1) and the target (2).
    - (1a) The defendant / **examined** / **by the lawyer** / turned out to be unreliable. (Reduced Relative)
    - (1b) The defendant / **examined** / **the bloody glove** / during the recess. (Main Verb)
    - (2a) The doctor / **examined** / **by the specialist** / had a large mole. (Reduced Relative)
    - (2b) The doctor / **examined** / **the patient** / who had a large mole. (Main Verb)
  - Results: priming effects (RRs were read faster following an RR-prime, compared to an MV prime), but only when the verb was the same in the prime and the target.
  - The lack of syntactic priming across different verbs may have resulted from the nature of the prime: a temporarily ambiguous MV / RR verb-form (with a preferred MV-analysis).
- Because of the relatively high activation of the MV-analysis of the prime, the RR-analysis may not have reached sufficient level of activation to prime a subsequent RR-target. This can happen either due to competition between the two analyses (parallel framework), or due to interference from the persevering MV-analysis (serial framework).

## Hypotheses

- The activation level of a structure affects the processing difficulty of subsequent similar structures.  
Prediction: unambiguous structures should produce stronger priming effects.
- The similarity between the target-structure and the most highly activated structure in the preceding context (the prime) modulates the magnitude of the priming effect.  
Prediction: more similar structures should produce stronger priming effects.

## EXPERIMENT

### Design & Materials

- Within-sentence priming paradigm (manipulating the structures of two conjoined clauses)
  - Design - 5 x 2 (5 PRIME-types, 2 TARGET-types)
- PRIME-clause**
- Unambiguous prime 1 (baseline):** Prepositional Phrase modifier (PP)
    - The bar on the busy downtown street reopened under a new name.
  - Unambiguous prime 2:** RR with an unambiguous verb-form (RR-unamb)
    - The bar known for cheap drinks reopened under a new name.
  - Unambiguous prime 3:** Full Relative Clause (Full RC)
    - The bar that was closed for the renovations reopened under a new name.
  - Ambiguous prime 1:** RR with an ambiguous verb-form, by-phrase disambiguation (RR-amb-short)
    - The bar closed by the police reopened under a new name.
  - Ambiguous prime 2:** RR with an ambiguous verb-form, long disambiguation (RR-amb-long)
    - The bar closed for the renovations reopened under a new name.

### TARGET-clause

- RR (amb):** and similarly, the club moved to the suburbs changed the sign on the door.
- Full RC (unamb):** and similarly, the club that was moved to the suburbs changed the sign on the door.

Measure of priming effects: compare the ambiguous (RR) target-structure to the unambiguous (Full RC) target-structure at the critical region (circled).

## Predictions

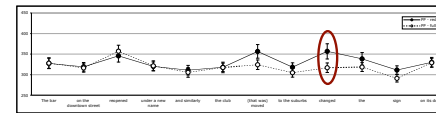
### Unambiguous primes:

- PP primes** - no priming effects (unambiguous, but very dissimilar); **RR-unamb primes** - strong priming effects (unambiguous and similar).
- Full-RC primes** - no / weak priming effects (unambiguous, more similar than PP-primes, but less similar than e.g., RR-unamb primes)
- Ambiguous primes:** **RR-amb-short & RR-amb-long primes** - weak priming effects (similar to the target-structure, but ambiguous)

## RESULTS AND CONCLUSIONS

### Reading Times

#### PP prime conditions (baseline)



**Pairwise: PP-red vs. PP-full**

- F1(1,63)=6.17; MSE=50506; p<.02
- F2(1,31)= 5.77; MSE=19178; p<.05

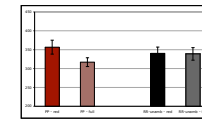
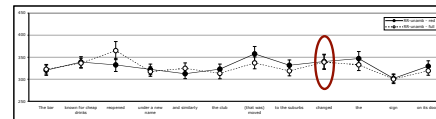
#### Data collection:

- 68 subjects
- 40 items
- 4 subjects and 8 items were excluded from the analyses based on low accuracies (equal to or less than 55%)

#### Accuracy data:

- Across conditions - 84.02%
- Marginal effect of TARGET (reduced RCs - lower accuracies):
- F1(1,63)=2.93; MSE=1485; p=.0917
- F2(1,31)=5.27; MSE=652; p<.05

#### RR-unambiguous prime conditions



**Pairwise: RR-unamb-red vs. RR-unamb-full**

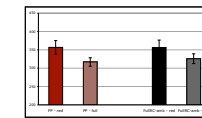
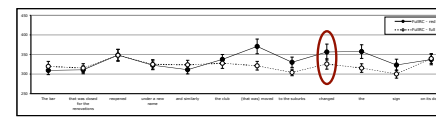
- F<1, p>.9

#### Interaction PRIME x TARGET:

##### PP vs. RR-unamb

- Marginal effect of TARGET (reduced < full):
- F1(1,63)=3.56; MSE=27079; p=.0639
- F2(1,31)= 3.93; MSE=10426; p=.0565
- Marginal interaction:
- F1(1,63)=3.79; MSE=23490; p=.0589
- F2(1,31)=2.22; MSE=8787; p=.146

#### Full-RC prime conditions



**Pairwise: Full-RC-red vs. Full-RC-full**

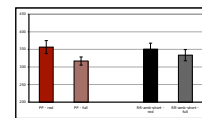
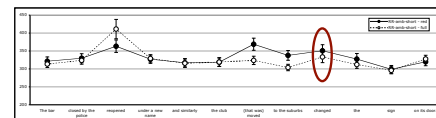
- F1(1,63)=2.42; MSE=29816; p=.125
- F2(1,31)= 4.34; MSE=15829; p<.05

#### Interaction PRIME x TARGET:

##### PP vs. RR-unamb

- Main effect of TARGET (reduced < full):
- F1(1,63)=6.19; MSE=78967; p<.02
- F2(1,31)=10.8; MSE=34926; p<.005
- Interaction: F<1, p>.67

#### RR-ambiguous-short prime conditions



**Pairwise: RR-amb-short-red vs. RR-amb-short-full**

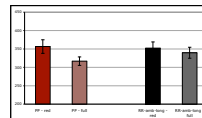
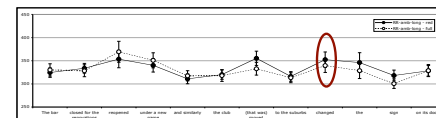
- F1(1,63)=1.57; MSE=9459; p=.215
- F2(1,31)= 1.95; MSE=5287; p=.173

#### Interaction PRIME x TARGET:

##### PP vs. RR-unamb

- Main effect of TARGET (reduced < full):
- F1(1,63)=6.97; MSE=51839; p<.02
- F2(1,31)=7.24; MSE=22301; p<.02
- Interaction: F<1.2, p>.27

#### RR-ambiguous-long prime conditions



**Pairwise: RR-amb-long-red vs. RR-amb-long-full**

- F1(1,63)=.764; MSE=5148; p=.386
- F2(1,31)= 1.16; MSE=4326; p=.291

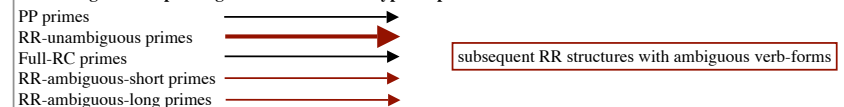
#### Interaction PRIME x TARGET:

##### PP vs. RR-unamb

- Main effect of TARGET (reduced < full):
- F1(1,63)=6.96; MSE=43951; p<.02
- F2(1,31)=4.77; MSE=20861; p<.05
- Interaction: F<1.4, p>.25

## Summary & Conclusions

### The strength of the priming effects for different types of primes:



### Priming effects in comprehension exist beyond the lexical level.

- 2 factors modulate the strength of the priming effects:
  - The strength of the activation of the prime-structure
  - The similarity of the prime-structure to the target-structure