



Cars and trucks [with permits]: Resolving legal ambiguities with psycholinguistic data



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Background

I drive my car into a parking lot and see this confusing sign:

Cars and trucks with permits are allowed.

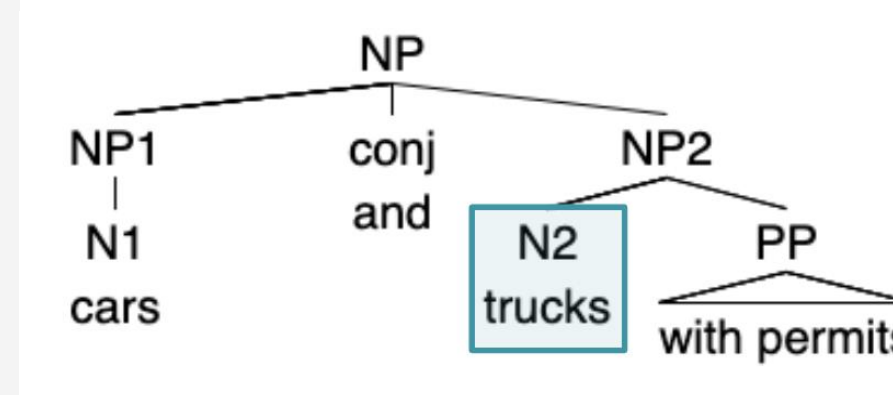
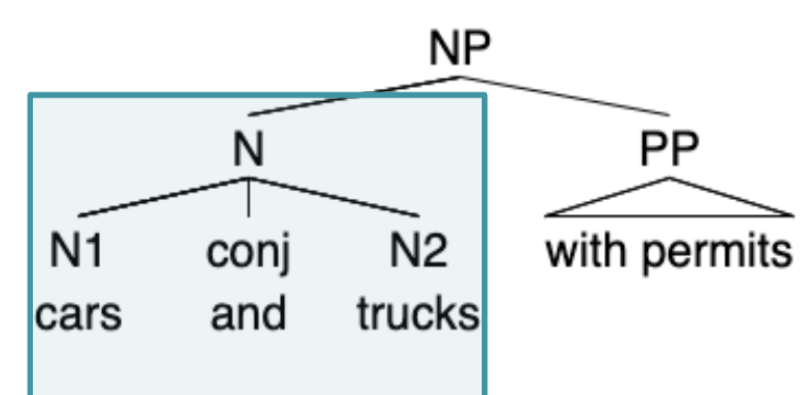


Is THIS the meaning?

I hope not. I have no permit.

But wait.

Maybe THIS is the meaning. And then I CAN park here.



Ambiguous laws are common, and judges often disagree as each tries to find the "ordinary meaning" (Solan, 2018; Tobia, et. al., 2022). But how do they know what this is?

Research suggests that our default interpretation is wide-scope: (Clifton, et. al., 2002; Jeon & Yoon, 2012).

cars and trucks [with permits]

But semantic bias might lead us to a narrow-scope preference:

cars and **trucks** [without trailers]

unless syntactic constraints prevent it:

~~trucks~~ and cars [without trailers]

In two experiments, we tested native speakers' intuitions about these kinds of scope ambiguities.

Hypotheses

Hypothesis 1: The preferred PP reading is wide-scope not narrow-scope (Clifton et al., 2002, Jeon & Yoon, 2012).

Hypothesis 2: Semantic bias can weaken the default wide-scope preference.

Hypothesis 3: Syntactic constraints override semantic biases.

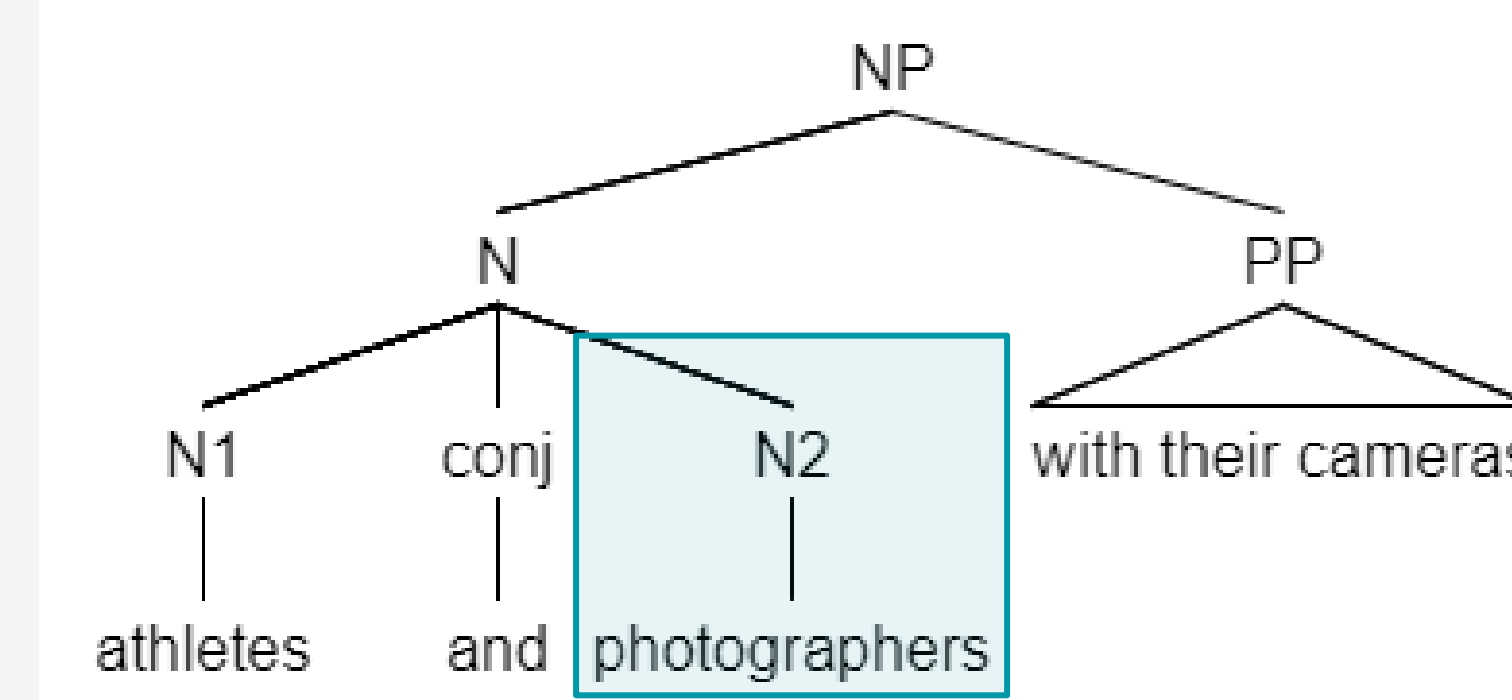
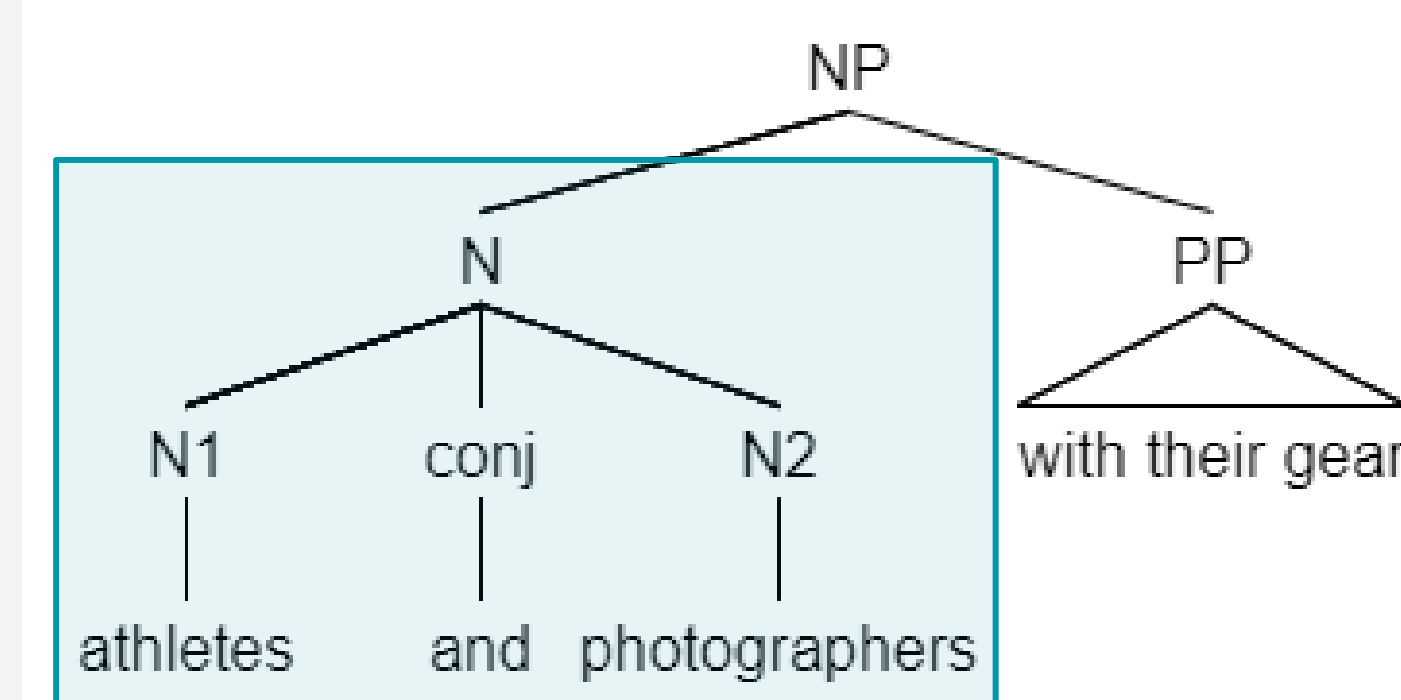
Experiment 1

Experiment 1 tested Hypothesis I and Hypothesis II by comparing the interpretations of sentences with **unbiased PPs** and **semantically-biased PPs**.

We predict that:

unbiased PPs [with their gear] will show a strong wide-scope preference.

semantically-biased PPs [with their cameras] will show a weaker wide-scope preference, and an increase in narrow scope readings.

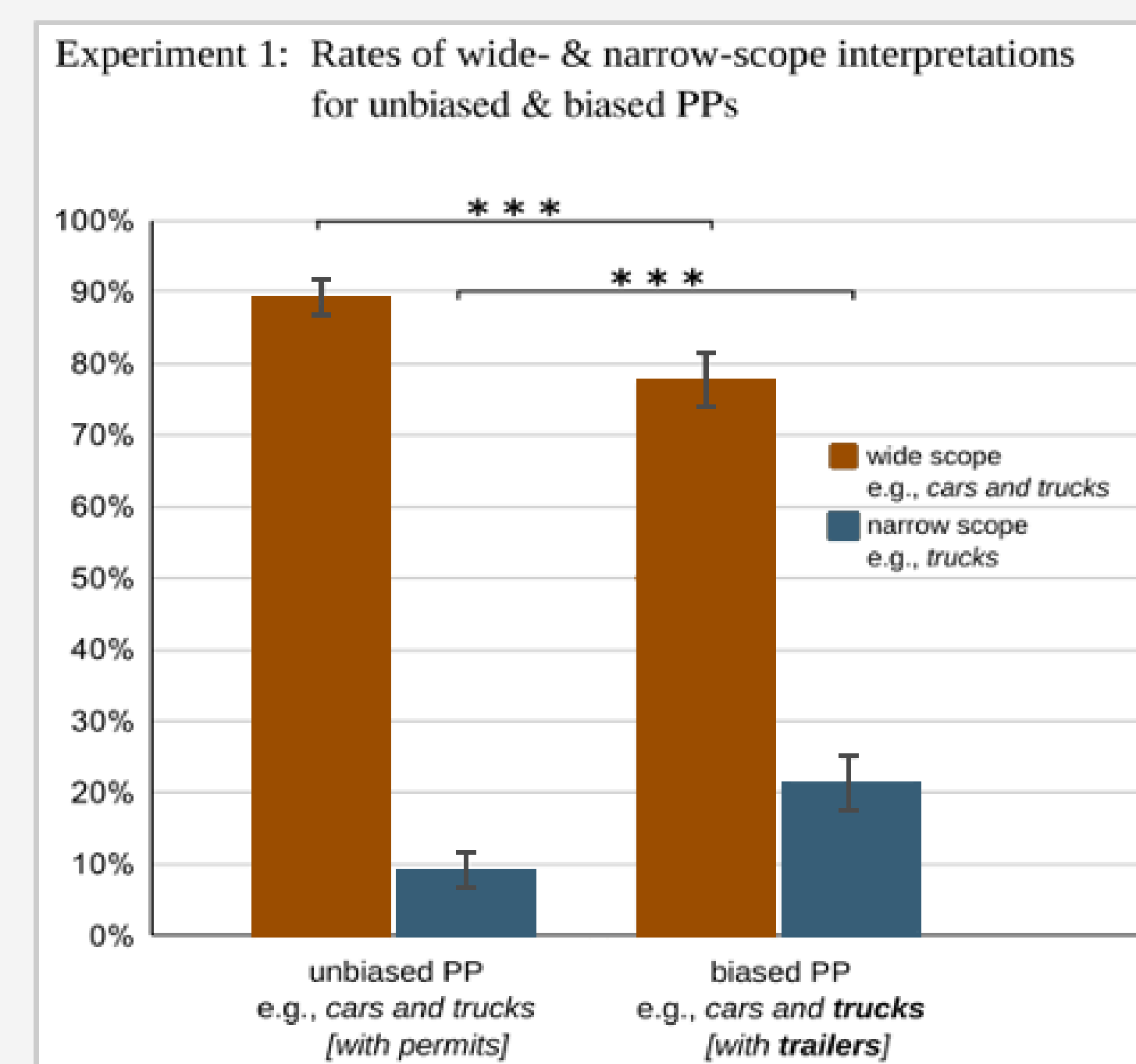


Results

- Wide-scope interpretation in **unbiased** sentences was **89.4%**
- Wide-scope interpretations in **biased** sentences was **77.8%**.

Hypothesis I was confirmed. Subjects significantly preferred wide-scope interpretations in both unbiased and biased sentences.

Hypothesis II was also confirmed. The rate of wide-scope interpretations was significantly lower in biased sentences than in unbiased sentences.



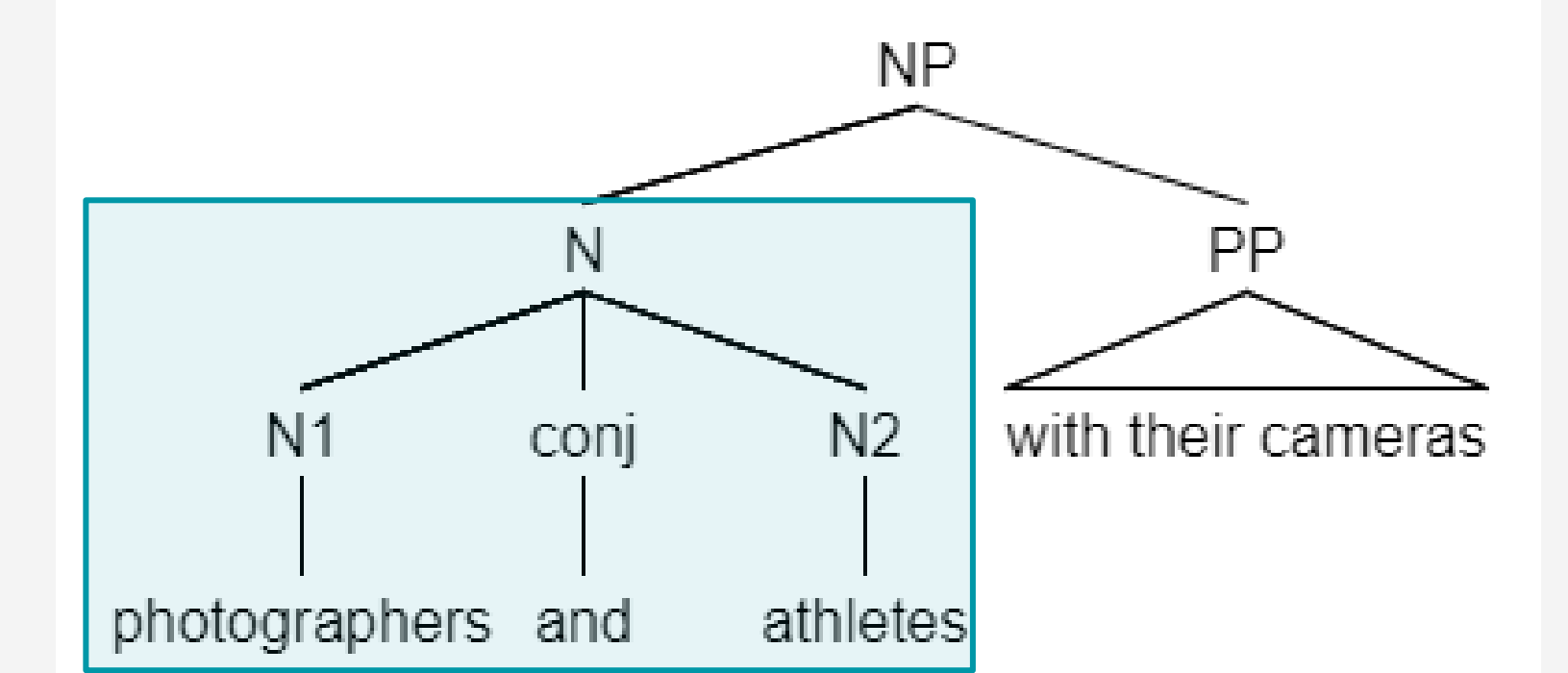
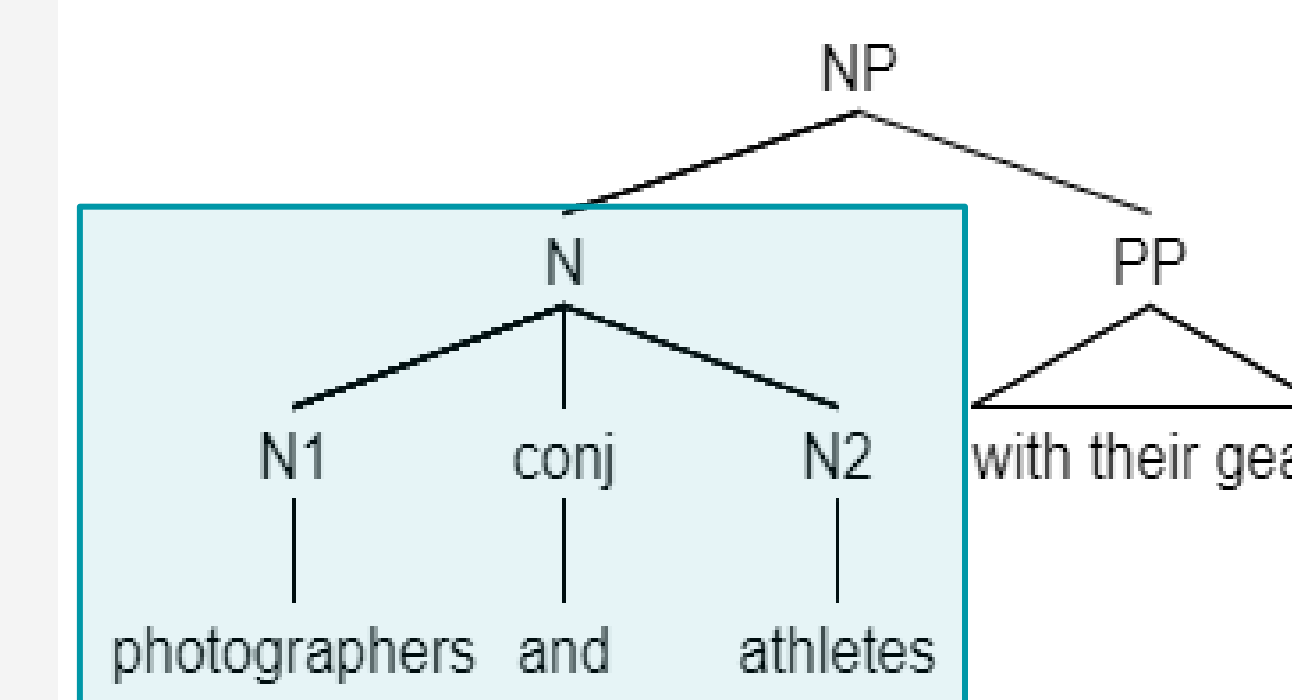
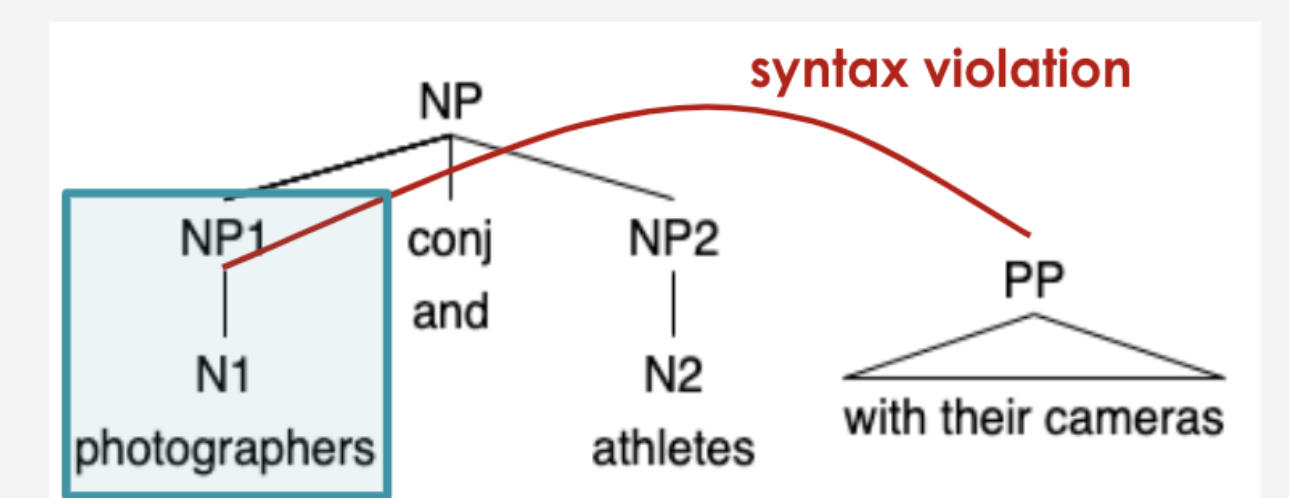
Experiment 2

Experiment 2 retested Hypothesis I and tested Hypothesis III, using the same test sentences as Experiment 1, but with the nouns reversed. Now, in the biased case, the PP cannot attach to the related noun without creating a syntax violation.

We predict that:

unbiased PPs [with their gear] will still elicit a strong wide-scope preference.

"illegally" biased PPs [with their cameras] will obey syntax over semantics and show a similar wide-scope preference

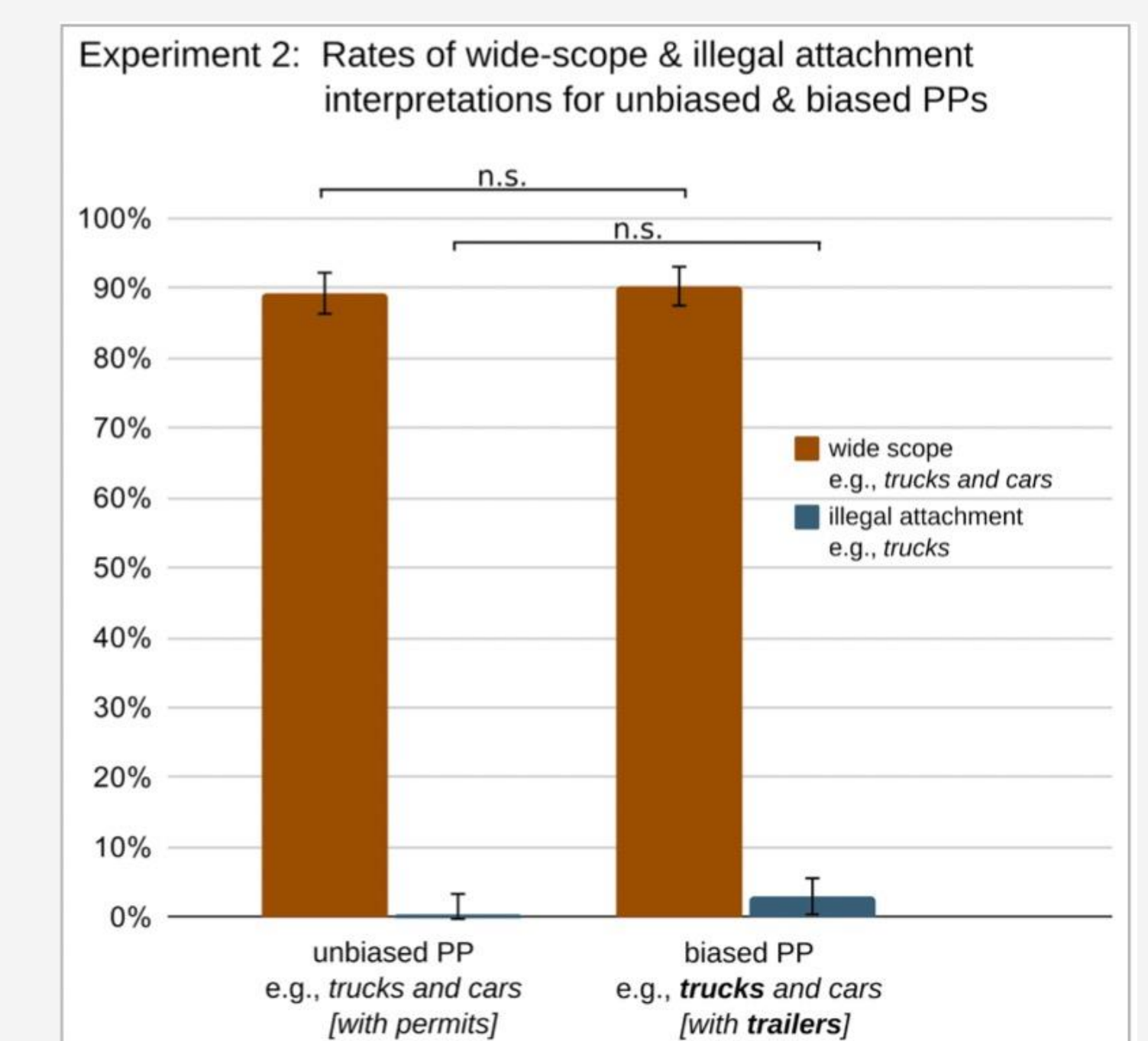


Results

- Wide-scope interpretations in **unbiased** sentences was **89.3%**
- Wide-scope interpretations in **"illegally" biased** sentences was **90.3%**

Hypothesis I was confirmed again. Subjects significantly preferred wide-scope interpretations for both unbiased and "illegally" biased sentences.

Hypothesis III was also confirmed. With the biased noun now in a syntactically inaccessible position, subjects overwhelmingly ignored the semantic bias and chose wide-scope for both the unbiased and "illegally" biased sentences.



Methodology: Experiments I & II

Subjects

- Experiment 1: 63 subjects
- Experiment 2: 53 subjects
- Recruited via Lucid (an online survey-distribution service) with demographics roughly matching those of the US Jury eligible population (US citizens over 18)

Materials & Procedure

Each subject saw 12 test sentences containing an ambiguous PP, 6 biased + 6 unbiased, each sentence in only one version. After each sentence was a question about the interpretation of the PP.

[Athletes]_{N1} & [photographers]_{N2} [with their gear]_{PP} [waited by the van]_{VP}

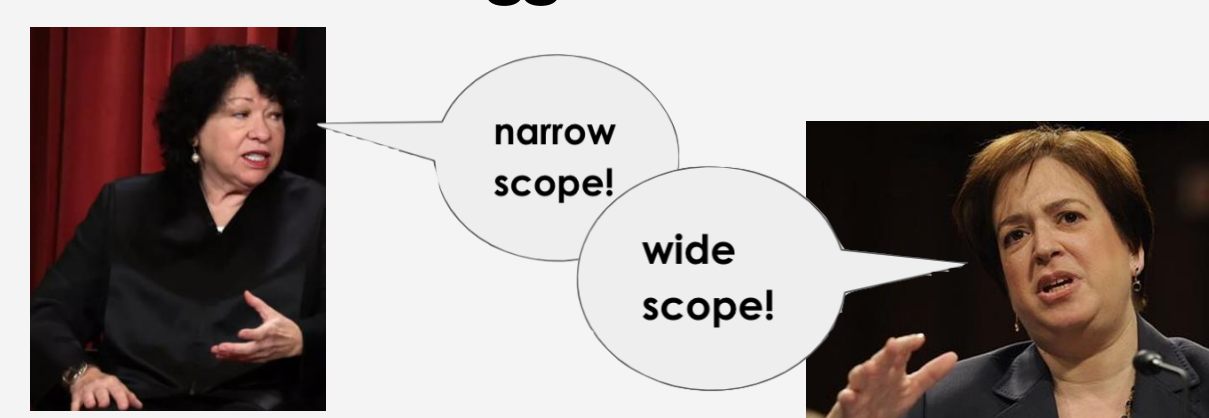
Who had their gear?

- The athletes
- The photographers
- The athletes and the photographers
- None of the above

Interspersed with the test sentences were 12 randomized attention-testing items. Subjects who failed the attention test or failed to answer any questions were excluded from the analysis.

Conclusions

Our results suggest that for PP modifiers on lists of nouns,



- a wide-scope reading is preferred
- semantics can override this preference
- BUT:**
- semantics can't override syntax

And as for laws, they need to be written clearly, and interpreted with an understanding of the semantic and syntactic factors that create "ordinary meaning". **So judges, ask a psycholinguist.**

References

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