Consequences of scalar inference derivation revealed through eye movement measures

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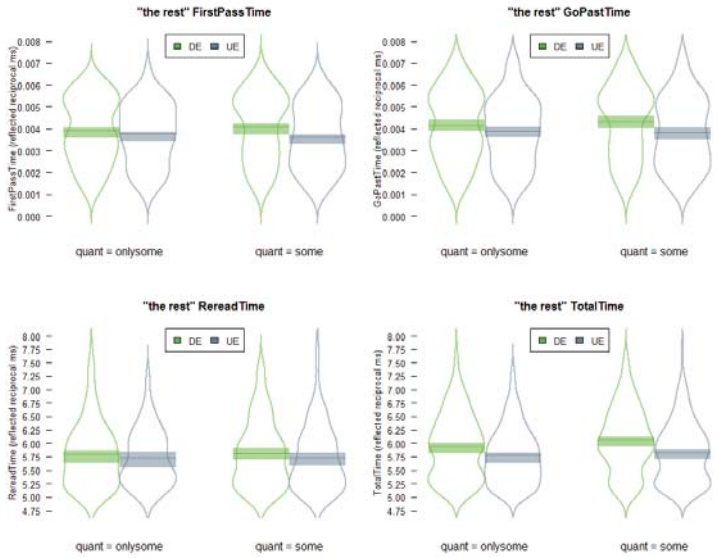
Context-sensitivity of scalar inferences

- *Yousef ate some of the cookies, and **the rest** are on the table.*
  - *the rest* read more quickly: in this context *some* tends to be interpreted as "not all", and thus the referent of *the rest* is easier to establish
- *If Yousef ate some of the cookies, then **the rest** are on the table.*
  - *the rest* read more slowly, because *some* is in a context where it is unlikely to be interpreted as meaning "not all" (Bergen & Grodner, 2012; Hartshorne & Snedeker, ms.; Hartshorne et al., 2015; Lewis, 2013; Politzer-Ahles & Fiorentino, 2013)
  - Mixed findings regarding whether there is a slowdown at the quantifier (i.e., an immediate processing cost for realizing scalar inferences)

- **Most of these studies used self-paced reading; can *eye-tracking* shed any more light on...**
  - **...the locus of this reading time slowdown (e.g., early vs. late processes)?**
  - **...whether there is a processing cost at the moment a scalar inference is realized?**

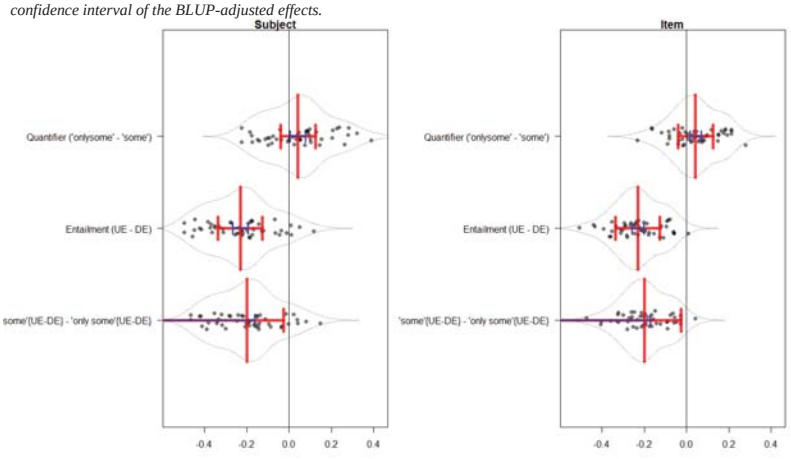
Reading times at *the rest*

Violin plots of transformed reading times for each measure. Shaded areas represent 95% confidence intervals (from mixed-effects model, normal bootstrap with 100 replicates) of the mean.



The expected interaction (larger DE-UE slowdown for *the rest* after *some* than after *only some*) was observed in **first pass reading times**

Plot of mixed-effect model contrasts for [reflected reciprocal] first-pass reading times at "and/then the rest". Red error bars and line represent the fixed-effect contrast and its 95% confidence interval. Points represent the BLUP-adjusted effects for each subject or item (fixed effect plus best linear unbiased predictor), and blue error bars represent the 95% confidence interval of the BLUP-adjusted effects.



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Design (*N*=47 native English speakers)

- 48 sentences (adapted from Hartshorne & Snedeker, ms.), manipulating Quantifier (2: *some*, *only some*) and Entailment (2: downward, upward)

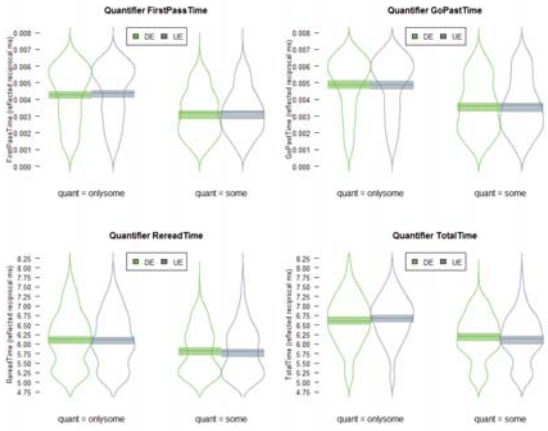
UE: | *Hailey beat* | *{some of /only some of}* | *her opponents* | *in the competition,* | *and the rest* | *remain to be defeated.*

DE: *If* | *Hailey beat* | *{some of /only some of}* | *her opponents* | *in the competition,* | *then the rest* | *remain to be defeated.*

- 83 fillers plus 104 sentences from other experiments; comprehension questions on all trials

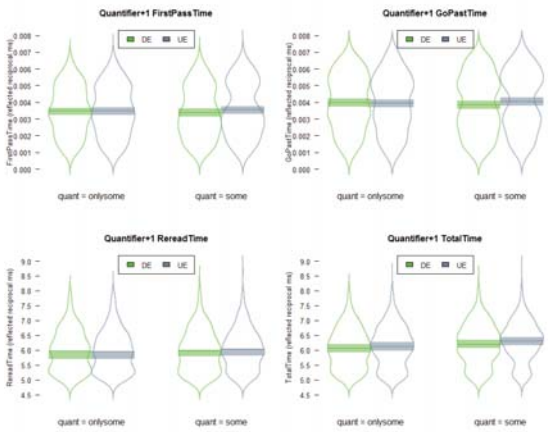
- **Prediction:** Effects of scalar inferencing should be Quantifier*Entailment interactions (with an entailment effect in *some* sentences but not *only some* sentences)

Reading times at quantifier and quantifier+1



↑No scalar inference effect on the quantifier

↓Non-significant trend in first-pass times at the spillover region



Discussion

- Downstream effect of scalar inference context-sensitivity may come from early processes(contra Lewis, 2013), e.g., prediction rather than integration
- Did not find strong evidence that scalar inferencing is costly (see also Hartshorne & Snedeker, ms.; Politzer-Ahles & Gwilliams, 2015)