Replicating eye-tracking research using incremental decision tasks and web-based libraries

Anonymous CogSci submission

Abstract

[jd: write]

Keywords: psycholinguistics; experimental pragmatics; scalar implicature; linking functions; eye-tracking

Introduction

[jd: include general linking function refs (see qing et al refs and also newer stuff by jim magnuson)]

[jd: include linking function for xprag refs: qing et al, jasbi et al, franke 2014 and franke newer paper (see our scil paper), scontras, waldon and degen]

Sun & Breheny (2020) – the original experiment

We replicate Experiment 3 of Sun and Breheny (2020).

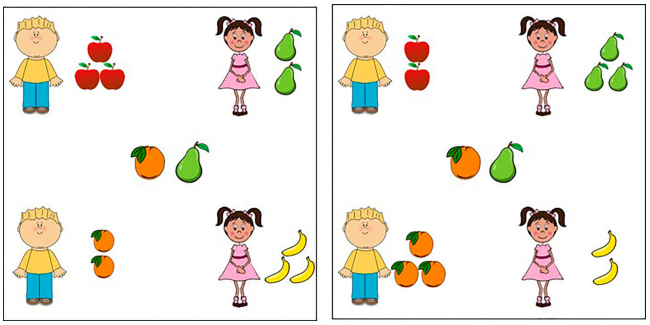

Figure 1: Example display from Experiment 3 of Sun and Breheny (2020). The left image (big *all/* small *some*) was paired with *Click on the boy that has all/three of Susan's apples* or *Click on the girl that has some/two of Susan's pears*. The right image (small *all/* big *some*) was paired with *Click on the boy that has all/two of Susan's apples* or *Click on the girl that has some/three of Susan's pears*.

Exp. 1: replicating Sun & Breheny (2020) using web-based eye-tracking

Methods

Participants, materials, procedure.

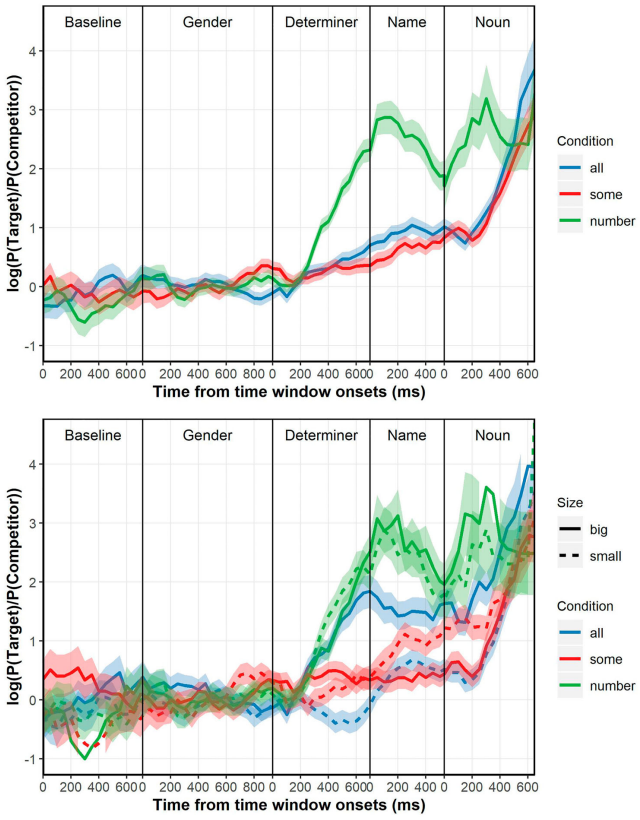

Figure 2: Eye movement results for Experiment 3 of Sun and Breheny (2020). Shown are target preference scores from instruction onset to instruction offset. Top: target preference scores by determiner type. Bottom: target preference scores by determiner type and target set size. Transparent ribbons indicate standard error.

Results

Exp. 2: replicating Sun & Breheny (2020) using an incremental decision task

Methods

Participants, materials, procedure.

Results

The results of a mixed-effects logistic regression in the determiner window, predicting target over competitor choices from fixed effects of quantifier (reference level: "number"), centered size (higher value: "big"), and by-item and by-subject random intercepts, and random by-subject slopes from condition and size. There were main effects of condition, such that target selections were less likely in both the *some* (β=-2.90, *SE*=0.36, $p < .0001$) and *all* (β=-2.92, *SE*=0.36, $p < .0001$) conditions, compared to the number condition. There was no main effect of size, consistent with the visual result that target selections in the number condition are not modulated by target set size (β=-0.09, *SE*=0.26, $p < .73$). However, we did observe interactions between quantifier and size, such that small sets led to more target selections for *some* (β=0.59, *SE*=0.28, $p < .05$) but to fewer target selections for *all* (β=-1.27, *SE*=0.29, $p < .0001$), compared to number terms. **[jd: does this replicate SB results? also report target preference score analysis?]**

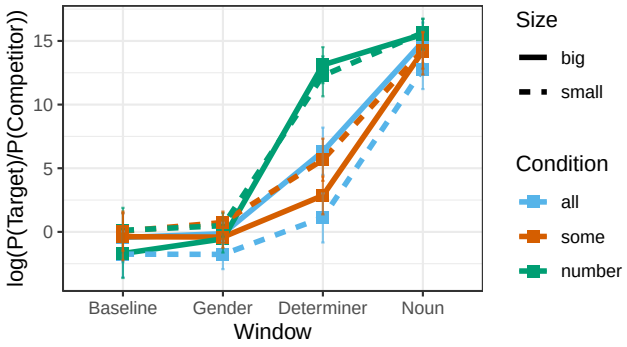

Figure 3: Proportions of target and competitor selections in Exp. 2 by quantifier and set size.

General discussion

References

Sun, C., & Breheny, R. (2020). Another look at the online processing of scalar inferences: an investigation of conflicting findings from visual-world eye-tracking studies. *Language, Cognition and Neuroscience*, *35*(8), 949–979.