



Production of Syntactic Alternations Displays Accessibility, But Not Informativity, Effects



Emily Goodwin
goodwine@stanford.edu

Judith Degen
jdegen@stanford.edu

Stanford University Department of Linguistics

Overview

Background

How do speakers choose between similar utterance alternatives, like those in (1)?

- (1) (a) Sally loaded the **truck** with wood. *Location-first form*
 (b) Sally loaded **wood** on the truck. *Substance-first form*

- **Meaning differences (the so-called “Holistic Effect”)** [1, 3, 6, 7]
Use location-first form if location is entirely affected; substance-first otherwise
- **Accessibility of visually foregrounded nouns** [5], Cf. [8]
Use the form that places easily-named nouns earlier in the sentence
- **Informativity of the nouns** (predicted by incremental by-word RSA model [4])
Use the form that places new or informative nouns earlier in the sentence
- Meaning, informativity, and accessibility-based criteria make different predictions about speaker preferences in certain contexts

Summary

- Two experiments test the trade-off between the influence of noun accessibility and informativity on speaker ordering preferences
- **Support for Influence of Noun Accessibility:** In Experiment 1, foregrounding an object increased first-mention, but we found no evidence for an accessibility effect in Experiment 2
- **No Support for Noun Informativity Effect:** In Experiment 2, we found no evidence that speakers mention more informative nouns first
- To avoid predicting informativity ordering effects, incremental RSA production models could plan over larger units. This would also capture speaker preferences to place recently-mentioned nouns earlier in the sentence [2, 9, *inter alia*]

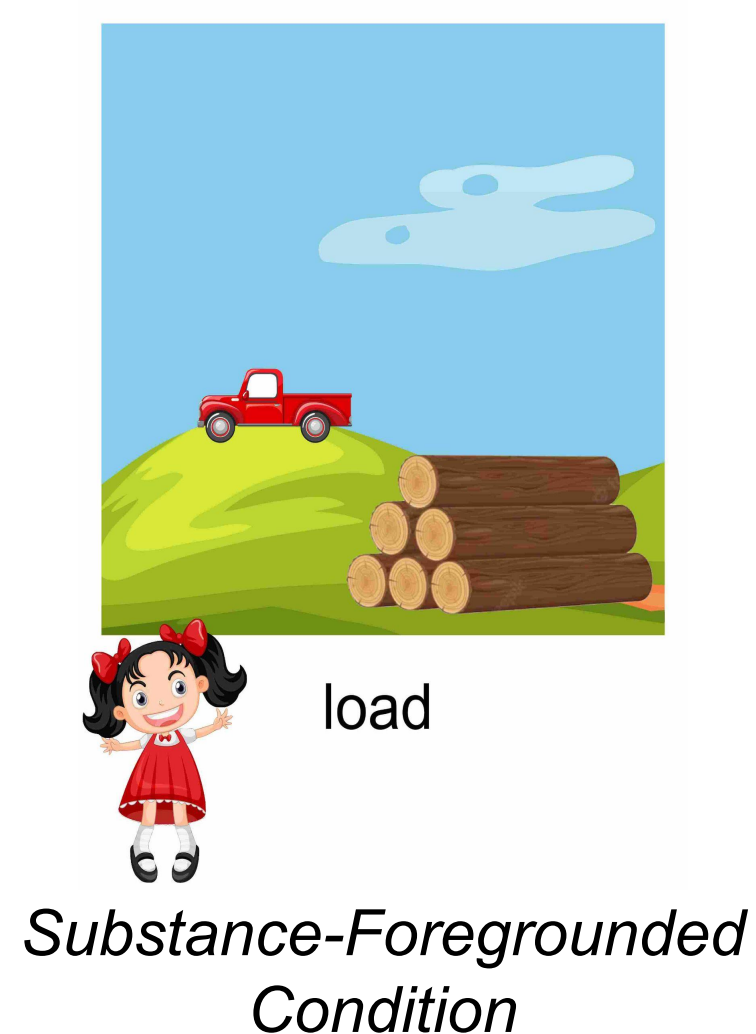
Limitations

- Greater difficulty naming items in Experiment 2, possibly an interfering accessibility effect
- Do not directly test meaning criteria: no items are incompatible with either form
 - Future work directly tests meaning and accessibility tradeoffs, by manipulating both the affectedness of the location objects and the accessibility of the nouns.
 - We also account for item-specific variability in the degree of meaning difference: certain items are judged to convey a similar affectedness

Experiment 1

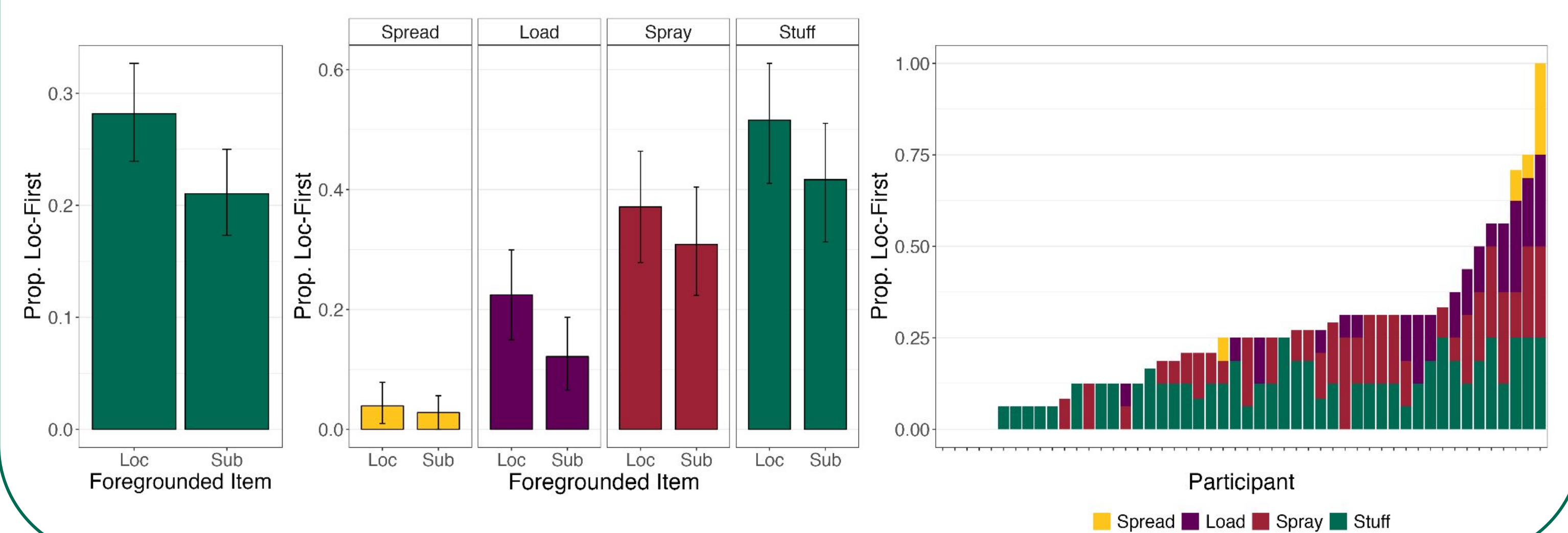
Methods and Stimuli

- Online production experiment: 55 native English speakers
 - Phase 1: Familiarization with object images and names
 - Phase 2: Object name recall task, with feedback
 - Phase 3: Picture-description task
- Design:
 - Foreground either the substance or location object
 - 16 critical trials with 4 alternating verbs *Spray, Spread, Stuff, Load*
 - 16 control trials with 4 non-alternating verbs *Drench, Cover, Put, Stash*
 - 4 filler trials using 2 dative verbs *Show, Bring*
- Participants instructed to record an image description, using the provided verb and mentioning both objects



Results

- Speakers are more likely to produce substance-first forms overall, for all verbs
- They produce location-first forms more often when the location is foregrounded ($\beta = 0.88, SE = .34, p < .01$)
- Verbs vary in their preference strength for the location-first form, creating an implicational hierarchy: *Spread < Load < Spray < Stuff*



Experiment 2

Methods and Stimuli

Make a sentence using the verb *load*, to tell your partner what Sally will do.



- Online, interactive production experiment: 63 dyads of native English speakers
 - Phase 1: Familiarization with object image and names
 - Phase 2: Picture-Description task, with partner
- 2 x 2 Design:
 - Location-Foregrounded or Substance-foregrounded
 - Location-Informative or Substance-informative
 - Same critical, control and filler items as Experiment 1
- Dyad directors instructed to describe the target image (indicated with a black square) for their partner, using the provided verb and mentioning both objects

Results

- Overall ordering preferences for each verb replicate from Experiment 1
- Location-first forms are not produced more often when location foregrounded ($\beta = 0.24, SE = 0.23, p > .30$)
- Location-first forms are not produced more often when location is informative ($\beta = -0.11, SE = .21, p > .60$)
- There was no interaction effect ($\beta = 0.39, SE = 0.41, p > 0.35$)

