A priming approach to the representation of English argument structure constructions
Outline

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Intro:
Priming as a window into grammatical representation
Structural priming

- **Priming**: processing a prime stimulus affects participants’ response to the same or a similar target stimulus (Lashley, 1951; Branigan & Pickering, 2017)

- **Structural priming** (Bock, 1986): e.g., after exposure to double-object primes, speakers produce more double-object targets

- Often used to investigate processing: e.g., comparing production and comprehension mechanisms (Bock et al., 2007) or monolingual and bilingual processing (Cai et al., 2011)

- But: priming can also be used to investigate speakers’ grammatical representations, providing a measure of representational similarity (Branigan & Pickering, 2017)

Questions for today

1. What does structural priming reveal about the representation of argument structure constructions?

2. Which theoretical framework can be used to interpret the effects?

3. How can priming be extended to a broader range of argument structure constructions?
Usage-based theories of grammar


- Grammar = a mental network of declarative knowledge, i.e. a network of constructions that share varying degrees of syntactic, semantic and/or discourse-functional similarity

- Constructions are represented at varying degrees of abstraction (e.g., [NP V NP NP] vs. **[the X-er the Y-er]** vs. **[kick the bucket]**)

- Speakers’ grammatical knowledge emerges from specific usage events: it is shaped by the frequency distribution of witnessed instances

(Goldberg, 2019, p. 37)
Network interpretations of structural priming effects
Two types of priming effects

- **Within-construction priming** (between instances of the same construction)
- **Cross-constructional priming** (between instances of different constructions)
Within-construction priming: the dative alternation

**Double-object primes:**
A rock star sold an undercover agent some cocaine.

**to-dative primes:**
A rock star sold some cocaine to an undercover agent.

(both from Bock, 1986)

- After double-object primes, participants produce more double-object targets; and same for to-datives
- This is even though primes and targets share no lexical material (e.g., verb)
- Interpretation: evidence that speakers represent abstract argument structure constructions

Bock (1986, Exp. 1)
A network model

Double-object cxn

to-dative cxn
Within-construction priming: the lexical boost

- When primes and targets share lexical material (especially the verb), priming is enhanced (Pickering & Branigan, 1998; Rowland et al. 2012; Tooley et al. 2019)

- According to a meta-analysis of production priming studies (Mahowald et al., 2016), the lexical boost is stronger than the effect of abstract priming itself

- Interpretation: speakers store verb-specific subconstructions at a lower level of abstraction
Network model ctd.

Double-object cxn

- give DO
- hand DO
- pass DO

To-dative cxn

- give to-dat.
- hand to-dat.
- pass to-dat.

A

B

S

T

R

A

C

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O

N
Cross-constructional priming: Datives and benefactives

**Benefactives**

DO: *The girl fetched the cowboy the hammer.*  
for-dative: *The girl fetched the hammer for the cowboy.*

**Datives**

DO: *The boy handed the fireman the teapot.*  
for-dative: *The boy handed the teapot to the fireman.*

Ziegler & Snedeker (2018, Exp. 1 & 6)

![Graph showing the proportion of dative DO targets](graph.png)

- Transfer DO: 31%
- to-dative: 21%
- Approx. baseline (Exp. 4): ≈ 30%

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Network model ctd. ctd.

Dative DO

Benefactive DO

give DO

hand DO

pass DO

fetch DO

bake DO

get DO
Extending structural priming to new constructions
Previous priming studies of argument structure constructions have been largely restricted to alternating patterns, such as the dative alternation (Bock, 1986), the benefactive alternation (Chang et al., 2003) and the locative alternation (Ziegler & Snedeker, 2018).

This is due to the limitations of production priming methods, which are typically restricted to testing “structural alternatives” (Branigan & Pickering, 2017): speakers choose between two ways of encoding the same event.

How can priming be extended to other (non-alternating) argument structure constructions?

Comprehension priming methods (e.g., SPR) provide mutually independent outcomes for each target construction (e.g., reaction time).
Example: resultative–depictive priming (Ungerer, 2022)

**Resultatives (adjectival)**
- Max cooked the chicken **tender**.
- Nancy cut the grass **short**.

**Depictives (object-oriented)**
- Gary cooked the chicken **whole**.
- John cut the grass **wet**.

**Participants**
160 self-reported English native speakers, recruited via Amazon Turk

**Materials**
20 resultatives, 20 depictives, 60 fillers

**Method**
Maze task (Forster et al., 2009), a variant of self-paced reading
Results

**Resultative targets**

- Cross-constructional priming

**Depictive targets**

- Within-construction priming

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Log-transformed response time

Prime construction:
- Resultative
- Depictive
- Unrelated
Interpretation

- Both within-construction and cross-constructional priming effects emerge after depictive primes, but not after resultative primes.
- Speakers treat constructions as related despite their semantic differences.
- Asymmetric priming probably due to lower frequency and lower acceptability of depictives ("inverse frequency effect"; Ferreira 2003).

Limitations:
- Source ambiguity
- Naturalness of the maze task?
- Small effect sizes in comprehension (null effects?)
Summary
Summary

- Structural priming can provide rich evidence about grammatical representation
  → E.g., the level of abstraction at which argument structure constructions are encoded

- A range of priming effects can be fruitfully interpreted within a usage-based view of grammar as a hierarchically structured network of constructions that share varying degrees of similarity

- Comprehension methods can be used to extend structural priming to understudied argument structure constructions
  → E.g., asymmetric priming from English depictives to resultatives suggests that speakers are sensitive to the similarity of the constructions but also to their differences in frequency, acceptability, etc.

Thank you!
References I


