

Dative Ordering Preferences in English: Productive Constraints, Item-Specific Experience & Frequency

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Syntactic ordering preferences incorporate item-specific knowledge gradually, as a function of frequency
+ A new, large-scale dative corpus

Background + Main Questions

- When do speakers rely on their different kinds of knowledge?
 - productive** knowledge (generally applicable rules)
 - item-specific** experience (exposures to a particular phrase)
- In binomial ordering preferences (e.g. *men and women vs. women and men*), speakers recruit **item-specific** knowledge more for more frequent items [2, 3]
- Q1: Do sentence-level ordering preferences also show a frequency-mediated reliance on item-specific knowledge?**
 - Dative alternation (Table 1, Row 1) ordering is influenced by **productive** knowledge (e.g. short constituents early) and **verb-specific** knowledge (e.g. *take* prefers *to*-form) [1, 4]
- Q2: How should item-specific experience be defined in sentence-level structures?**
 - Some dative verbs have non-dative uses with dative-like syntax (Table 1, Row 2)
 - What part of speakers' experience with a verb contributes to the verb-specific ordering knowledge?
Do speakers abstract over syntactic structures (all cells in Table 1) **or only over uses with similar event structure** (Dative-only/first row of Table 1)?

A New, Large-Scale Dative Corpus

- Extracted dative verbs with two objects from 6.15 billion words of English web text
- Hand-annotated samples for:
 - Dative status (Is there a recipient?)
 - Features of **productive** rules (e.g., recipient animacy, number)
- Corpus totals 23,488 sentences, 7,403 dative uses
 - 81 verbs have more than 10 dative uses

Methods

- Model 1:** Mixed-effects model predicting form (*to*- or DO form) from fixed effects (reflecting **productive knowledge**) and random by-verb intercept (**verb-specific knowledge**)
 - $DO_{form} \sim anim_recip + \dots + (1|verb)$
- Model 2:** Fixed-effects model predicting Verb-specific intercepts (extracted from Model 1) from form-preference in datives vs non-datives
 - $verbIncpt \sim dative_DOpref + nonDative_DOpref$

Summary

- Q1:** **Item-specific** knowledge does contribute more to the ordering preferences of more frequent verbs (Fig 2)
 - Additionally, more frequent verbs prefer the DO form (Fig 4)
- Q2:** Ordering preference of non-dative uses did not significantly predict dative ordering preferences (Table 2)
 - Suggests that speakers' direct experience is "sorted" into dative and non-dative experience
- Together, these results support usage-based, exemplar theories of grammar in which:
 - Productive** and **item-specific** knowledge are flexibly combined in sentence processing
 - Exemplars are tagged or weighted by event structure as well as syntactic structure

Results

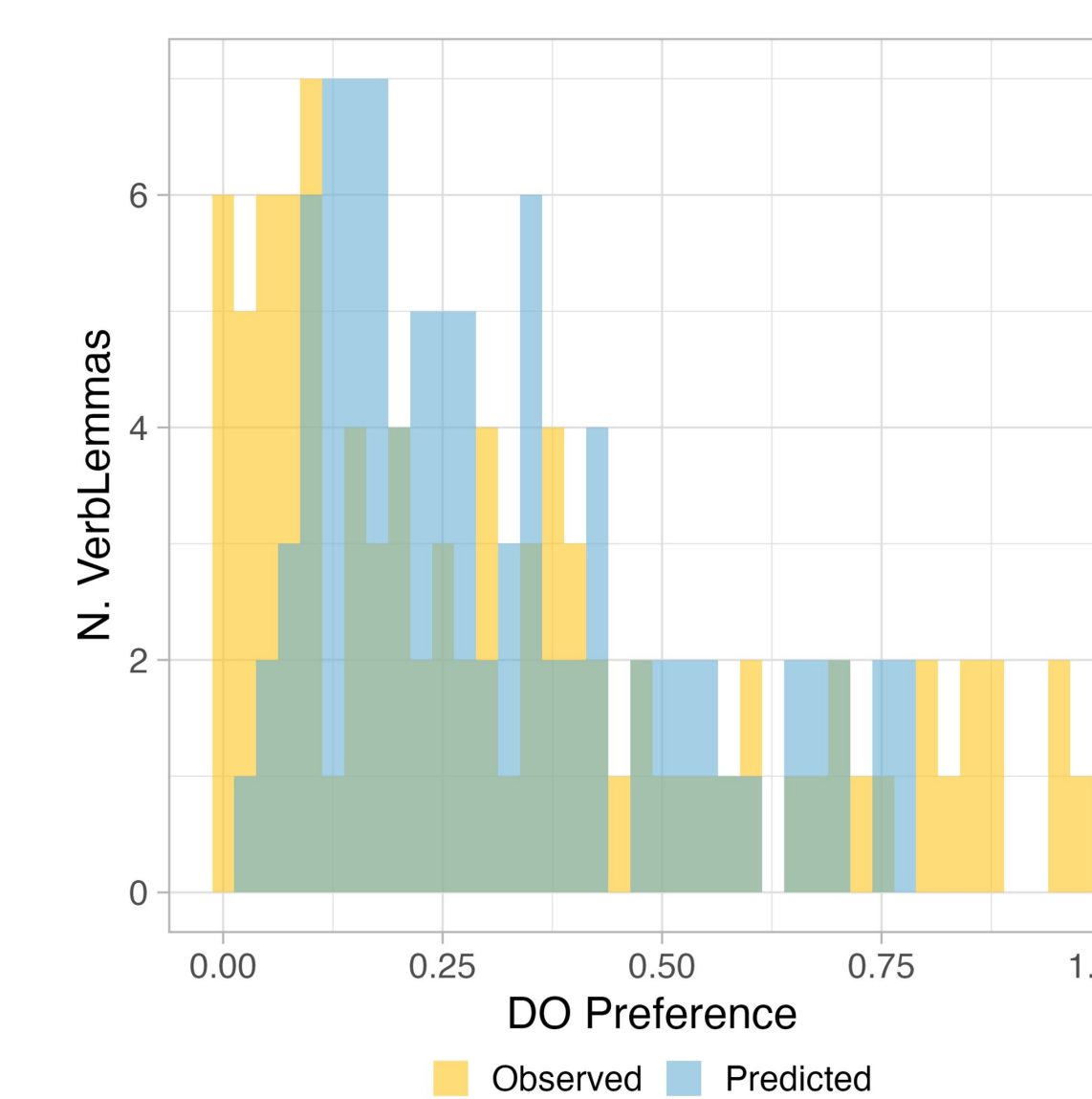


Fig 1: Extreme ordering preferences are not predicted by productive knowledge (Model 1 fixed-effects predictions)

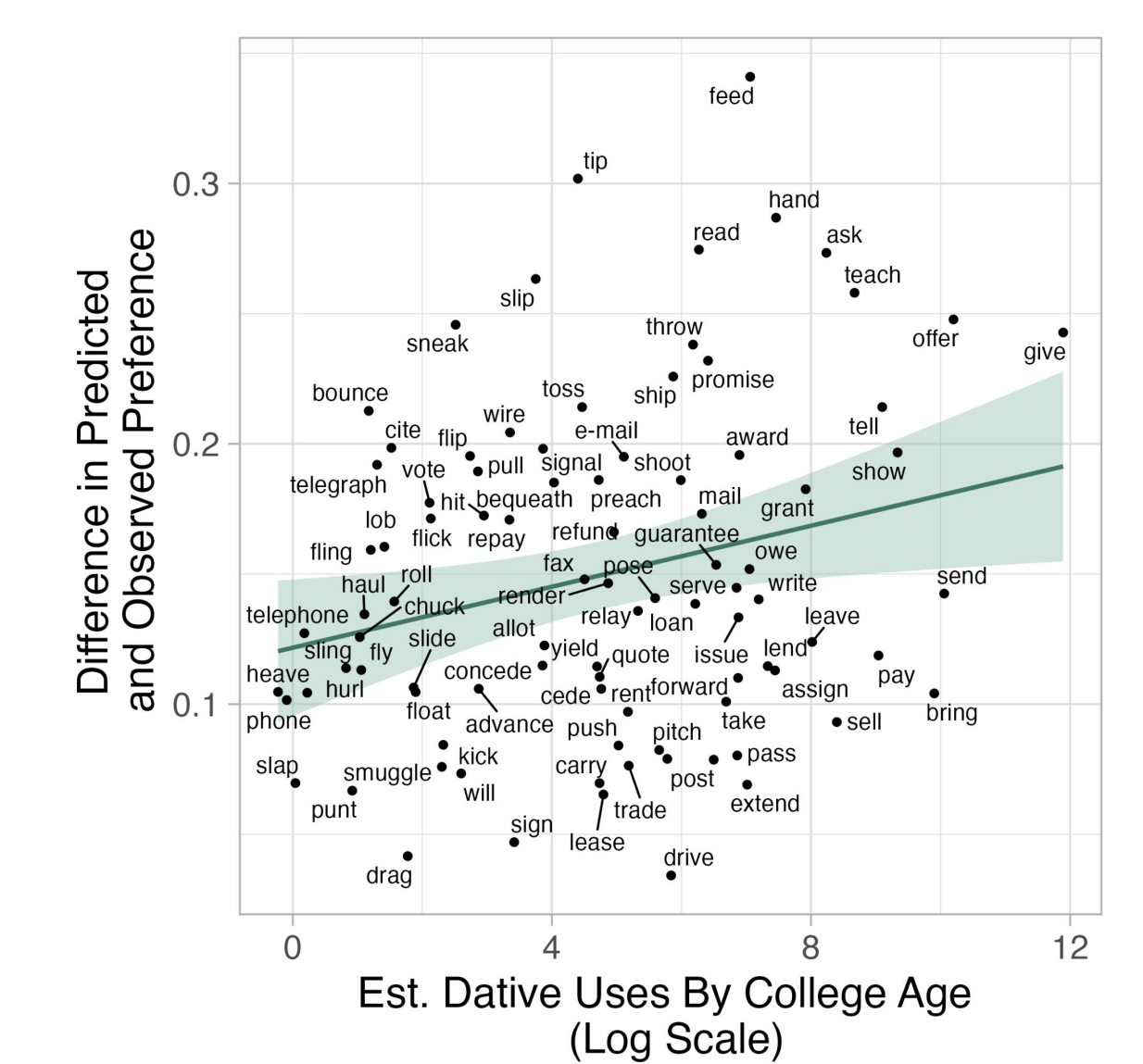


Fig 2: More frequent verbs have more idiosyncratic ordering preferences

	Effect	S.E.	P
Dative Use DO Preference	5.26	0.43	< 2e-16
Non-Dative Use DO Preference	0.71	0.48	0.14

Table 2: Model 2 finds only dative uses influence ordering preferences

Corpus Results

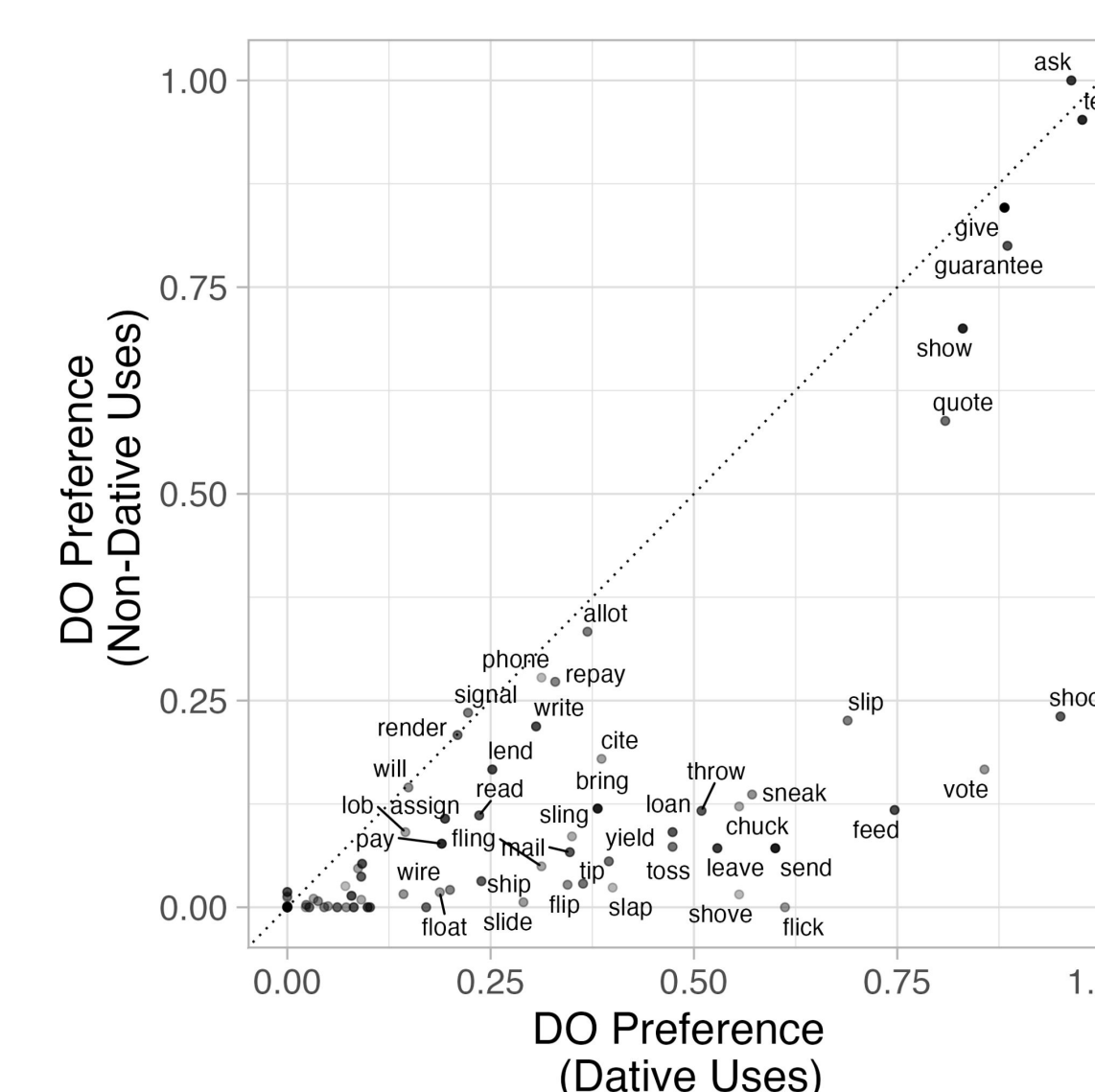


Fig 3: Non-dative and dative uses differ in DO preference

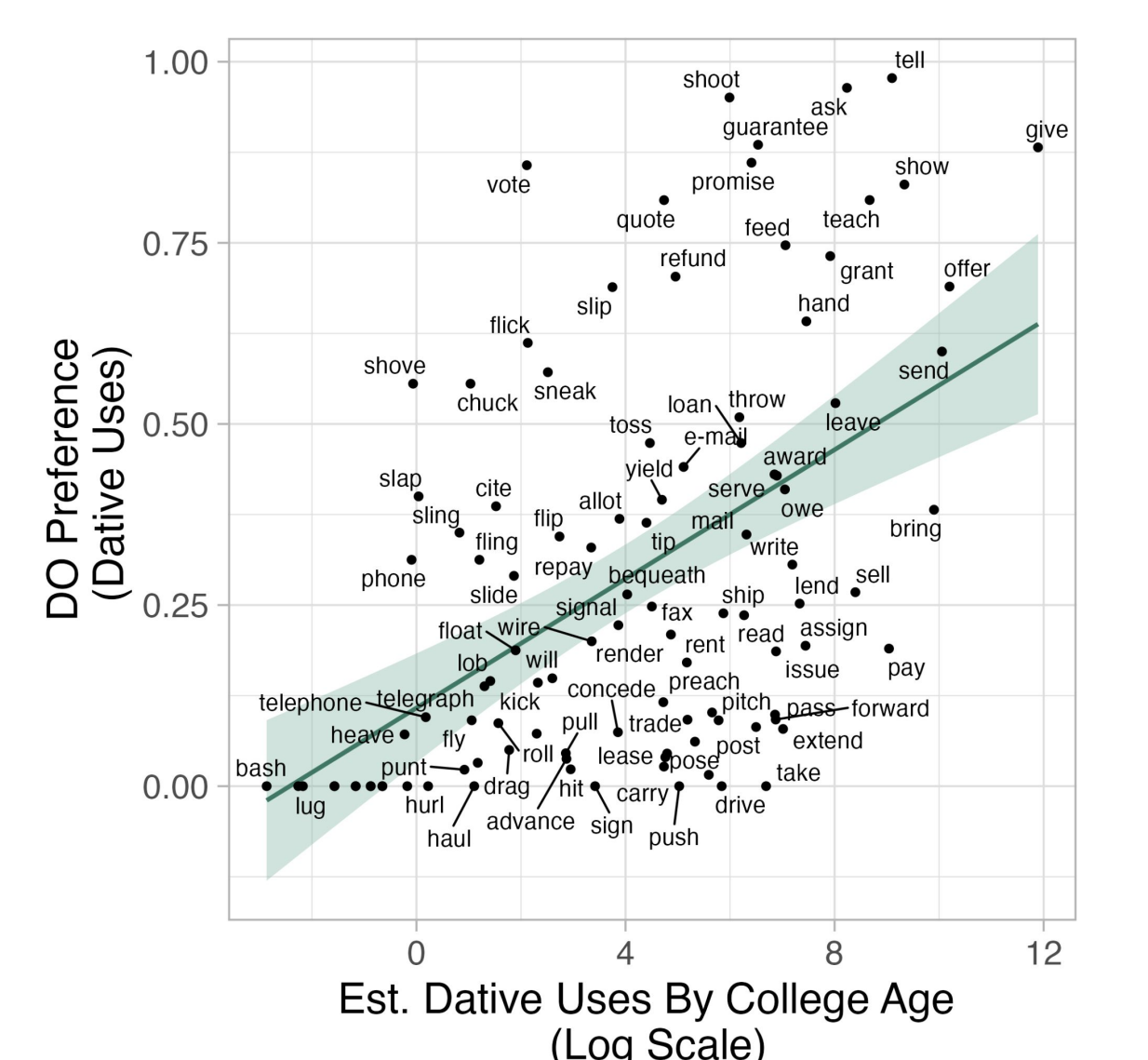


Fig 4: More frequent verbs prefer DO form

	DO form	To-form
Dative Use <i>has recipient, alternating</i>	Take her a snack	Take a snack to her
Non-Dative Use <i>no recipient; not alternating</i>	* Take the limit it Take me a day	Take it to the limit * Take a day to me

Table 1: Dative and non-dative uses of the dative verb *take*

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References. [1] Bresnan, J., Cueni, A., Nikitina, T., & Baayen, R. H. (2007). Predicting the dative alternation. In *Cognitive foundations of interpretation* (pp. 69–94). KNAW. [2] Morgan, E., & Levy, R. (2016). Abstract knowledge versus direct experience in processing of binomial expressions. *Cognition*, 157, 384–402. [3] Morgan, E., & Levy, R. P. (2023). *Generative knowledge and item-specific knowledge trade off as a function of frequency in multiword expression processing* [Preprint]. PsyArXiv. [4] Wasow, T. (2002). *Postverbal behavior*. CSLI Publications.