

Introduction. English dative verbs alternate between a double object (DO) form and a prepositional object (PO) form (Table 1, Row 1-2). Speakers' form choice reflects both productive knowledge (generally applicable rules like "prefer pronouns earlier") and item-specific knowledge (verb biases like "give appears in DO forms more than productive knowledge predicts"). Verb biases are driven by direct experience; however, learning verb ordering biases is more complicated than simply counting occurrences in each form. *Issue 1:* First, dative verbs vary considerably in frequency (e.g. *heave* vs. *give*) and the strength of their ordering bias. Research on other constructions has shown more frequent items have stronger biases [4, 5]; however, this may not hold for verb-argument ordering, which targets different planning mechanisms. How and what do speakers learn from the varying amounts of evidence they have about different verbs? *Issue 2:* Many dative verbs occur in other two-argument structures, complicating the picture of dative verb experience. Unlike "true datives", these "red herring" examples have the same surface syntax as PO forms, but different event structure (lacking a recipient) and do not alternate (no DO form; Table 1, Row 3). Such uses are a significant part of speakers' experience, but distinguishing whether a given PO example could be construed as having a recipient, and thus potentially alternate, is often non-trivial even for trained annotators (Table 1, Row 4). How do speakers learn correct verb biases from data complicated by red herrings: non-alternating and other superficially similar structures?

Methods and Results. We collected ordering preference judgments via an online 2-AFC task: participants saw both the DO and PO form of a true dative, and selected their preferred ordering. We constructed 4,984 alternating examples from 91 verbs, varying themes and recipients to maximally cover combinations of pronominality, animacy, definiteness, and length difference predictors. To extract verb-specific knowledge, we fit a regression predicting form (DO/PO) from fixed effects for each productive constraint (e.g. animacy, pronominality) [1]. We included a verb-specific random intercept, which we take as our measure of verb-specific biases. *Issue 1:* More frequent verbs had stronger ordering biases ($\beta = 0.04$, $P < .01$), and preferred the DO form ($\beta = 0.13$, $P < .001$, see Figure 1). *Issue 2:* To investigate the effect of red herrings, we fit a model predicting verb bias from verb experience. One predictor was the distribution of forms (DO/PO) among true datives (e.g. Table 1, Row 1); and one was the distribution of forms (DO/PO) among red herrings (e.g. Table 1, Row 3). We expected a significant effect of alternating experience—at minimum, dative verb ordering is presumably learned from experience with true datives. Our main question of interest was whether the red herrings predictor also influenced verb-specific bias, and to what degree. The red herring predictor had a smaller but significant effect on ordering (see Table 2).

Discussion. Our results demonstrate that what speakers learn from their experience is *rational* in two ways: 1) Speakers put more weight on their item-specific experience (learning stronger preferences) when they have more experience, i.e. for higher frequency verbs. 2) Speakers learn from both more-relevant experience (true datives) and less-relevant experience (red herrings) but weight the more relevant experience higher than the less relevant experience. Our results support previous conclusions about the effect of frequency on learning item-specific preferences [4,5], extending these conclusions to a construction with more syntactic complexity and a more challenging learning environment, where speakers must abstract over semantically and syntactically heterogeneous examples to converge on the correct verb-bias.

¹ goodwine@stanford.edu

Use	PO Form	DO Form
Alternating Use “True Dative”	<i>drove the books to teacher</i>	<i>drove the teacher the books</i>
Alternating Use “True Dative”	<i>give the books to the school</i>	<i>give the school the books</i>
Non-Alternating Use “Red Herring”	<i>drove the kids to the school</i>	* <i>drove the school the kids</i>
Ambiguous Use	<i>drove the books to the school</i>	? <i>drove the school the books</i>

Table 1. Dative verbs in alternating and non-alternating examples.

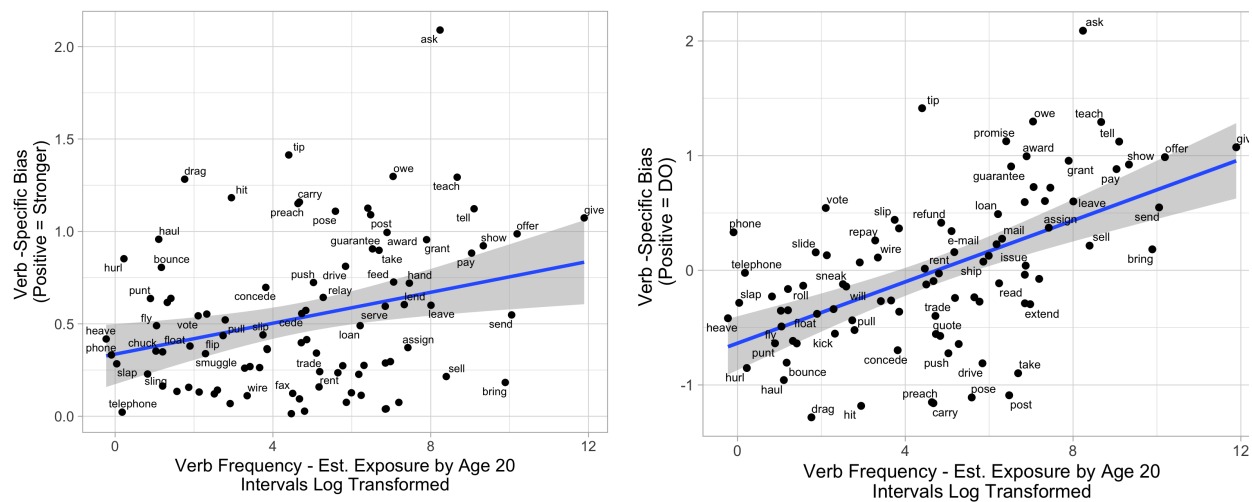


Figure 1. More frequent verbs have stronger biases (left) and more DO-preferent biases (right).

Effect	Estimate	SE	P value t
Intercept	- 0.54	0.07	< 0.001
True Dative Uses	1.34	0.22	< 0.001
Red Herring Uses	0.61	0.25	< .05

Table 2: Estimates for the effect of experience with a verb in the DO form in alternating uses and non-alternating uses. Both were significant, but alternating uses had a larger effect.

References

[1] Bresnan et al.. (2005). *Predicting the Dative Alternation*. [2] Goodwin et al.. (2025). *Syntactic Choice Is Shaped by Fine-Grained, Item-Specific Knowledge*. [3] Levin. (1993). *English Verb Classes and Alternations*. [4] Morgan & Levy. (2015). Modeling idiosyncratic preferences: How generative knowledge and expression frequency jointly determine language structure. *Proceedings of the 37th CogSci*. [5] Morgan & Levy. (2016). Abstract knowledge versus direct experience in processing of binomial expressions. *Cognition*, 157.