

The asymmetry of argument structure alternations

A productivity experiment

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- Overview
 - The phenomenon: argument structure productivity
 - The question: the status of alternations in productivity
 - Presentation of an experiment

- Argument structure productivity
 - Property of an argument structure construction to be used innovatively with different verbs

Don't say me that! (Gropen et al. 1989)

John sneezed the napkin off the table. (Goldberg 1995)
 - What are the determinants of productivity?
 - In usage-based CxG, mostly driven by constructions:
 - Constructions convey a schematic meaning
 - This meaning constrains the distribution of the construction
 - Main determinant: the meaning of the verb
 - But verbs never occur in isolation, always within constructions
 - Does productivity also depend on which construction(s) a verb has previously been witnessed with?

Alternation-driven productivity

- Alternation-driven productivity
 - Alternations: pairs of constructions with the same function
 - Dative alternation

John gave a book to Mary vs. John gave Mary a book

 - Events of caused transfer of possession
 - No major difference in meaning but different discourse profiles
 - Locative alternation (*spray/load* alternation)

John loaded hay onto the cart vs. John loaded the cart with hay

 - Events of caused change of location
 - Different construals of the event: action on theme vs. on location
 - Hard to tease apart from construction-driven productivity
 - Is the productivity of variants of an alternation qualitatively different from the productivity of unrelated constructions?

Alternation-driven productivity

- A relevant study: Conwell & Demuth (2007)
 - Investigated 3-year-olds' knowledge of the dative alternation
 - A novel action acted out with toys was described to children with a nonce verb (e.g., *pilk*) used in one of the variant of the dative alternation
 - The children were then asked to reproduce the action and say what they were doing
 - Finding: productivity asymmetry
 - 3-year-olds readily use a verb in the *to*-dative variant if they heard it in the ditransitive variant
 - But they are much less likely to do the opposite

Alternation-driven productivity

- Is that evidence for alternation-driven productivity?
 - The model construction does have an influence on productivity
 - But there might be other explanations:
 - Bias towards a construal of the toy recipients as goals (i.e., locations); hence they stick to a ‘locative’ construction
 - Could it be just an artefact of language acquisition?
 - i.e., would we find the same asymmetry with adult speakers?

Alternation-driven productivity

- A new experiment; questions:
 - Are adult speakers also biased towards the *to*-dative?
 - How is this bias related to verb meaning?
 - Is it only found with verbs of physical transfer (i.e., goal-taking)?
 - If not, does the effect vary according to verb meaning?
 - Are other alternations similarly asymmetrical?
 - => the locative alternation

- Experimental design
 - Conwell & Demuth's method is inappropriate for adult speakers
 - Instead, novel verbs are introduced in short stories
 - Their intended meaning is hinted at by contextual cues
 - Tasks:
 - Read a short story containing a novel verb and presented one sentence at a time
 - Type the novel verb on the computer screen
 - Decide on the meaning of this verb by picking a definition out of three suggestions
 - Production task, to elicit a productive use of the novel verb:
 - Sentence prompt containing the verb
 - Subjects must complete this prompt according to what happened in the story (not necessarily rote repetition)

Demo



Ted and Sam were testing the new machines.

Sam pelled a box to Ted.

When the conveyor belt stopped,
Ted removed the box.

Sam wrote their boss a positive report.

(verb recall task)

What was the new word in the short story
you have just read?

(meaning decision task)

What do you think this word means?
Pick the definition that you find most appropriate
in the list below.

- 1) pack something with difficulty
- 2) transfer from a distance by using
a conveying device
- 3) drag something with a rope

(sentence completion task)

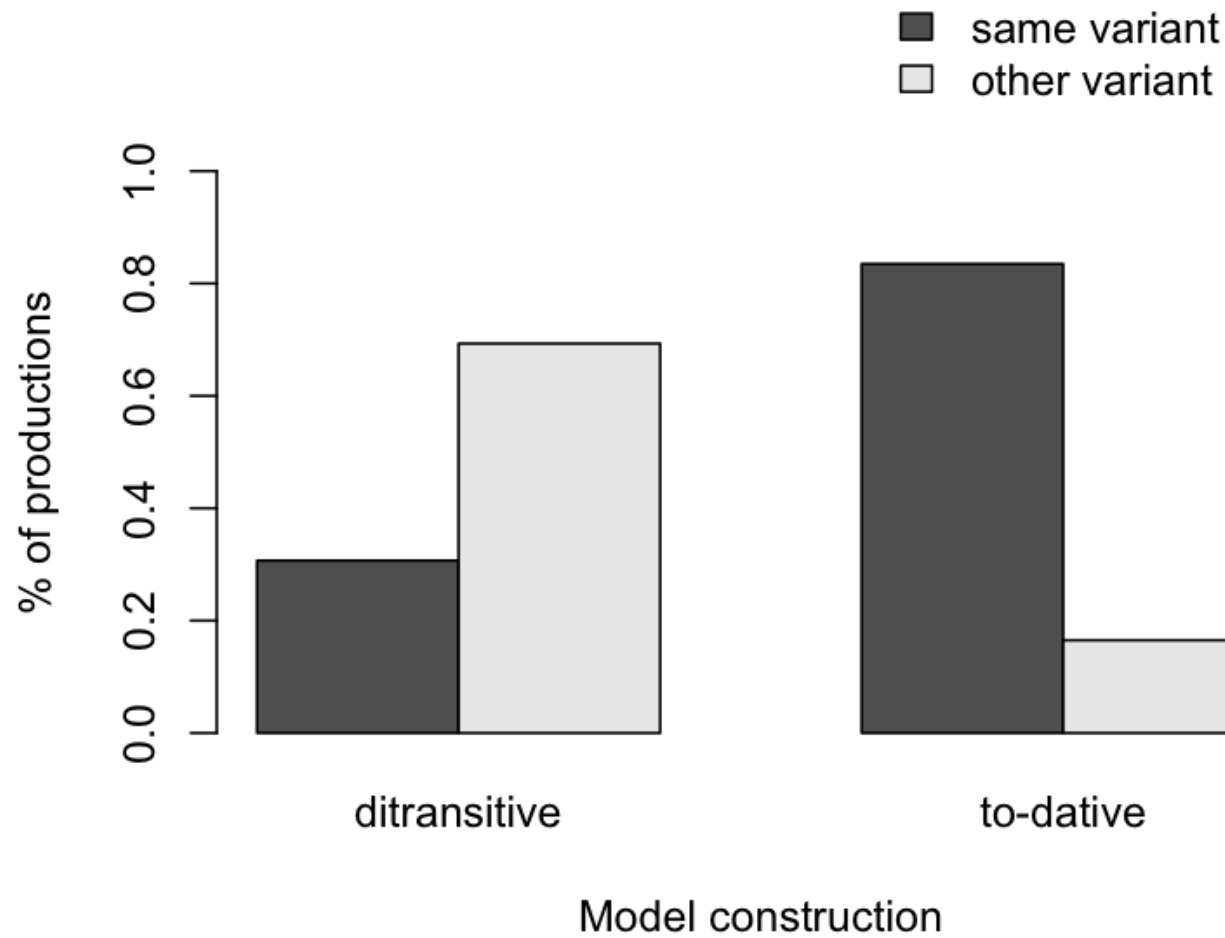
Now answer this question:

What did Sam do?

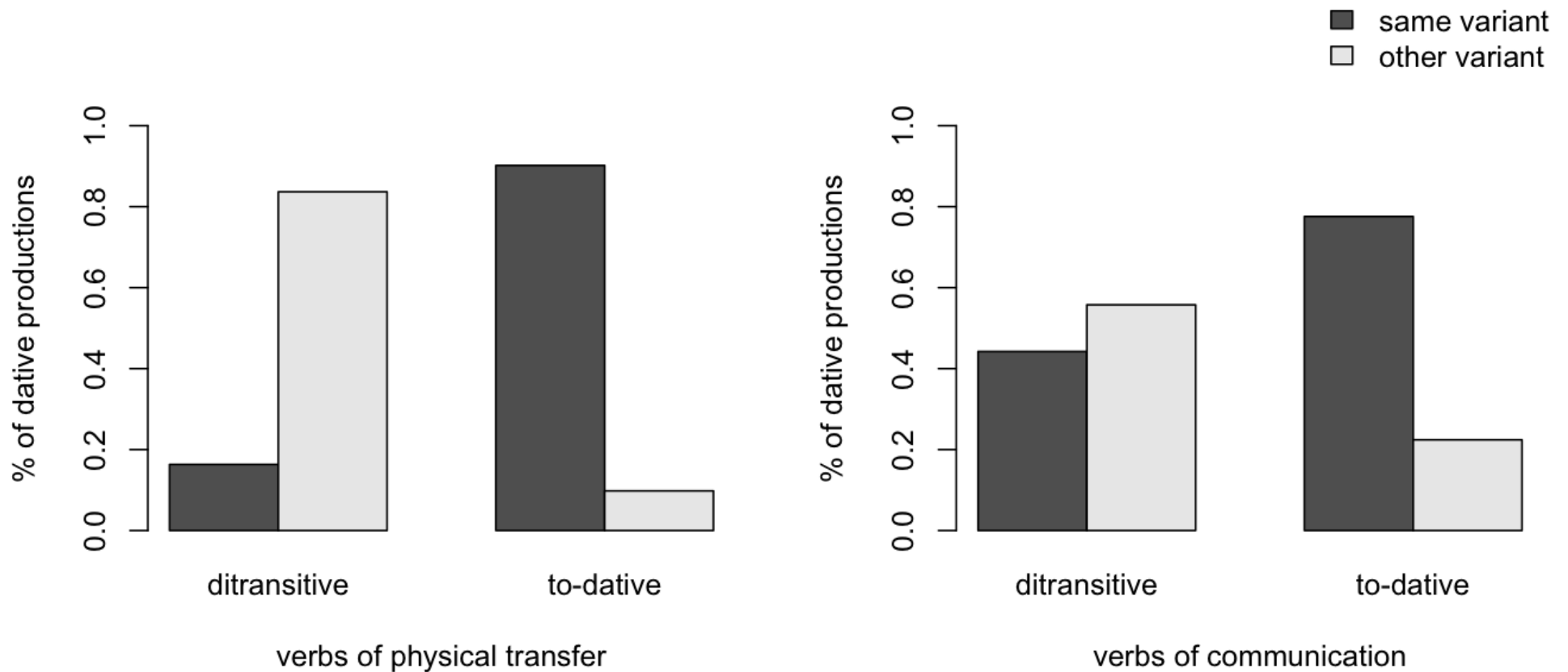
Sam pelled ...

- Stimuli
 - Two alternations: dative alternation, locative alternation
 - Novel verbs are used in one variant of these alternations
 - The verb meanings fall into two classes for each alternation:
 - Dative: physical transfer vs. communication
 - Locative: change of location vs. change of state
 - 2 novel meanings in each class, one short story for each meaning
- Subjects
 - 40 English native speaker students at the University of Freiburg
 - Each meaning was presented in one variant for half the subjects, and in the other variant for the other half

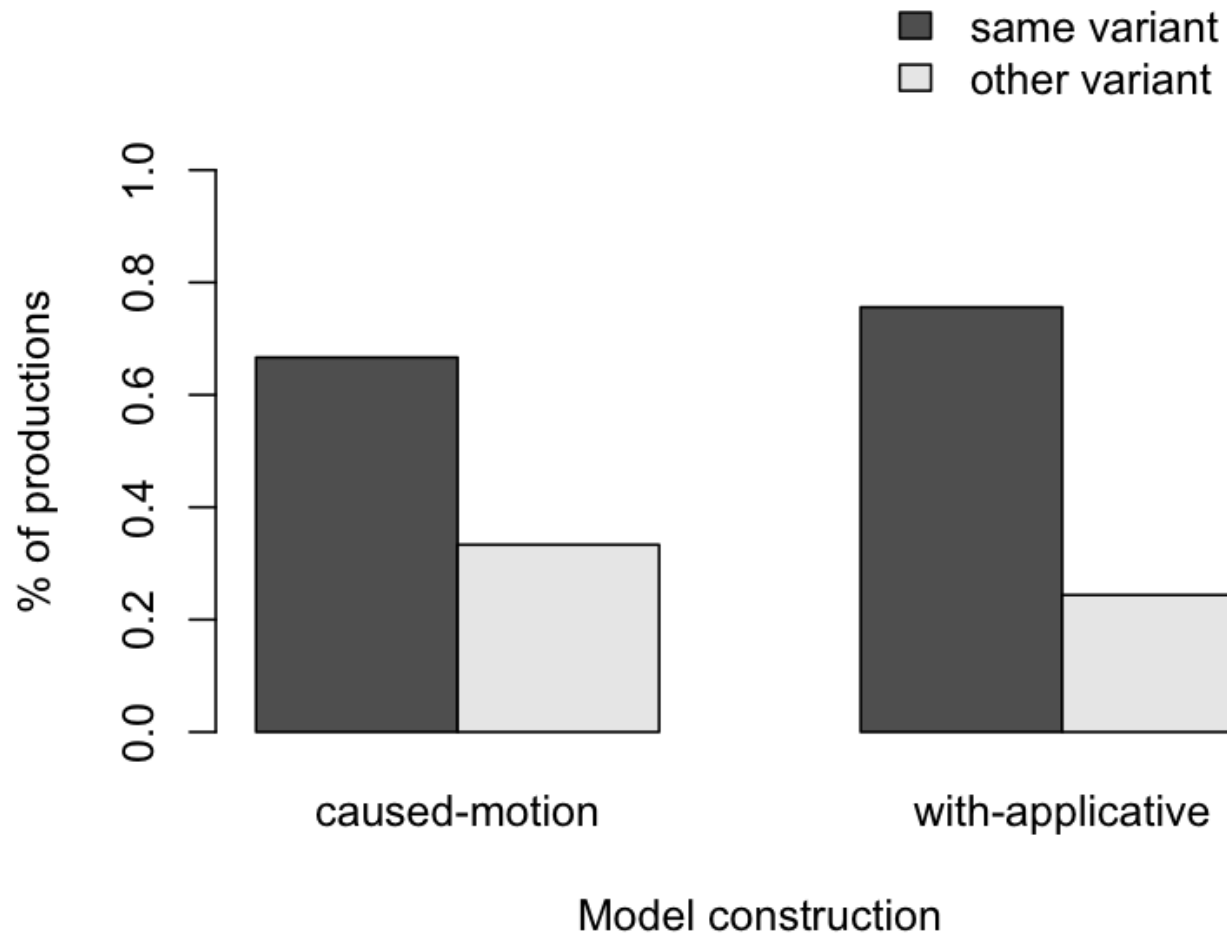
- Dative alternation



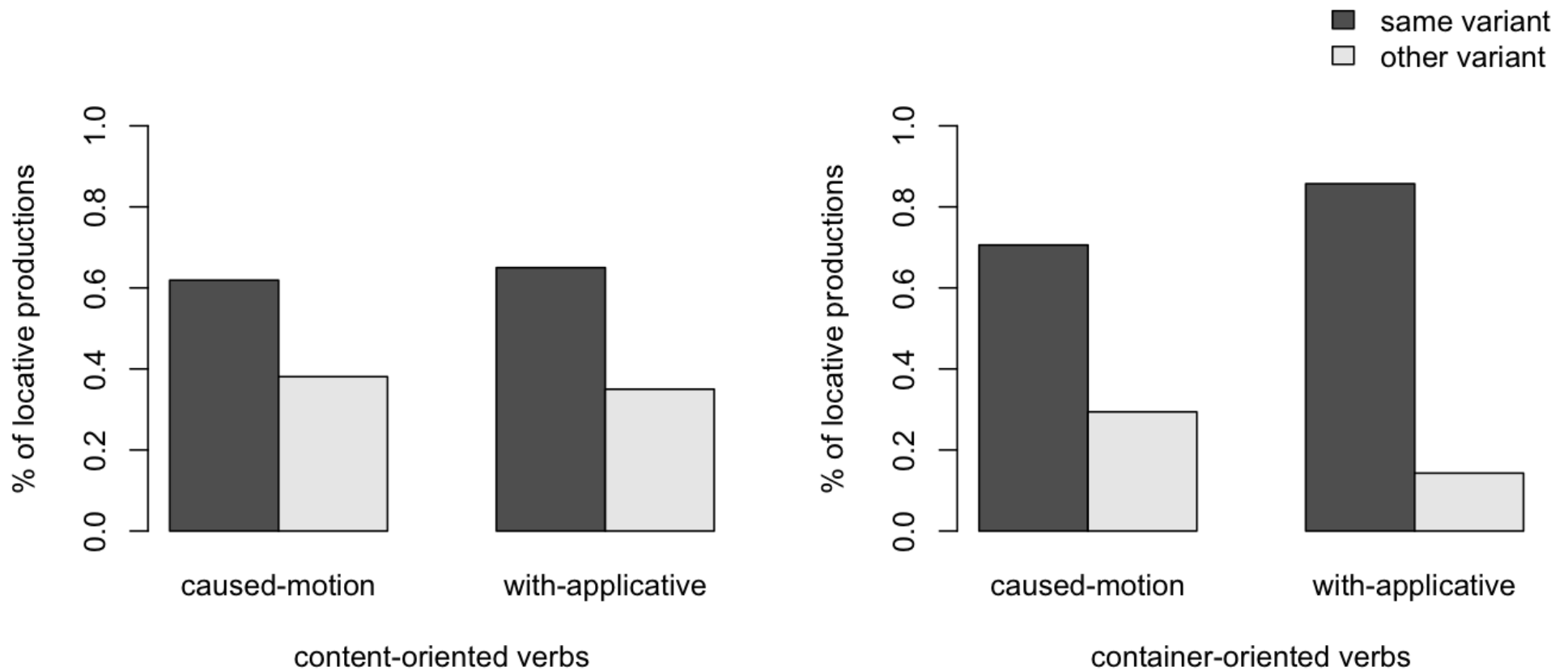
- Dative alternation, by verb meaning



- Locative alternation



- Locative alternation, by verb meaning



- Summary
 - For the dative alternation:
 - Same asymmetry as in Conwell & Demuth (2007):
 - Adult speakers rarely generalize a verb from the *to*-dative to the ditransitive, but they often do the opposite
 - Found for both verb classes, including non-locative verbs
 - => rules out the explanation in terms of a 'goal' bias
 - For the locative alternation:
 - No asymmetry in either verb class
- Evidence for alternation-driven productivity

A usage-based explanation

- A usage-based explanation
 - Intuitively, very few English verbs occur in the ditransitive but not in the *to*-dative
 - A lot occur in both and even more occur only in the *to*-dative
 - Confirmed by a corpus survey (source: ICE-GB):

	<i>to</i> -dative-only	ditransitive-only	alternating
Physical transfer	40	1	5
Communication	17	1	3
All verbs	104	33	37

- It is more likely for a *to*-dative verb to belong to the ‘*to*-dative-only’ class than to the ‘alternating’ class
- Conversely, it is more (or equally) likely for a ditransitive verb to belong to the ‘alternating’ class than to the ‘ditransitive-only’ class

A usage-based explanation

- The same explanation predicts the lack of asymmetry in the locative alternation:

with-applicative-only

alternating

-
- The ²¹³caused-motion variant ³⁵should be more productive (highest ¹⁴type frequency)
 - Yet subjects were conservative with both variants
=> shows that only *relative* type frequency matters

Conclusion

- Conclusion
 - The behavior of speakers correlates with type frequencies
 - Means that speakers are aware of these facts of frequency and use them in their linguistic behavior
 - In line with Wonnacott et al.'s (2008) claim that speakers learn “general facts” about their language
 - Linguistic knowledge involve usage patterns that relate several constructions (cf. Perek to appear)

Thanks for your attention!

Conwell, E. & K. Demuth (2007). Early syntactic productivity: Evidence from dative shift. *Cognition* 103: 163-179.

Goldberg, A. (1995). *Constructions: a construction grammar approach to argument structure*. Chicago: University of Chicago Press.

Gropen, J., S. Pinker, M. Hollander, R. Goldberg, & R. Wilson (1989). The learnability and acquisition of the dative alternation in English. *Language* 65.2: 203–257.

Perek, F. (to appear). Alternation-based generalizations are stored in the mental grammar: evidence from a sorting task experiment. *Cognitive Linguistics* 23.3.

Wonnacott, E., E. Newport & M. Tanenhaus (2008). Acquiring and processing verb argument structure: Distributional learning in a miniature language. *Cognitive Psychology* 56: 165-209.

<http://omnibus.uni-freiburg.de/~fp185>

