

Hebrew Possessive Datives: from Affectedness to Possession

Tal Linzen

Linguistics Department
Tel Aviv University

Workshop: Variation and Change in Argument Realization, Naples

May 30, 2010

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this
- The concept of affectedness is **fuzzy**

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this
- The concept of affectedness is **fuzzy**
- Go to **typology** in search of clearly defined proxies of affectedness

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this
- The concept of affectedness is **fuzzy**
- Go to **typology** in search of clearly defined proxies of affectedness
- Use clearly defined proxies to quantify:

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this
- The concept of affectedness is **fuzzy**
- Go to **typology** in search of clearly defined proxies of affectedness
- Use clearly defined proxies to quantify:
 - Synchronic **variation** (Experiment 1)

Outline

- Linguists **love** possessive datives, in Hebrew and in other languages (e.g. articles in Payne and Barshi 1999)
- **Affectedness** is supposed to be play an important role in the Hebrew possessive dative
- Run a **corpus experiment** to test this
- The concept of affectedness is **fuzzy**
- Go to **typology** in search of clearly defined proxies of affectedness
- Use clearly defined proxies to quantify:
 - Synchronic **variation** (Experiment 1)
 - **Language change** (Experiment 2)

The possessive dative

- The core use of dative constructions is to express transfer of possession (cf. Latin *dare* 'give'):

(1) natati le-yosi et ha-kadur.
I.gave **to-Yosi** ACC the-ball
'I gave Yosi the ball.'

The possessive dative

- The core use of dative constructions is to express transfer of possession (cf. Latin *dare* 'give'):
 - (1) natati le-yosi et ha-kadur.
I.gave **to-Yosi** ACC the-ball
'I gave Yosi the ball.'
- The Hebrew dative has many other uses, including one that is very common in European languages:
 - (2) harasti le-yosi et ha-xulca.
I.ruined **to-Yosi** ACC the-shirt

The possessive dative

- The core use of dative constructions is to express transfer of possession (cf. Latin *dare* 'give'):
 - (1) natati le-yosi et ha-kadur.
I.gave **to-Yosi** ACC the-ball
'I gave Yosi the ball.'
- The Hebrew dative has many other uses, including one that is very common in European languages:
 - (2) harasti le-yosi et ha-xulca.
I.ruined **to-Yosi** ACC the-shirt
- This does not mean *I transferred the shirt to Yosi's possession by ruining it*

The possessive dative

(2) harasti le-Yosi et ha-xulca.
I.ruined **to-Yosi** ACC the-shirt

- A common gloss for (2) is 'I ruined Yosi's shirt'. Hence **possessive dative**.

The possessive dative

(2) harasti le-Yosi et ha-xulca.
I.ruined **to-Yosi** ACC the-shirt

- A common gloss for (2) is 'I ruined Yosi's shirt'. Hence **possessive dative**.
- Hebrew has an ordinary genitive construction as well:

(3) harasti et ha-xulca šel Yosi.
I.ruined ACC the-shirt **of Yosi**
'I ruined Yosi's shirt.'

The possessive dative

(2) harasti le-Yosi et ha-xulca.
I.ruined **to-Yosi** ACC the-shirt

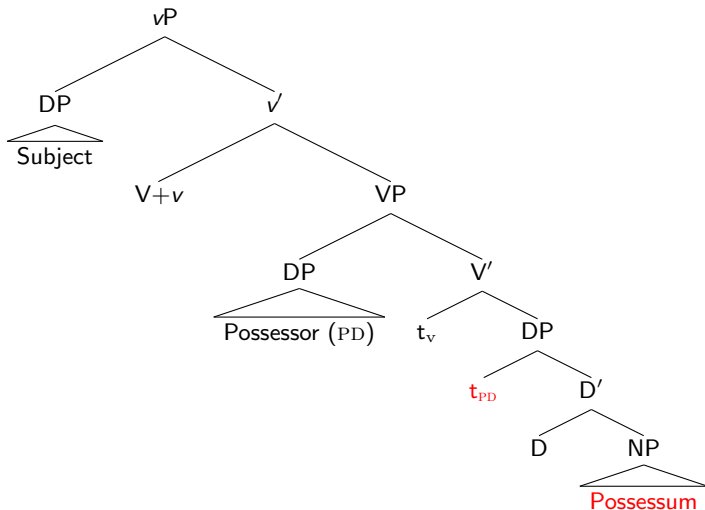
- A common gloss for (2) is 'I ruined Yosi's shirt'. Hence **possessive dative**.
- Hebrew has an ordinary genitive construction as well:

(3) harasti et ha-xulca šel Yosi.
I.ruined ACC the-shirt **of Yosi**
'I ruined Yosi's shirt.'

- **Are the two constructions synonymous?**

Well, some say they are:

(Landau 1999)



The affectedness hypothesis

Speakers use the possessive dative to emphasize a certain **subjective view** of the event:

The affectedness hypothesis

Speakers use the possessive dative to emphasize a certain **subjective view** of the event:

- The possessor was **affected** by it (Berman 1982)

The affectedness hypothesis

Speakers use the possessive dative to emphasize a certain **subjective view** of the event:

- The possessor was **affected** by it (Berman 1982)
- The event **happened to** him or her (Wierzbicka 1988)

The affectedness hypothesis

Speakers use the possessive dative to emphasize a certain **subjective view** of the event:

- The possessor was **affected** by it (Berman 1982)
- The event **happened to** him or her (Wierzbicka 1988)
- The **camera** is pointed at him or her (Velázquez-Castillo 1999, Kuno 1987)

Experiment 1: Methodology

- **Basic idea:** count genitive and possessive dative sentences in a corpus, see if affectedness influences the counts

Experiment 1: Methodology

- **Basic idea:** count genitive and possessive dative sentences in a corpus, see if affectedness influences the counts
- **Problem:** quantitative corpus experiments require an easily countable feature; “affectedness” is hard to identify

Experiment 1: Methodology

- **Basic idea:** count genitive and possessive dative sentences in a corpus, see if affectedness influences the counts
- **Problem:** quantitative corpus experiments require an easily countable feature; “affectedness” is hard to identify
- Look for **proxies** of affectedness that can be automatically and uncontroversially identified

Experiment 1: Methodology

- **Basic idea:** count genitive and possessive dative sentences in a corpus, see if affectedness influences the counts
- **Problem:** quantitative corpus experiments require an easily countable feature; “affectedness” is hard to identify
- Look for **proxies** of affectedness that can be automatically and uncontroversially identified
- Get the inspiration for the proxies from the **typology** of this construction

Experiment 1: Methodology

- **Basic idea:** count genitive and possessive dative sentences in a corpus, see if affectedness influences the counts
- **Problem:** quantitative corpus experiments require an easily countable feature; “affectedness” is hard to identify
- Look for **proxies** of affectedness that can be automatically and uncontroversially identified
- Get the inspiration for the proxies from the **typology** of this construction
- Grammatical restrictions (**hard constraints**) in one language may appear as statistical tendencies (**soft constraints**) in another, if they are motivated by the meaning of the construction (e.g. Givón 1979, Bresnan et al. 2001)

Soft constraints mirror hard constraints

Example: Bresnan et al. (2001)

- “In Lummi, the person of the subject argument cannot be lower than the person of a nonsubject argument.”

(Jelinek and Demers 1983, cited in Bresnan et al. 2001)

- ① *The man knows me.
- ② I am known by the man.
- ③ I know the man.
- ④ *The man is known by me.

Soft constraints mirror hard constraints

Example: Bresnan et al. (2001)

- “In Lummi, the person of the subject argument cannot be lower than the person of a nonsubject argument.”

(Jelinek and Demers 1983, cited in Bresnan et al. 2001)

- ① *The man knows me.
 - ② I am known by the man.
 - ③ I know the man.
 - ④ *The man is known by me.
- Soft constraint in English:

Action	% Active	% Passive
1, 2 → 3	100.0	0.0
3 → 1, 2	97.1	2.9

($p < 0.001$)

Inalienability of possessum

French vs. German

- Hebrew is a European language (in a way)

Inalienability of possessum

French vs. German

- Hebrew is a European language (in a way)
- Use König and Haspelmath's (1998) typological survey

Inalienability of possessum

French vs. German

- Hebrew is a European language (in a way)
- Use König and Haspelmath's (1998) typological survey

(4) Je **lui** ai cassé le bras / *la fenêtre.
I **to.him** have broken the arm / *the window
'I broke his arm / *window.' (French)

(5) Ich habe **ihm** den Arm gebrochen / das Fenster
I have **to.him** the arm broken / the window
zerbrochen.
broken
'I broke his arm / window.' (German, Hebrew)

Typological scales

Inalienability of possessum

The inalienability scale (König and Haspelmath 1998)

body part \subset garment \subset other contextually unique item

Typological scales

Inalienability of possessum

The inalienability scale (König and Haspelmath 1998)

body part \subset garment \subset other contextually unique item

- Each language picks a **cut-off point**; the possessive dative is only grammatical to the left of this point

Typological scales

Inalienability of possessum

The inalienability scale (König and Haspelmath 1998)

body part \subset garment \subset other contextually unique item

- Each language picks a **cut-off point**; the possessive dative is only grammatical to the left of this point
- **Functional motivation**: the closer the possessum is to the possessor, the more affected the possessor

Animacy of possessor

A typological scale

Animacy hierarchy (Silverstein 1976)

1st/2nd person pronoun \subset 3rd person pronoun \subset other animate (human) \subset inanimate object

- Also hierarchy of **empathy** (Seiler 1983, Kuno 1987): a higher position on this hierarchy reflects a higher degree of speaker empathy

Animacy of possessor

Inanimate possessors in German

Animacy hierarchy: 1st/2nd person pronoun \subset 3rd person pronoun
 \subset other animate (human) \subset inanimate object

- (6) a. Der Stein fällt dem Mann auf den Kopf.
the stone falls the:DAT man on the head
'The stone falls on the man's head.'
- b. *Der Stein fällt dem Auto aufs Dach.
the stone falls the:DAT car on.the roof
'The stone falls on the roof of the car.'

(Neumann 1996, cited in Haspelmath 1999)

Animacy of possessor

Pronouns vs. full noun phrases in Portuguese

Animacy hierarchy (simplified): pronouns \subset other animate
(human) \subset inanimate

- (7) *A mãe está lavando os cabelos ao menino.
the mother is washing the hairs **to.the** child
'The mother is washing the child's hair.'
- (8) A mãe está lhe/te/me lavando os cabelos.
the mother is **to.him/you/me** washing the hairs
'The mother is washing his/your/my hair.'

(König and Haspelmath 1998, p. 570)

Where does Hebrew fit in?

- Hebrew is at the lowest points of these scales (and others). For example, **animacy** and **pronominality**:

Where does Hebrew fit in?

- Hebrew is at the lowest points of these scales (and others).
For example, **animacy** and **pronominality**:

(9) xotxim **la-agvanya** et ha-kipa
 cut:PRS:3PL **to.the-tomato** ACC the-top
 ve-meroknim et toxn-a.
 and-empty:PRS:3PL ACC inside-POSS:3SG
 'You cut the top out of the tomato and hollow it out.'

Where does Hebrew fit in?

- Hebrew is at the lowest points of these scales (and others). For example, **animacy** and **pronominality**:

(9) xotxim **la-agvanya** et ha-kipa
 cut:PRS:3PL **to.the-tomato** ACC the-top
 ve-meroknim et toxn-a.
 and-empty:PRS:3PL ACC inside-POSS:3SG
 ‘You cut the top out of the tomato and hollow it out.’

- The scales have no role in the grammar of the Hebrew possessive dative; but will they influence its statistical distribution (as soft constraints)?

Experiment 1

- **The experiment:** Count possessive datives and genitives in the Israeli Blog Corpus (Linzen 2010)

Experiment 1

- **The experiment:** Count possessive datives and genitives in the Israeli Blog Corpus (Linzen 2010)
- If the affectedness hypothesis is true for Hebrew, and if there is a soft/hard constraints correspondence in this case –

Experiment 1

- **The experiment:** Count possessive datives and genitives in the Israeli Blog Corpus (Linzen 2010)
- If the affectedness hypothesis is true for Hebrew, and if there is a soft/hard constraints correspondence in this case –
- We expect to find difference between the constructions with respect to animacy of possessor and inalienability of possessum

Experiment 1: Annotation

- The dative preposition *le* 'to' is fused with the word in Hebrew orthography, so hard to search for dative sentences

Experiment 1: Annotation

- The dative preposition *le* 'to' is fused with the word in Hebrew orthography, so hard to search for dative sentences
- Corpus was morphologically analyzed

Experiment 1: Annotation

- The dative preposition *le* 'to' is fused with the word in Hebrew orthography, so hard to search for dative sentences
- Corpus was morphologically analyzed
- Dative constructions with common transfer verbs (*give* etc.) were automatically removed

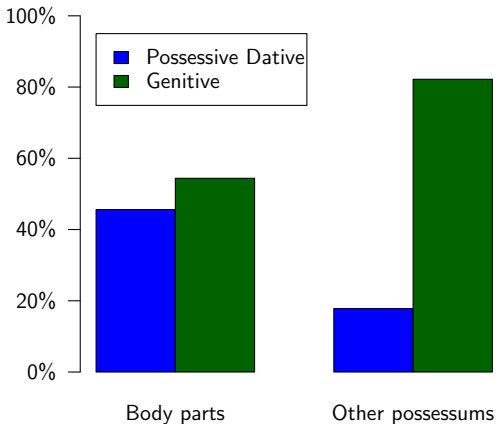
Experiment 1: Annotation

- The dative preposition *le* 'to' is fused with the word in Hebrew orthography, so hard to search for dative sentences
- Corpus was morphologically analyzed
- Dative constructions with common transfer verbs (*give* etc.) were automatically removed
- The remaining sentences were filtered manually, to exclude datives governed by the verb, benefactive datives etc.

Experiment 1: Effect of scales on variation

Linzen (2009)

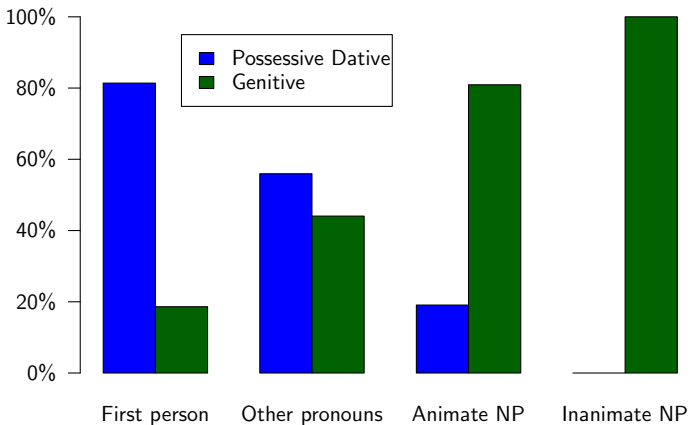
Effect of inalienability on choice of possessive construction



Experiment 1: Effect of scales on variation

Linzen (2009)

**Effect of animacy on
choice of possessive construction**



Experiment 2: Motivation

From affectedness to possession

- We have seen that affectedness greatly increases the likelihood of a possessive dative being used

Experiment 2: Motivation

From affectedness to possession

- We have seen that affectedness greatly increases the likelihood of a possessive dative being used
- But it is not a necessary condition:

Experiment 2: Motivation

From affectedness to possession

- We have seen that affectedness greatly increases the likelihood of a possessive dative being used
- But it is not a necessary condition:

(10) ha-se'ar magi'a la ad sof ha-gav.
the-hair arrives **to-her** until end the-back
'Her hair goes down to the bottom of her back.'

Experiment 2: Motivation

From affectedness to possession

- We have seen that affectedness greatly increases the likelihood of a possessive dative being used
- But it is not a necessary condition:

(10) ha-se'ar magi'a la ad sof ha-gav.
 the-hair arrives **to-her** until end the-back
 'Her hair goes down to the bottom of her back.'

(11) ba-tmuna ha-šniya lo ro'im lo et ha-roš.
 in.the-photo the-second not see.PL **to.him** ACC the-head.
 'One can't see his head in the second photo.'
 (attested examples)

Experiment 2: Motivation

From affectedness to possession

- **Diachronic conjecture:** The construction started out expressing affectedness (e.g. Fried 1999)

Experiment 2: Motivation

From affectedness to possession

- **Diachronic conjecture:** The construction started out expressing affectedness (e.g. Fried 1999)
- Affectedness often implies possession: if I am affected, it must be mine

Experiment 2: Motivation

From affectedness to possession

- **Diachronic conjecture:** The construction started out expressing affectedness (e.g. Fried 1999)
- Affectedness often implies possession: if I am affected, it must be mine
- What was once a pragmatic inference is becoming grammaticalized

Experiment 2: Motivation

From affectedness to possession

- **Diachronic conjecture:** The construction started out expressing affectedness (e.g. Fried 1999)
- Affectedness often implies possession: if I am affected, it must be mine
- What was once a pragmatic inference is becoming grammaticalized
- **Prediction:** Diminishing statistical effect of scales: the possessive dative should become increasingly similar to the genitive

Experiment 2: Methodology

- **Problem:** No historical corpus

Experiment 2: Methodology

- **Problem:** No historical corpus
- **Solution:** use **ages** reported by bloggers

Experiment 2: Methodology

- **Problem:** No historical corpus
- Solution: use **ages** reported by bloggers
- An **apparent time** interpretation of generational differences (Labov 1963, Labov 1966)

Experiment 2: Methodology

- **Problem:** No historical corpus
- Solution: use **ages** reported by bloggers
- An **apparent time** interpretation of generational differences (Labov 1963, Labov 1966)
- **Age grading** is also possible, but is rare (Sankoff 2005)

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens
- Used an expanded 150 million token corpus (50 times larger than in Experiment 1)

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens
- Used an expanded 150 million token corpus (50 times larger than in Experiment 1)
- Hand-coding is not feasible

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens
- Used an expanded 150 million token corpus (50 times larger than in Experiment 1)
- Hand-coding is not feasible
- **Solution:** Restrict search to verbs where we can be confident that the dative is possessive

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens
- Used an expanded 150 million token corpus (50 times larger than in Experiment 1)
- Hand-coding is not feasible
- **Solution:** Restrict search to verbs where we can be confident that the dative is possessive
- Out of all verbs that had dative arguments (countless), selected a set of suitable verbs (200)

Experiment 2: Methodology

Annotation and statistical analysis

- We need a lot of different **users**, and therefore many more tokens
- Used an expanded 150 million token corpus (50 times larger than in Experiment 1)
- Hand-coding is not feasible
- **Solution:** Restrict search to verbs where we can be confident that the dative is possessive
- Out of all verbs that had dative arguments (countless), selected a set of suitable verbs (200)
- Count body part possessums and analyzed using a mixed-effects logistic regression model

Mixed-effects logistic regression

- **Regression** quantifies the effect of a set of factors on an outcome

Mixed-effects logistic regression

- **Regression** quantifies the effect of a set of factors on an outcome
- In **logistic regression** the outcome is a choice between two options (here: genitive or possessive dative)

Mixed-effects logistic regression

- **Regression** quantifies the effect of a set of factors on an outcome
- In **logistic regression** the outcome is a choice between two options (here: genitive or possessive dative)
- The **mixed-effects** model removes variability that is due to the specific verbs ("items") and speakers ("subjects") in our sample

Mixed-effects logistic regression

- **Regression** quantifies the effect of a set of factors on an outcome
- In **logistic regression** the outcome is a choice between two options (here: genitive or possessive dative)
- The **mixed-effects** model removes variability that is due to the specific verbs ("items") and speakers ("subjects") in our sample
- Concentrate on the effect we're interested in: **age**

Regression coefficients

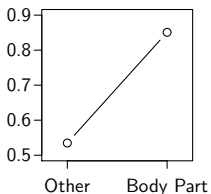
Factor	Estimate	Std. Error	z value	Pr	Sig
(Intercept)	0.507	0.101	5.035	0.000	***
17-18	-0.089	0.055	-1.609	0.108	
19-21	-0.094	0.057	-1.661	0.097	.
22-26	-0.051	0.091	-0.560	0.575	
27-35	-0.144	0.104	-1.394	0.163	
36-60	-0.368	0.124	-2.976	0.003	**
bodypart	0.605	0.116	5.204	0.000	***
male	-0.294	0.152	-1.928	0.054	.
17-18:bodypart	0.135	0.098	1.375	0.169	
19-21:bodypart	0.195	0.100	1.953	0.051	.
22-26:bodypart	0.625	0.172	3.642	0.000	***
27-35:bodypart	0.741	0.192	3.856	0.000	***
36-60:bodypart	0.997	0.237	4.205	0.000	***

Age × inalienability interaction

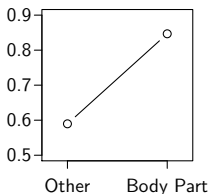
Experiment 2: Results

Effect of possessum inalienability on the probability of choosing the Possessive Dative increases with age

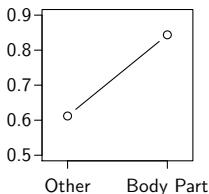
36-60



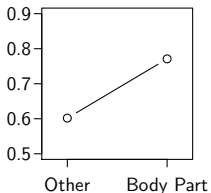
27-35



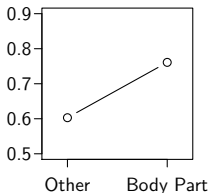
22-26



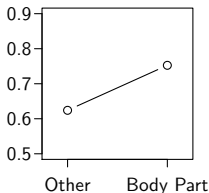
19-21



17-18



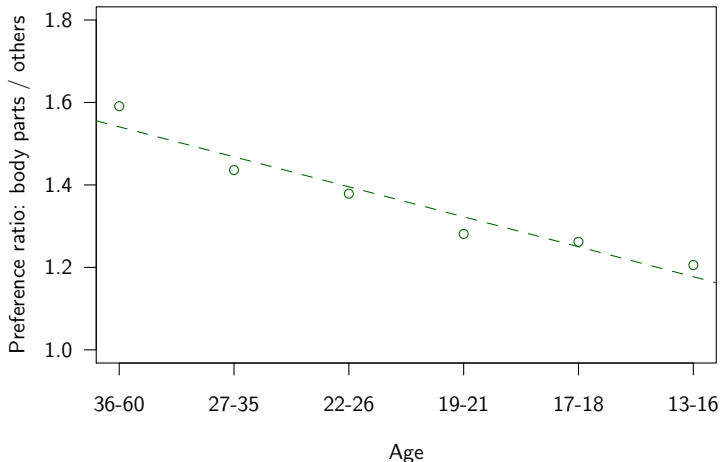
13-16



Age × inalienability interaction

Experiment 2: Results

Declining effect of possessum inalienability on choice of possessive construction



Conclusion

- **Experiment 1:** Cross-linguistic scales influence speakers' choice of possessive construction

Conclusion

- **Experiment 1:** Cross-linguistic scales influence speakers' choice of possessive construction
- **Experiment 2:** The same scales suggest that possessive datives and genitives are becoming more and more alike with time

Conclusion

- **Experiment 1:** Cross-linguistic scales influence speakers' choice of possessive construction
- **Experiment 2:** The same scales suggest that possessive datives and genitives are becoming more and more alike with time
- The origins of the construction as encoding affectedness still show in the statistical evidence; but are being constantly eroded

Conclusion

This study used typological scales to:

- **Quantify** vague concepts such as affectedness

Conclusion

This study used typological scales to:

- **Quantify** vague concepts such as affectedness
- Explore **synchronic variation**: Statistical patterns in one language mirror another language's grammar

Conclusion

This study used typological scales to:

- **Quantify** vague concepts such as affectedness
- Explore **synchronic variation**: Statistical patterns in one language mirror another language's grammar
- Explore **language change** quantitatively

Thank you!

Mira Ariel, Tali Siloni, Julia Horvath, Idan Landau, Mark Baltin, Ester Borochofsky, Ibtisam Ammouri, Yoav Goldberg, Hillel Taub-Tabib, Outi Bat-El's methodological seminar class.

Inalienability of possessum

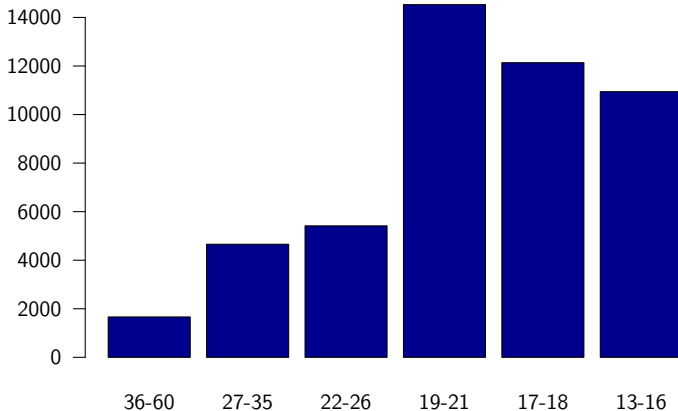
Grammaticalization in Czech

- In Czech the possessive dative can be used both with inalienable and alienable possessums
- However, in the other direction, the preference for PD over the genitive for inalienable possessions has become grammaticalized (Fried 1999):

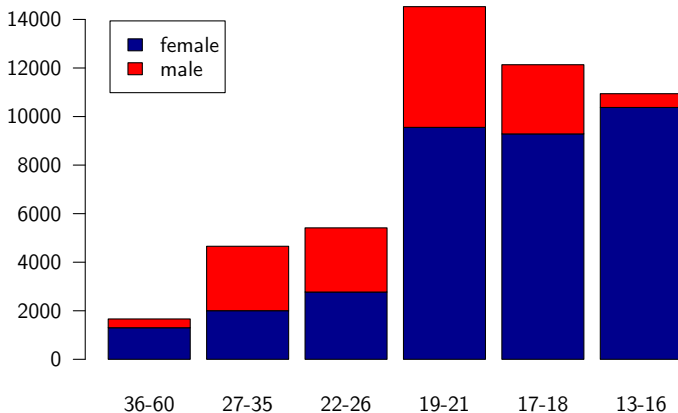
(12) Šlapal jí na nohy.
step:PP:SG:MASC 3SG:FEM:DAT on foot:ACC:PL:FEM
'He stepped on her feet.' (**Possessive Dative**)

(13) #Šlapal na její nohy.
step:PP:SG:MASC on her:ACC foot:ACC:PL:FEM
'He stepped on some feet of hers.' (**Genitive**)

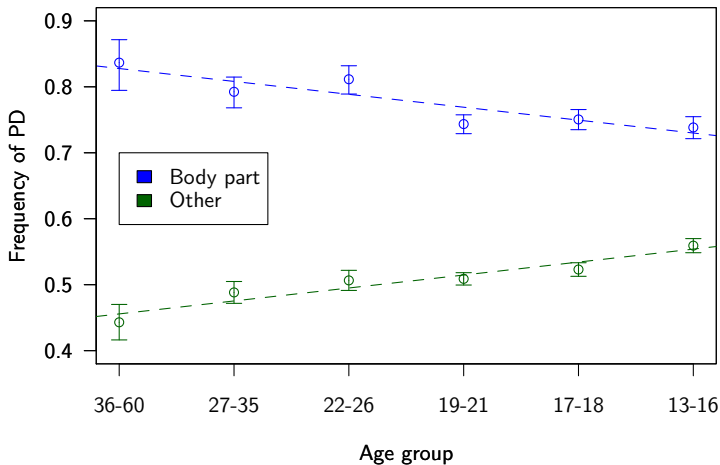
Possessive sentences by age



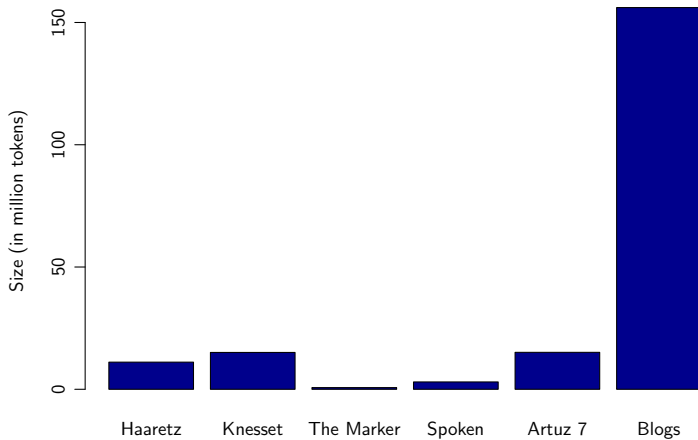
Possessive sentences by age and gender



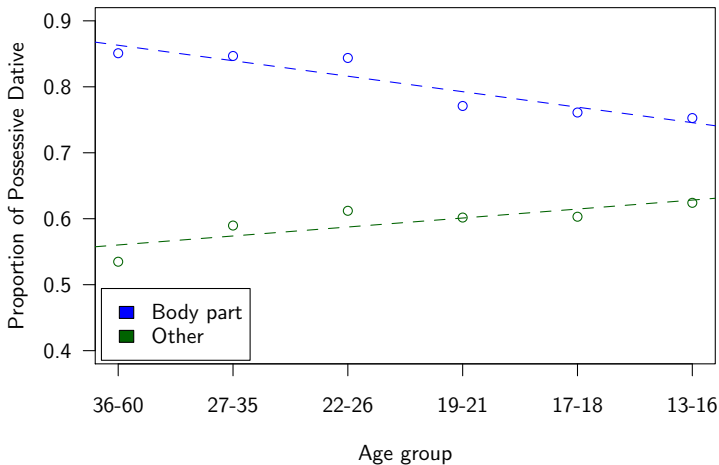
Association between body part possessums and PD



Available Hebrew corpora



Association between body part possessums and PD



- Berman, Ruth. 1982. Dative marking of the affectee role: Data from Modern Hebrew. *Hebrew Annual Review* 6:35–59.
- Bresnan, Joan, Shipra Dingare, and Christopher D. Manning. 2001. Soft constraints mirror hard constraints: voice and person in English and Lummi. In *Proceedings of the LFG '01 conference*. Stanford, CA: CSLI Publications.
- Fried, Mirjam. 1999. From interest to ownership: a constructional view of external possessors. In Payne and Barshi (1999).
- Givón, Talmy. 1979. *On understanding grammar*. New York: Academic Press.
- Haspelmath, Martin. 1999. External Possession in a European Areal Perspective. In Payne and Barshi (1999).
- Jelinek, Eloise, and Richard Demers. 1983. The agent hierarchy and voice in some Coast Salish languages. *International Journal of American Linguistics* 49:167–185.
- König, Ekkehard, and Martin Haspelmath. 1998. Les constructions à possesseur externe dans les langues d'Europe. In *Actance et valence dans les langues de l'Europe*, ed. Jack Feuillet, 525–606. Berlin: Mouton de Gruyter.

- Kuno, Susumo. 1987. *Functional syntax: anaphora, discourse and empathy*. University of Chicago Press.
- Labov, William. 1963. The social motivation of a sound change. *Word* 19:273–309.
- Labov, William. 1966. *The social stratification of English in New York City*. Washington DC: Center for Applied Linguistics.
- Landau, Idan. 1999. Possessor raising and the structure of VP. *Lingua* 107:1–37.
- Linzen, Tal. 2009. Hebrew possessive datives: The effects of affectedness. Master's thesis, Tel Aviv University.
- Linzen, Tal. 2010. Hebrew statistical linguistics using a morphologically analyzed blog corpus. In *Israeli Seminar on Computational Linguistics 2010*. Tel Aviv, Israel.
- Neumann, Dorothea. 1996. The dative and the grammar of body parts in German. In *The grammar of inalienability: A typological perspective on body part terms and the part-whole relation*, ed. Chappell Hilary and William McGregor. Berlin: Mouton de Gruyter.
- Payne, Doris L., and Immanuel Barshi, ed. 1999. *External possession*. Amsterdam: John Benjamins Publishing.

- Sankoff, Gillian. 2005. Age: Apparent time and real time. In *Elsevier encyclopedia of language and linguistics, 2nd edition*, ed. Keith Brown, 525–606. Oxford: Elsevier.
- Seiler, Hansjakob. 1983. *Possession as an operational dimension of language*. Language Universals Series 2. Tübingen: Gunter Narr.
- Shibatani, Masayoshi. 1994. An integrational approach to possessor raising, ethical datives and adversative passives. *BLS* 20:461–485.
- Silverstein, Michael. 1976. Hierarchy of features and ergativity. In *Grammatical categories in Australian languages*, ed. R. M. W. Dixon. Canberra: Australian Institute of Aboriginal Studies.
- Velázquez-Castillo, Maura. 1999. Body part EP constructions: a cognitive/functional analysis. In Payne and Barshi (1999).
- Wierzbicka, Anna. 1988. *The semantics of grammar*. Amsterdam: John Benjamins.