Morphological directionality

in syntax, semantics, and discourse

Elisabeth Verhoeven

elisabeth.verhoeven@cms.hu-berlin.de

Introduction

phenomenon

We know from the causative alternation that two options for the derivation of transitive/intransitive verbs appear Between and Within languages, e.g., German:

sinken → *senken* (transitivization)

öffnen → *sich öffnen* (detransitivization)

event decomposition

intransitive basis

> (e.g. Pesetsky 1995, Pylkkänen 2008, Rappaport-Hovav & Levin 2012, Van Valin 2005, Kallmeyer et al. 2016)

transitive basis

> (e.g. Levin & Rappaport-Hovav 1995, Reinhart 2002, Chierchia 2004, Reinhart & Siloni 2005, Horvath & Siloni 2011, Koontz-Garboden 2009)

pre-categorial basis

> (e.g. Harley 1995, Marantz 1997, Alexiadou et al. 2006, Schäfer 2008)

Introduction

typological research

languages display global preferences in the verbal lexicon for transitive or intransitive roots

(Nichols et al. 2004, cf. Haspelmath et al. 2014)

targets of this talk

Do the cross-linguistic differences in verbal morphology have correlates in the semantics/syntax of the verbs? Or is morphological variation just a random factor for the creation of verbal inventories?

In a nutshell, I will show that:

(a) languages differ with respect to the root expressions of psych verbs
(b) this typology is relevant for the semantics of the root: agentivity
(c) agentivity has repercussions for the syntax: non-canonical subject properties

Morphology

Cross-linguistic differences

	intransitive		transitive

transitivizing

Turkish x y *sevin-di* → y x *sevin-dir-di*
'x is happy about y' 'y makes x happy' (causativization)

Yucatec *chi'chnak ti'* y x → *chi'chnak-kuns-* x y
'x is annoyed about y' 'y annoys x' (causativization)

intransitivizing

Greek x *enðiaférete ja* y ← y *enðiaféri* x
'x is interested in y' (mediopassive) 'y interests x'

German x *ärgert sich* über y ← y *ärgert* x
'x is annoyed by y' (reflexive) 'y annoys x'

underspecified

Hungarian *megrém-ül* x y-tól - - - - *megrém-ít* y x
'y gets frightened by x' 'y frightens x'

English x *worries* about y - - - - y *worries* x

Cross-linguistic differences

between verbs or between languages?

Inventory of basic lexicalizations: 17 - 119 alternating verb pairs from the basic psych domains

Beyond the available **variation**, most languages have a **dominant strategy** in the verbal inventory.
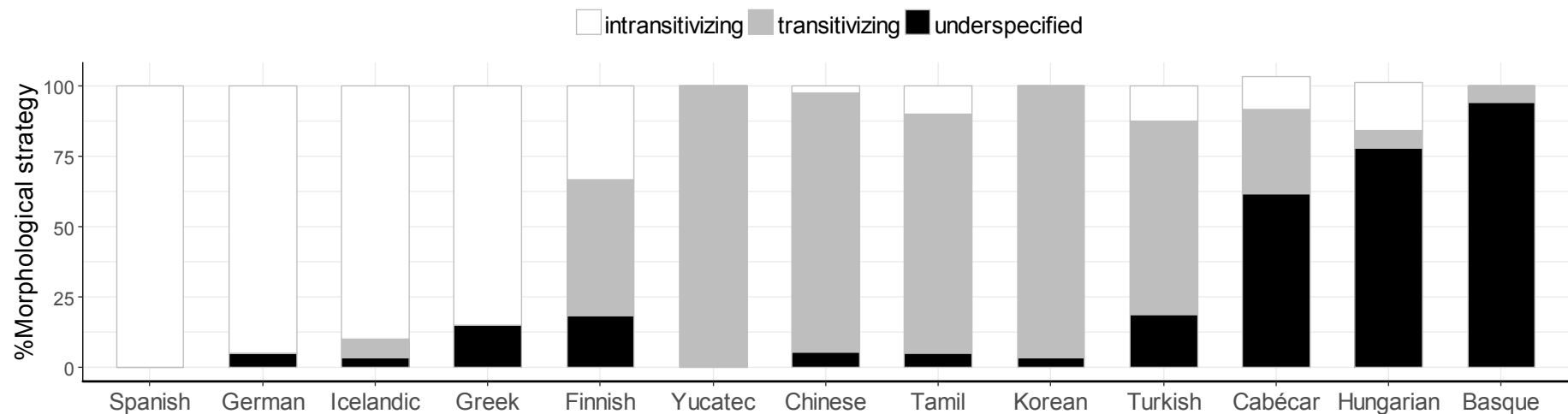

Fig. 1 *Morphological process in the formation of EO/ES verbs (Rott, Verhoeven, Fritz Huechante 2018)*

Cross-linguistic differences

Morphological typology

intransitivizing lgs.
transitive roots & intransitivization

German
Greek
Icelandic
Spanish

transitivizing lgs.
intransitive roots & transitivization

Turkish
Yucatec Maya
Tamil
Chinese
Korean

underspecified
no asymmetry

Basque
Hungarian
Cabécar

Cross-linguistic differences

Morphological typology

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Semantics

Agentivity

Several diagnostics:

- embedding under control verbs

- compatibility with intentional adverbs

- imperative formation

etc.

reveal that EO verbs vary:

- some EO verbs are compatible with an agentive reading

- other EO verbs are not compatible with an agentive reading

Roeper 1987; Klein & Kutscher 2002; Verhoeven 2010a; Grafmiller 2013, etc.

Agentivity

Illustration (German)   Cf. Verhoeven 2017
_____

Embedding under control verbs:

X entschied, Y zu V

‚X decided to V Y'

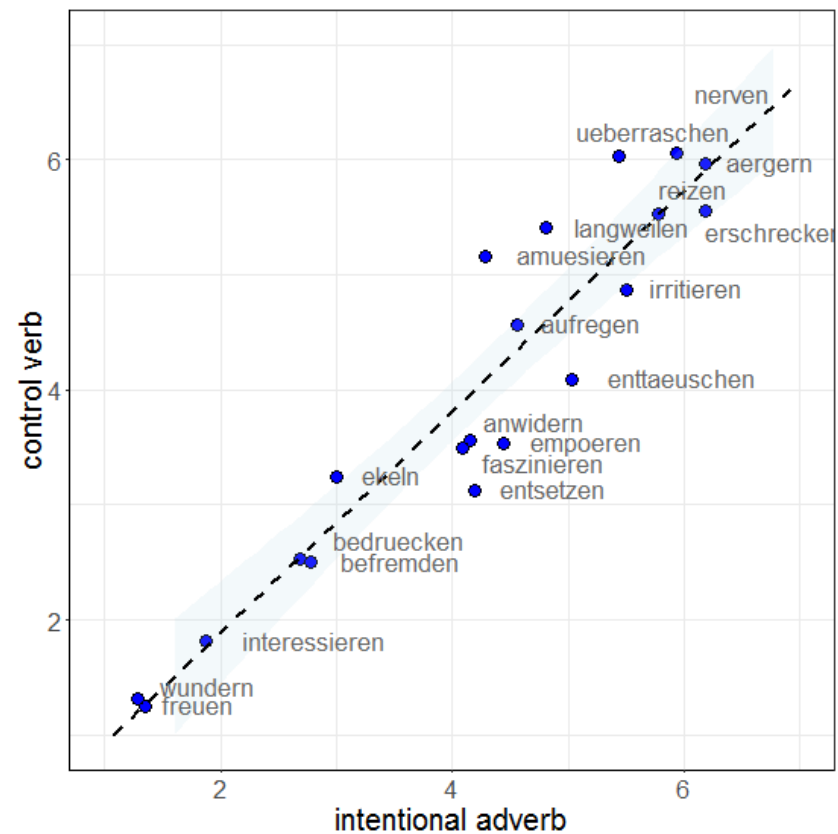### Compatibility with intentional adverb:

X V Y absichtlich

‚X V Y on purpose'

Result
_____

- tests are **correlated**: i.e., a part of the variation in the individual tests is due to a property of the lexical semantics
- the result involves **gradience**

Fig. 2 *Agentivity tests with German EO verbs*

scalar acceptability: 1= non-acceptable; 7= acceptable
n of speakers: 32, 20 female, age rage 17-52

Agentivity

Recall

Type A: transitive roots & intransitivization (**German, Greek**, Spanish, Icelandic)

Type B: intransitive roots & transitivization (**Turkish, Yucatec Maya**, Korean, Tamil, Chinese)

Question

The distinction between **–agentive and ±agentive verbs** is reported for intransitivizing languages (e.g., German). Is it **generalizable** across languages?

Method   Cf. Verhoeven 2010a

- selection of **four potentially non-agentive verbs** through elicitation, based on an inventory of 60 experiential concepts.

- control conditions: **agentive** (canonical transitive verbs) and **non-agentive** (dative-experiencer verbs).

- Acceptability judgments on different agentivity tests with a repeated-observations design (16 speakers per language).

Agentivity

Background

Volitional involvement is a prerequisite for agenthood

Dowty 1991, Lehmann 1991, Van Valin & Wilkins 1996,

Van Valin & LaPolla 1997, Primus 1999

Conditions

canonical

Das Mädchen **schubst** den Jungen <u>absichtlich</u>.

The girl is jostling the boy intentionally.
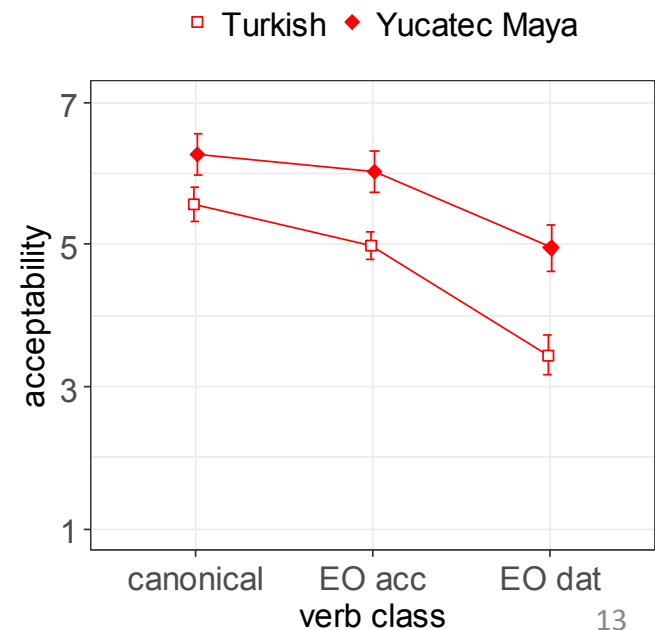
exp-object

Das Mädchen **interessiert** den Jungen <u>absichtlich</u>.

The girl concerns the boy intentionally.

exp-subject

Der Junge **gefällt** dem Mädchen <u>absichtlich</u>.

The boy pleases to the boy intentionally.

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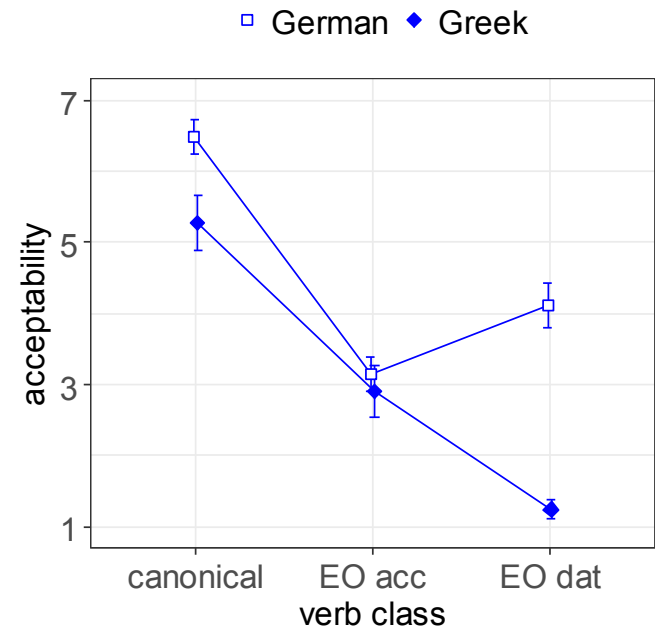
Agentivity cross-linguistically

similar results obtained in imperative test and stativity tests; Verhoeven 2010a

Morphological typology

intransitivizing lgs.   transitivizing lgs.

German   Turkish
Greek   Yucatec Maya

agentivity:

non-agentive vs.   all verbs compatible with ag. readings

±agentive verbal roots
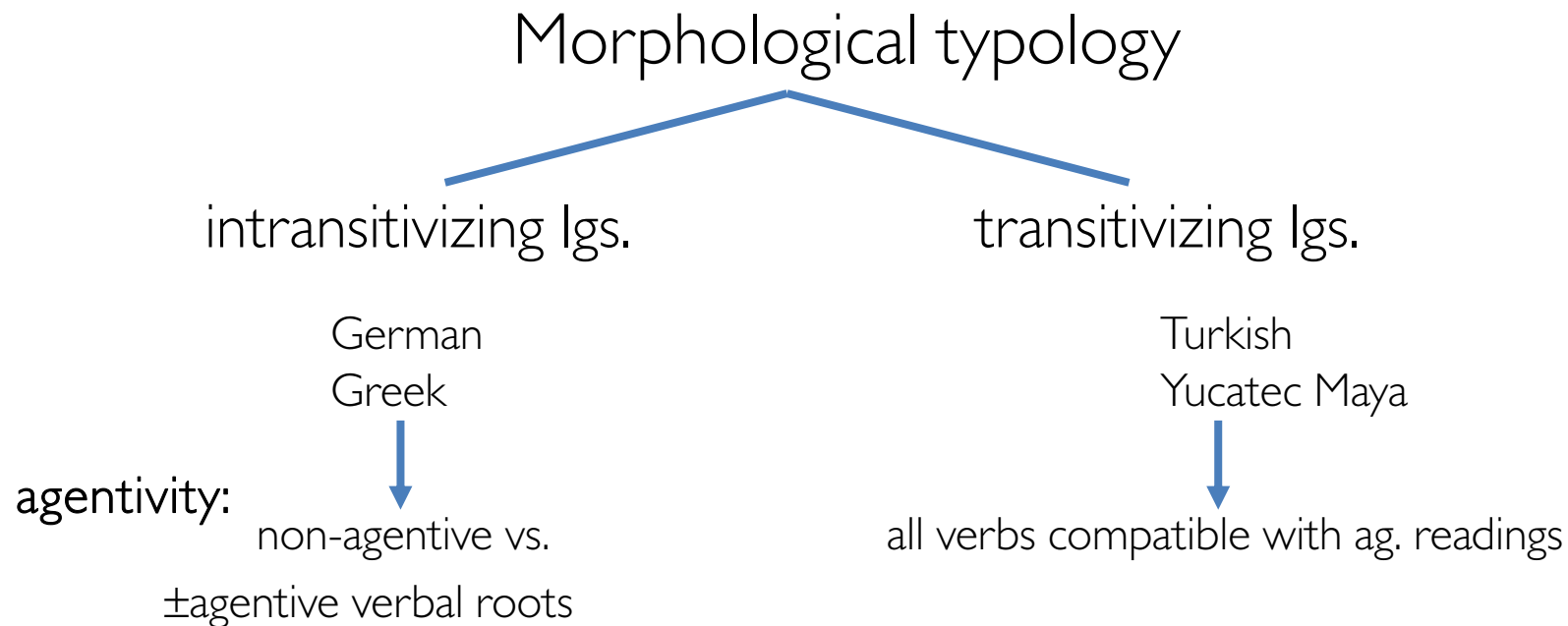
Intuition

Transitive roots of type-A languages are flexible to develop various sem. properties, while verbal stems in type-B languages bear a morphological expression of CAUSE.

Syntax

Non-canonical EO-properties

$$[_{VP} \text{ experiencer} \quad [_{V'} \text{ stimulus} \quad V]]$$
$$(-\text{NOM}) \qquad\qquad (\text{NOM})$$

(a) advantage for −NOM ≺ NOM in linearization;

single obs., (e.g. Fanselow 2000, 2003, Haider & Rosengreen 2003, Bayer 2004, Landau 2010)

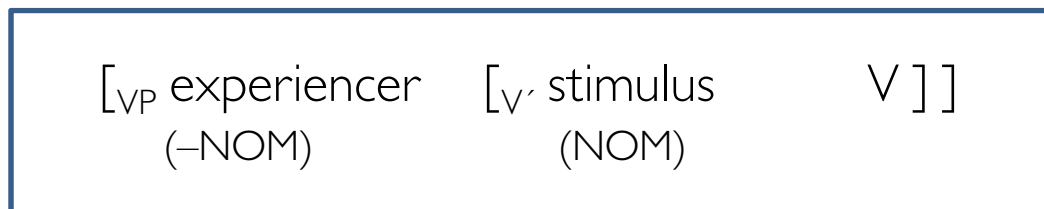experimental acceptability, (e.g. Haupt et. al. 2008);

neurocognitive studies of language comprehension (e.g. Bornkessel 2002, Bornkessel et al. 2005);

corpus (Bader & Häussler 2010, Verhoeven 2015)

(b) reflexes of the c-command relation [$_{VP}$ experiencer [$_{V'}$ stimulus …

Backward binding in English, Italian, etc. (e.g. Belletti & Rizzi 1988, Pesetsky 1995);

German (Platzack 2009, Kiss 2012)

experimental study on variable binding (Temme & Verhoeven 2017)

Forward binding in Italian, etc. (e.g. Belletti & Rizzi 1988, Landau 2010); difference between non-canonical (German) and canonical psych verbs (Chinese) (e.g. Verhoeven 2010b)

Binding properties

Backward binding: German

Sein$_i$ Gesundheitszustand beunruhigt jeden Patienten$_i$.

His$_i$ heath worries every patient$_i$.

*Sein$_i$ Arzt besucht jeden Patienten$_i$.

*His$_i$ doctor visited every patient$_i$.　　　　　　　　(cf. Reinhart 2002, experimental evidence Temme & Verhoeven 2017)

Forward binding: German vs. Turkish

Tur	*Arkadaş-lar*	*küçük*	*hediye-ler-le*	*birbir-lerin-i*	*sevin-dir-di-ler.*
	friend-PL	small	presents-PL-with	each.other-3.PL.POSS-ACC	happy-CAUS-PFV-PL

Friends made each other happy with small presents. (G. Yilmaz)

Ger *Lehrer und Schüler wunderten/interessierten sich gegenseitig.

Teacher and student amazed/intrigued each other.

Cf. Verhoeven 2010b

Linearization properties

Illustration in the following: preferences in a parallel corpus study

Further related studies:

Speech production (O<S linearization and subject choice)

German/Greek: independent verb-class effect in the choice of active vs. non-active voice

Turkish/Chinese: the experiencer-first effect is reducible to animate-first.

(Verhoeven 2014)

Forced-choice study ((non-)contextual licensing of O<S, accusative vs. dative verbs)

German/Hungarian: verb-class effect in the licensing of O<S (psych verbs vs. can. causatives)

Korean: no experiencer-first effects with causative EO verbs

(Temme & Verhoeven 2016)

Corpora

German   *W-öffentlich of COSMAS database*, IDS, 2.291.520.000 word forms;

Greek   *Hellenic National Corpus* (HNC), ILSP, 47.000.000 word forms;

Turkish   *TS Corpus*, Taner Sezer, Mersin University, 491.000.000 word forms;

extracted   10 verbs for every verb class (two verb classes: EO vs. canonical tr.)

              250 tokens per verb (randomized)

              total 5000 sentences per language

valid   declarative main clauses (active verbs, with two arguments: sbj, obj,
              either lex. or pron.)

Verb classes

EXPERIENCER-OBJECT PSYCH VERBS

interessieren 'concern', *faszinieren* 'fascinate', *beeindrucken* 'impress', *erschrecken* 'frighten', *wundern* 'amaze', *enttäuschen* 'disappoint', etc.

CANONICAL TRANSITIVE VERBS

beeinträchtigen 'impair', *behindern* 'hinder', *schützen* 'protect', *heilen* 'heal', *retten* 'rescue', *vergiften* 'poison', *infizieren* 'infect', *ruinieren* 'ruin', etc.

Diese Geschichte fasziniert/beeinträchtigt den amerikanischen Wähler.
This story fascinates/impairs the American voter.

Den amerikanischen Wähler fasziniert/beeinträchtigt diese Geschichte.
The American voter is fascinated/impaired by this story.

Referentiality

Referentiality scale
zero > personal pronoun > definite NP > bare NP > indefinite NP

German
person > definite|proper|possessed > indefinite

Greek
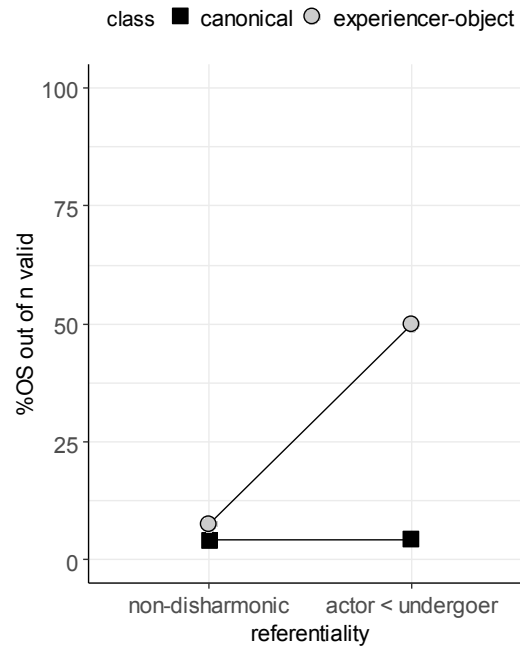zero > person > definite|proper|demonstrative > indefinite

Turkish
zero > person > proper|dem.|acc. > bare > indefinite

➢ Disharmonic configuration: ACTOR (= ag, stim) $<_{referentiality}$ UNDERGOER (= exp, pat)

OS order: EO vs. canonical verbs

Greek
(n = 873)

class ■ canonical ○ experiencer-object

German
(*n* =744)

class ■ canonical ○ experiencer-object

Turkish
(*n*=676)

class ■ canonical ○ experiencer-object
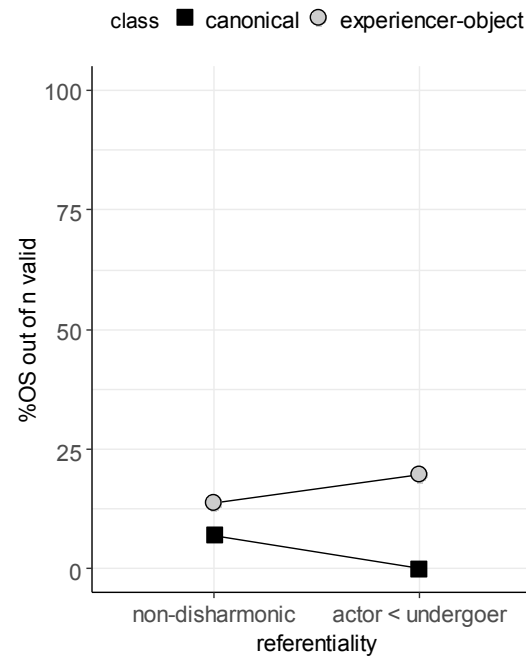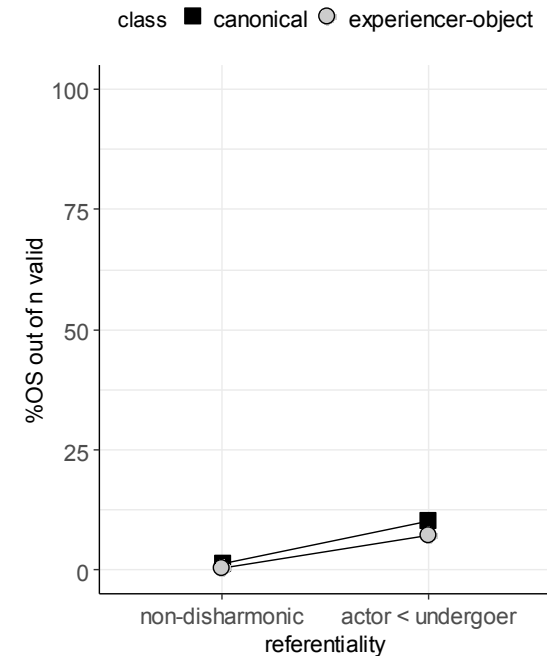
In general, our studies in languages with non-canonical EO verbs show that the experiencer-first effects appear if additional factors (=asymmetries in animacy or in referentiality) license experiencer fronting. In this case, there is a verb-class effect, i.e., EO verbs do not behave identical to canonical verbs.

Non-canonical EO-properties

Morphological typology

intransitivizing lgs.   transitivizing lgs.

German   **Turkish**
Greek   Chinese
Icelandic   Yucatec Maya
Spanish   Korean

non-agentive vs. ±agentive roots   all verbs compatible with ag. readings

**non-canonical
EO properties**
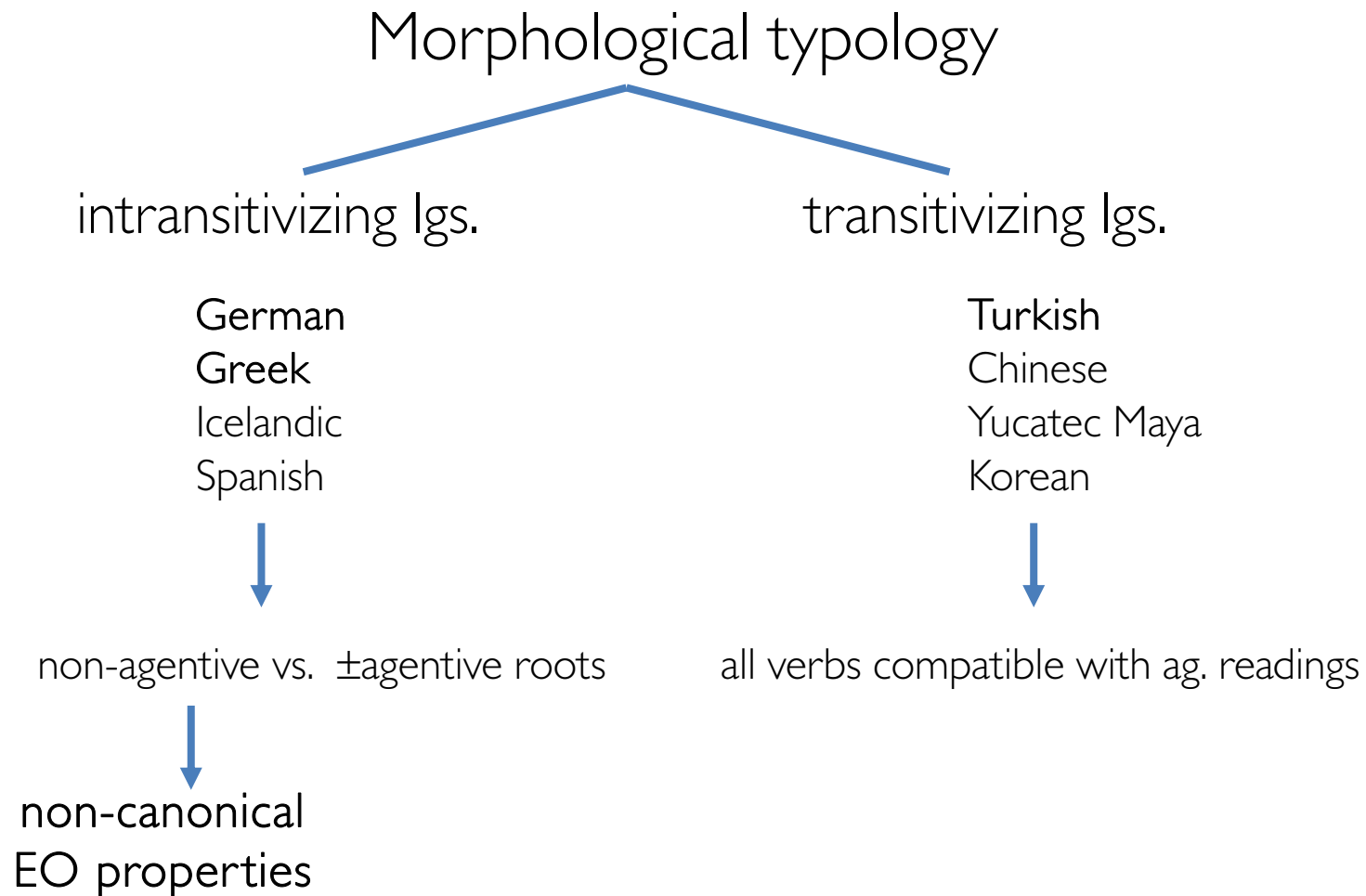
The role of gradience

The role of gradience

- The data presented so far (intuitions of agentivity, corpus frequencies) involve **gradience.**

- This leads to the question of the role of gradience for our understanding of grammar.

- Linguistic theories assume the existence of discrete features (see e.g. Kallmeyer & Richter 2014)

- Research on agentivity assumes a binary distinction: is there evidence that we need more levels? I.e., would we get better predictions about the relevant syntactic phenomena by a richer representation of lexical semantics?

Gradience in Agentivity?

Where does the gradience
in this data come from?

Agentivity is not scalar. A verb either
allows for an agentive reading or not.

The scalar judgments reflect the
possibility to imagine a context in which
the verb is used as agentive. If this is true,
the gradience should correlate
with the likelihood of such contexts
in speech production.

Cf. Verhoeven 2017

Fig. 2 *Agentivity tests with German EO verbs*

scalar acceptability: 1= non-acceptable; 7= acceptable
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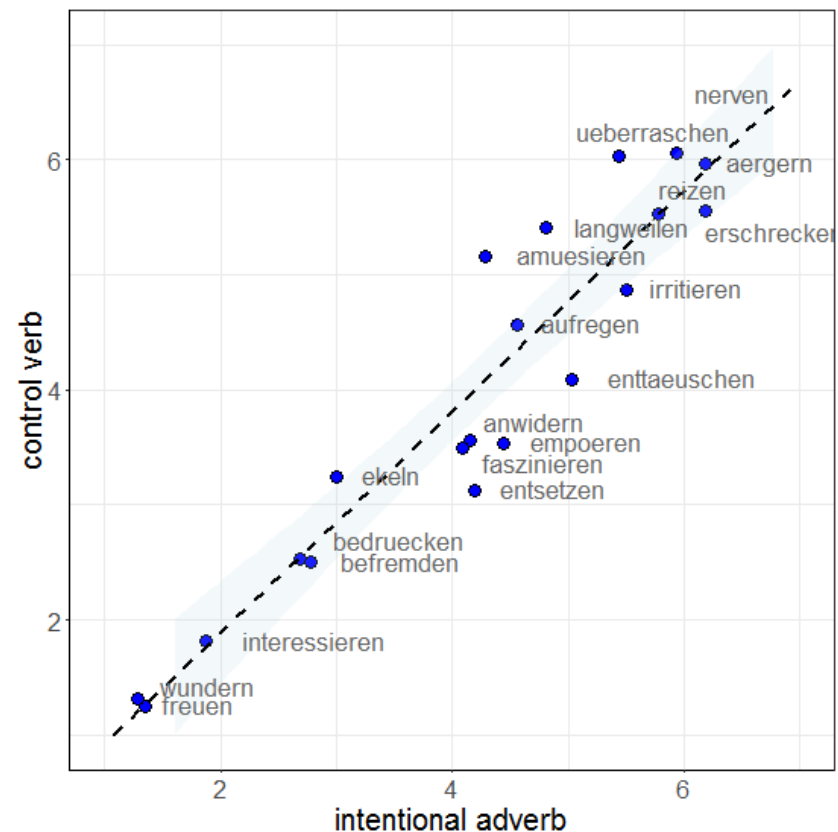
Clustering

Beyond gradience, can we identify verb (sub)classes, that cluster?

Cluster analysis, based on the distances between verbs by the obtained judgements in the two tests.

Highest clustering: 10 agentive vs. 10 non-agentive verbs.

Can we predict the frequencies of OS by means of the agentivity judgments?

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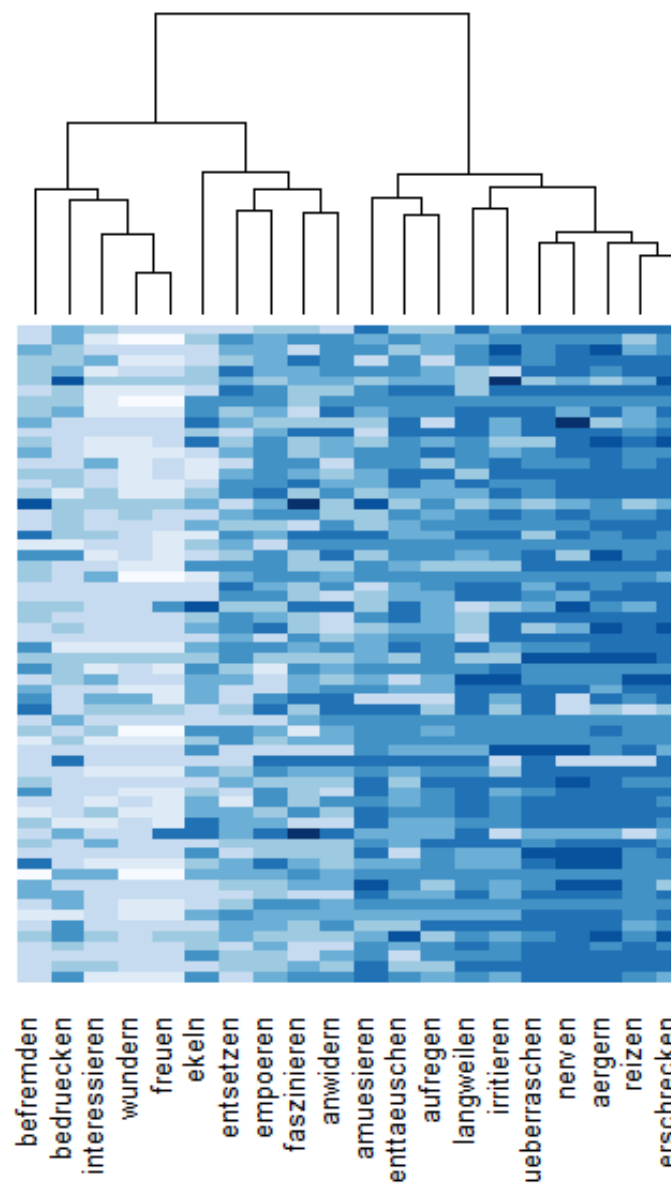
Interaction with word order

Even if the agentivity tests involve gradience, do we need this gradience for understanding syntax? I.e., does the retrievability of agentive contexts predict the likelihood of OS order?

Modelling

Comparing regression models assuming different levels of the factor VERB
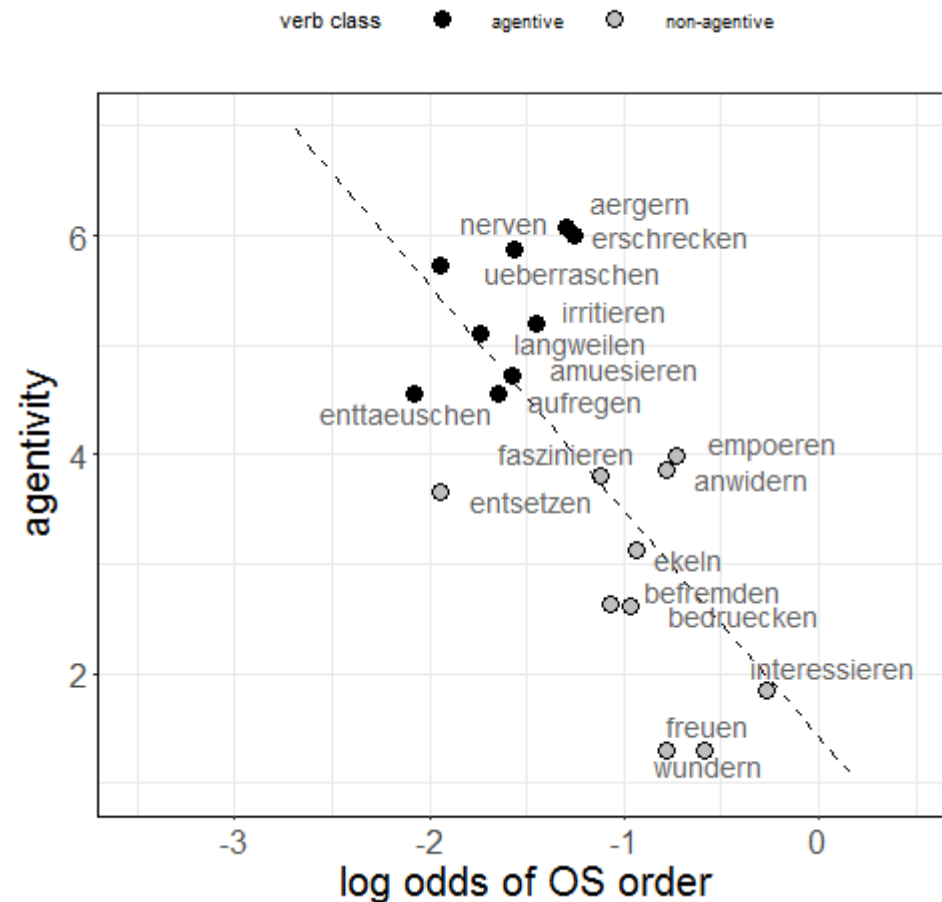(A: scale; B-G: levels of the cluster analysis)

Model		df	residual deviance	BIC
A >		2	2188	2204
☞ B		2	2187	2203
C		4	2184	2215
D		8	2182	2243
E		13	2175	2274
F		18	2161	2298
G		20	2153	2306

wundern, freuen, interessieren, bedrücken, befremden, ekeln, entsetzen, empören, faszinieren, anwidern, enttäuschen, aufregen, amüsieren, langweilen, irritieren, überraschen, nerven, reizen, erschrecken, ärgern

Cf. Verhoeven 2017

Summary

Summary

- Morphological structure matters

  Languages with root EO verbs differ from languages with derived EO verbs, in that the former are more likely than the latter to have subsets of non-agentive verbs.

- Repercussions for syntax

  Non-canonical subject properties appear with non-agentive uses of EO verbs. Such phenomena appear in languages with non-canonical EO verbs. In languages where EO verbs are derived by transitivizing devices, these verbs ususally behave like canonical verbs.

- Gradience

  Data involving repeated observations involve gradience. A part of this gradience may be relevant for linguistic modelling of the observed phenomena - however, it should not be taken for granted that every instance of gradience in the data does so (it is rather an empirical question, in which cases gradience is relevant).

Appendix

Morphological directionality

Language	Bases total	%ES	%EO	%Double
Icelandic	30	6.67	*90*	3.34
Spanish	119	0	*100*	0
Korean	59	*96.61*	0	3.39
Chinese	75	*92*	2.67	5.34
Tamil	20	*85*	10	5
Turkish	64	*68.75*	12.5	18.75
Cabécar	26	29.92	11.54	*61.54*
Basque	17	5.89	0	*94.11*
Finnish	60	*48.34*	*33.34*	*18.34*

Table 1 *Base orientation of psych verbs (n=470 pairs, Rott et al. 2018)*

ES = experiencer subject; EO = experiencer object; Double = double derivation

Turkish

Causativization

Tur *Kadın*   *hırsız-dan*   *ürk-er.*
woman.NOM   robber-ABL   be.scared-PRES

,The woman is scared by the robber.'

Hırsız   *kadın-ı*   *ürk-üt-ür.*
robber.NOM   woman-ACC   be.scared-CAUS-PRES

,The robber scares the woman.'

Underspecification: Auxiliary change (Nichols et al. 2004)

Tur *Delikanlı*   *masal-dan*   *keyif*   *al-ır.*
boy.NOM   fairy.tale-ABL   pleasure   get-PRES

,The young man gets pleasure from the fairy tale.'

Masal   *delikanlı-ya*   *keyif*   *ver-ir.*
fairy.tale.NOM   boy-DAT   pleasure   give-PRES

,The fairy tale gives pleasure to the young man..'

Cf. Rott et al 2018

Basque

Underspecification: auxiliary change (Nichols et al. 2004)

Eus *Anaia* *zahar-a-k* *mutil-a* *amorra-tu* *du.*
brother old-DET-ERG boy-DEF.ABS anger-VBLZ HAVE.3SG

‚The old brother got the boy angry.'

Eus *Mutil-a* *anaia* *zahar-a-rekin* *amorra-tu* *da.*
boy-DEF.ABS brother old-DEF-COM anger-VBLZ BE.3SG

‚The boy got angry with the old brother.'

Cf. Rott et al 2018