



Recent Approaches to (Non-)Agentivity in Natural Language
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Agentivity and the typology of the psych-alternation

Elisabeth Verhoeven
Humboldt-Universität zu Berlin
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 'sink' → *senken* 'dip, lower, drop' (transitivization)
öffnen 'open' → *sich öffnen* 'open' (detransitivization)

event decomposition

intransitive basis

(e.g. Pesetsky 1995, Pykkänen 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](#)

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Morphology

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Cross-linguistic differences

	intransitive		transitive
transitivizing	Turkish	x y <i>sevin-di</i> 'x is happy about y'	→ y x <i>sevin-dir-di</i> 'y makes x happy' (causativization)
	Yucatec	<i>chi'chnak ti'</i> y x 'x is annoyed about y'	→ <i>chi'chnak-kuns-</i> x y 'y annoys x' (causativization)
intransitivizing	Greek	x <i>enōiaférete</i> ja y 'x is interested in y' (mediopassive)	← y <i>enōiaféri</i> x 'y interests x'
	German	x <i>ärger</i> <i>sich</i> über y 'x is annoyed by y' (reflexive)	← y <i>ärger</i> x 'y annoys x'
underspecified	Hungarian	<i>megrém-ül</i> x y-tól 'y gets frightened by x'	- - - <i>megrém-it</i> y x 'y frightens x'
	English	x <i>worries</i> about y	- - - y <i>worries</i> x

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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.

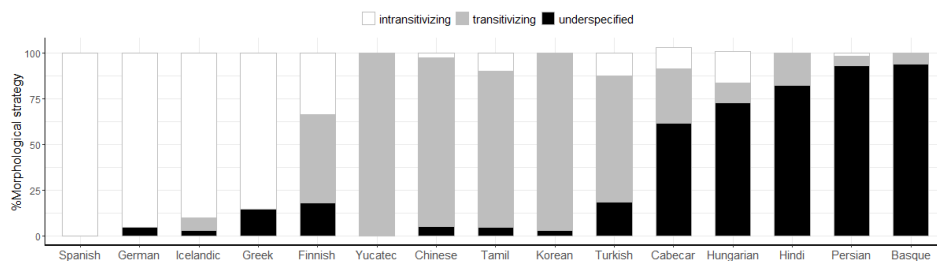
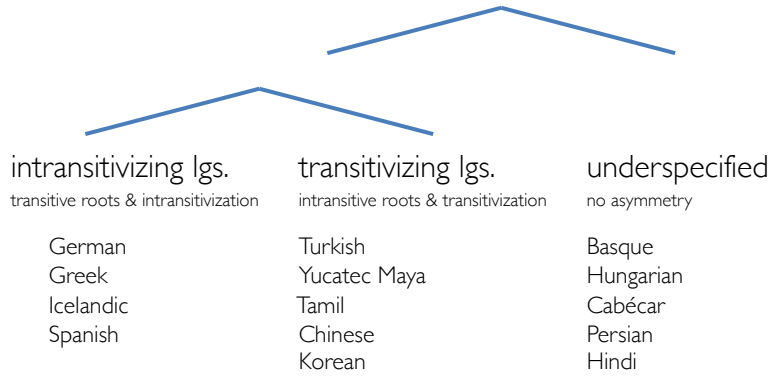


Fig. 1 Morphological process in the formation of EO/ES verbs (Rott, Verhoeven, Fritz Huechante 2018)

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Cross-linguistic differences

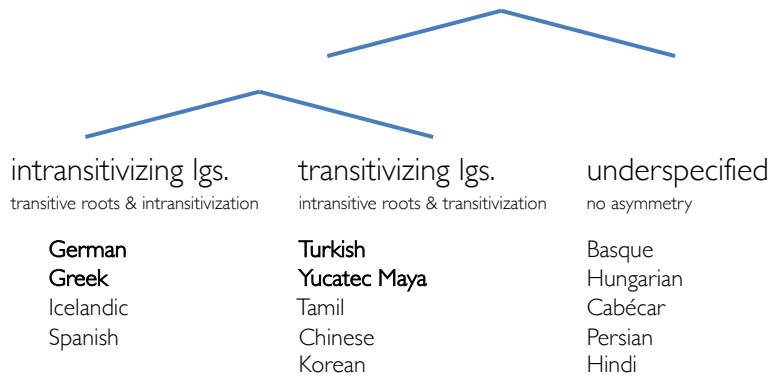
Morphological typology



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Cross-linguistic differences

Morphological typology



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Semantics

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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.

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Agentivity

Illustration (German) Cf. Verhoeven 2017

Embedding under control verbs:

X entschied, Y zu V
,X decided to VY'

Compatibility with intentional adverb:

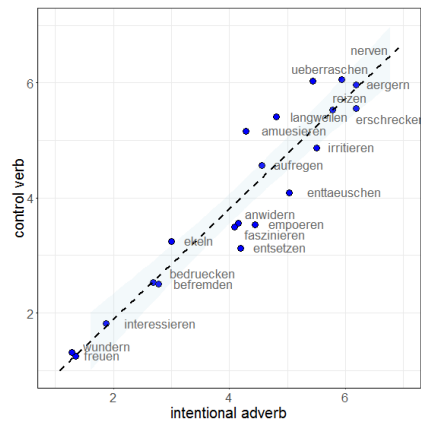
X V Y absichtlich
,X V Y on purpose'

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 range 17-52



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Agentivity

Recall

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

Type B: intransitive roots & transitivity (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).

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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 absichtlich.

The girl is **jostling** the boy intentionally.

exp-object

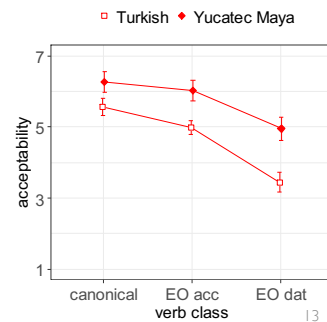
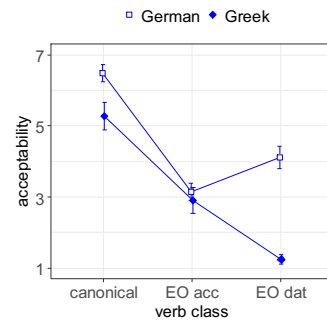
Das Mädchen **interessiert** den Jungen absichtlich.

The girl **concerns** the boy intentionally.

exp-subject

Der Junge **gefällt** dem Mädchen absichtlich.

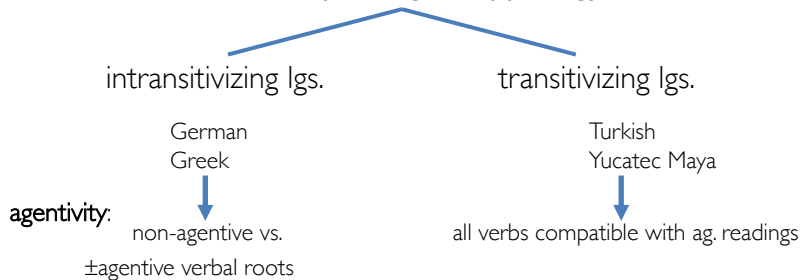
The boy **pleases** to the girl intentionally.



Agentivity cross-linguistically

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

Morphological typology



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

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Non-canonical EO-properties

$[_{VP}$ experiencer (-NOM)	$[_{V}$ stimulus (NOM)	V]]
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(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)

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Binding properties

Backward binding: German

Sein_i Gesundheitszustand beunruhigt jeden Patienten_i.

His_i health 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)

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Binding properties

Forward binding: German vs. Turkish/Chinese

Tur Arkadaş-lar küçük hediyelerle birbirlerini sevindir-diler.
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)

Chi lǎoshī hé xuéshēng (wúyìjiān) xiānghù jīnù-le.
teacher and student (unconsciously) each.other enrage-PFV
Teacher and student enraged each other (unconsciously).

Ger *Lehrer und Schüler wunderten/interessierten sich gegenseitig.
Teacher and student amazed/intrigued each other.

Cf. Verhoeven 2010b

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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)

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Corpora

German	<i>W-öffentlich of COSMAS database, IDS, 2.291.520.000 word forms;</i>
Greek	<i>Hellenic National Corpus (HNC), ILSP, 47.000.000 word forms;</i>
Turkish	<i>TS Corpus, Taner Sezer, Mersin University, 491.000.000 word forms;</i>

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.)

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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.

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Referentiality

ANNOTATING THE REFERENTIALITY OF THE ARGUMENTS

Referentiality scale

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

German

person > definite|proper|possessed > indefinite

Greek

zero > person > definite|proper|demonstrative > indefinite

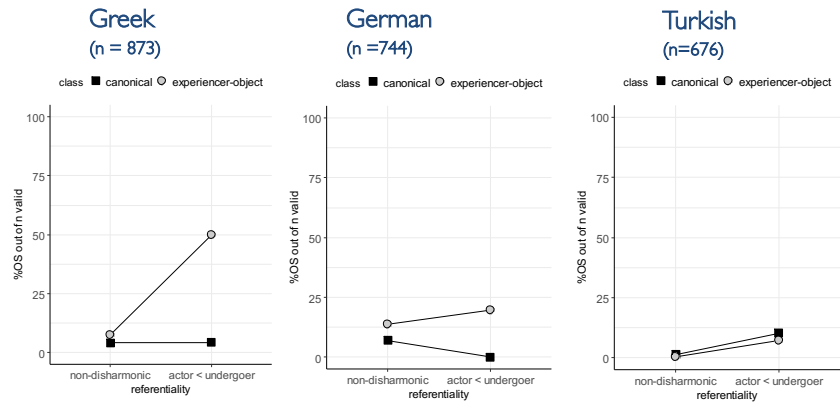
Turkish

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

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

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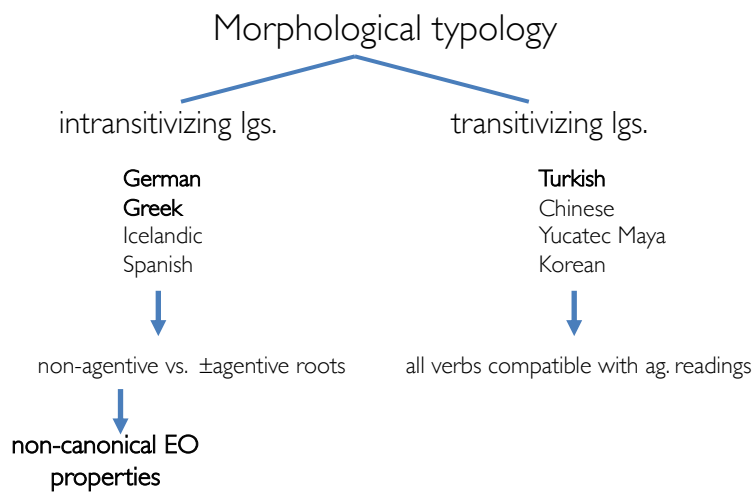
OS order: EO vs. canonical verbs



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

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Non-canonical EO-properties



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The role of gradience

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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?

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Gradience in Agentivity?

Where does the gradience in this data come from?

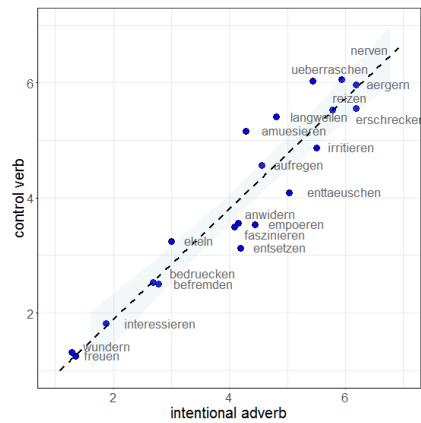
Agentivity is not scalar. A verb either allows for an agentive reading or not.

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
n of speakers: 32, 20 female, age range 17-52



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Some examples

German: variation in acceptability of agentive reading

* *Die Polizistin entschloss sich, Sarah zu freuen.*

The police woman decided to please Sarah.

?? *Der Taxifahrer beschloss, Silke zu entsetzen.*

The taxidriver decided to appall Silke.

? *Anna beschloss, den Pastor zu enttaeuschen.*

Anna decided to disappoint pastor.

Hannes beschloss, die Lehrerin zu aergern.

Hannes decided to annoy the teacher.

Cf. Verhoeven 2017

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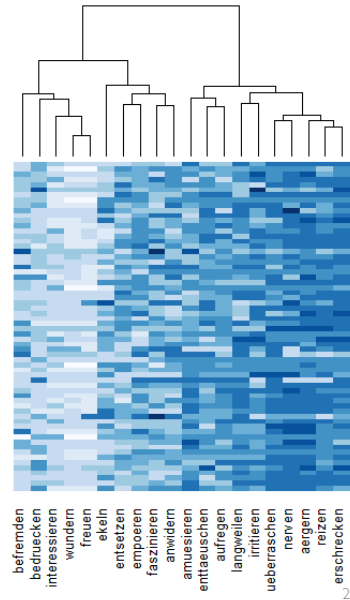
Clustering

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

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

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

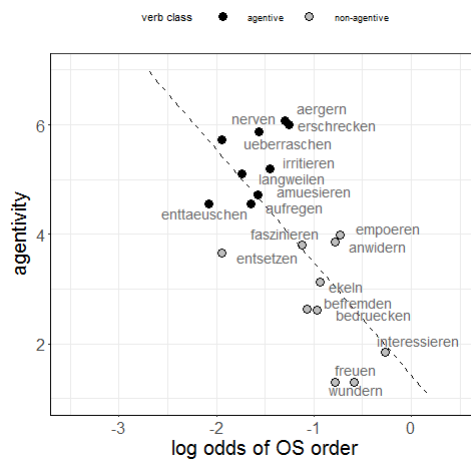
Can we predict the frequencies of OS by means of the agentivity judgments?



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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?



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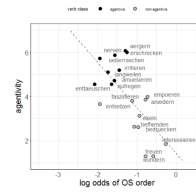
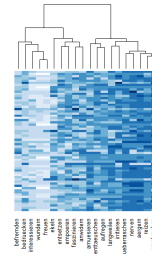
Modelling

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																								
ekekn																								
entsetzen																								
empören																								
faszinieren																								
anwidern																								
enttäuschen																								
aufregen																								
amüsieren																								
langweilen																								
irritieren																								
überraschen																								
nerwen																								
reizen																								
erschrecken																								
ärgern																								

Cf. Verhoeven 2017



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Summary

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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 transitivity devices, these verbs usually 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).

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Appendix

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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
Hungarian	46	10.87	17.39	72.74
Hindi	17	17.65	0	82.35
Persian	57	5.26	1.75	92.98
Basque	17	5.89	0	94.11
Finnish	60	48.34	33.34	18.34

Table 1 Base orientation of psych verbs (n=590 pairs, cf. Rott et al. 2018)

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

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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

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Basque

Underspecification: auxiliary change (Nichols et al. 2004)

Eus	Anaia	zaha-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	zaha-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

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Elicitation method

Five basic emotion modes (Johnson-Laird & Oatley 1989, Ekman 1994, Turner 2007)

HAPPINESS	sub-goals being achieved	<i>delight, like, enjoy, please, charm</i> etc.
SADNESS	failure of major plan or loss of active goal	<i>sadden, mourn, afflict, depress</i> , etc.
ANGER	active plan obstructed	<i>annoy, anger, hate, irritate, bother</i> , etc.
FEAR	self preservation goal threatened	<i>fear, frighten, worry, terrify, startle</i> , etc.
DISGUST	gustatory goal violated	<i>disgust, nauseate, gross out, repel</i> , etc.

- presentation of simple scenarios,
- further semantic subcomponents: intensity, duration etc. of feeling; animacy of stimulus

Cf. Rott & Verhoeven 2019

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