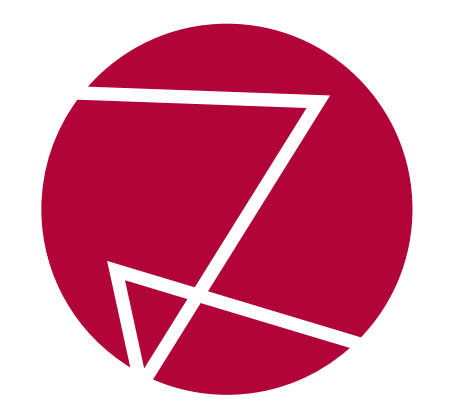


How do 5 year olds understand questions? Differences in languages across Europe

Uli Sauerland, ZAS; Kleanthes K. Grohmann, U Cyprus & CAT; Maria Teresa Guasti, U Bicocca Milan; Darinka Andjelković, U Belgrade; Reili Argus, U Tallinn; Sharon Armon-Lotem, Bar Ilan U; Fabrizio Arosio, U Bicocca Milan; Larisa Avram, U Bucharest; Joao Costa, FCSH/UN Lisbon; Ineta Dabašinskienė, VDU Kaunas; Kristina de Lopez, U Aalborg; Daniela Gatt, U Malta; Helen Grech, U Malta; Ewa Haman, U Warsaw; Angeliek van Hout, U Groningen; Gordana Hrzica, U Zagreb; Judith Kainhofer, U Salzburg; Laura Kamandulytė-Merfeldienė, VDU Kaunas; Sari Kunnari, U Oulu; Melita Kovačević, U Zagreb; Jelena Kuvac Kraljevic, U Zagreb; Katarzyna Lipowska, Warsaw School of Economics; Sandrine Mejias, UC Louvain; Maša Popović, U Belgrade; Jurate Ruzaitė, U Kaunas; Maja Savić, U Belgrade; Anca Sevcenco, U Bucharest; Spyridoula Varlokosta, U Athens; Marina Varnava, U Cyprus & CAT; Kazuko Yatsushiro, ZAS Berlin



Z A S

Based on major contributions by Heather van der Lely and dedicated to her memory

1. COST Action A33 (2006–2010)

European Cooperation in Language Acquisition Research

- 210€ billion economic potential of Language Acquisition research roughly, 1.5% of GDP (= economic damage of language and speech disorders; Ruben 2000 *The Laryngoscope*, Bercow 2008 *UK Government*)
- Language and speech disorders underresearched (Bishop 2010, *PLoS ONE*)
- Lack of critical mass of researchers, split into linguistics communities
- COST Action: establish cross-linguistic base, spread knowledge

Topics of COST A33 (chair: U. Sauerland, vice: H. van der Lely)

Binding: paper on object clitics/pronouns (S. Varlokosta *et al.*, *Lang. Acq.*)

Tense/Aspect: paper (A. van Hout *et al.*, in progress)

Questions: this paper, paper on relative clauses (N. Friedmann *et al.*, in prog.)
research Q: Which gramm. features affect wh-comprehension across languages?

Passive: paper (S. Armon-Lotem *et al.*, *Lang. Acq.*)

Quantifiers: paper on implicatures (N. Katsos *et al.*, in prog.)

2. Design (illustrated for English)

Factors: Argument type (subject/object), Wh type (simple/complex)

Who — is pushing the princesses? (subject, simple)

Which lady — is pushing the queens? (subject, complex)

Who are the queens washing —? (object, simple)

Which princess are the ladies pushing —? (object, complex)

Sample picture choice item for the question 'Who are the queens washing?'



Response Types:

correct (top left): Who are the queens washing?

reversal error (bottom left): Who is washing the queens?

number error (bottom right): Who is the queen washing?

semantic verb error (top right): Who are the queens chasing?

3. Child Participants

ISO	country	language	(sub-)family	n	female	m(age)	SD(age)	%order A
EE	Estonia	Estonian	Finnic	20	10	65.5	3.5	50
FI	Finland	Finnish	Finnic	20	12	64.9	3.2	50
MT	Malta	Maltese	Semitic	20	11	67	3.1	50
IL	Israel	Hebrew	Semitic	18	11	67.2	3	50
CY	Cyprus	Cypriot Greek	Greek	20	10	63	2.7	50
EL	Greece	Greek	Greek	21	11	65.8	4	52.4
LT	Lithuania	Lithuanian	Baltic	17	7	67.9	2.2	58.8
HR	Croatia	Croatian	Slavic	21	11	65.8	3.2	47.6
RS	Serbia	Serbian	Slavic	20	12	65	3.3	50
PL	Poland	Polish	Slavic	22	12	68.2	3.3	50
UK	Great Britain	English	Germanic	20	10	64	2.6	50
DE	Germany	German	Germanic	20	10	67.7	3.3	50
AT	Austria	German	Germanic	25	10	66.2	3.8	52
NL	Netherlands	Dutch	Germanic	20	10	67.3	3.4	45
DK	Denmark	Danish	Germanic	21	8	64.7	2.7	47.6
BE	Belgium	French	Romance	24	14	63.8	3.3	50
IT	Italy	Italian	Romance	20	10	62.4	3.5	50
PT	Portugal	E. Portuguese	Romance	20	13	65.2	3	50
RO	Romania	Romanian	Romance	23	10	65.8	2.5	47.8
total	19	18	7	392	202	65.6	3.5	50

4. Linguistic Factors

fam. lang	Finnic	Sem.	Greek	Bl.	Slavic	Germanic	Romance
	EE FI	MT IL	CY EL	LT	HR RS PL	UK DE,AT NL DK	BE IT PT RO
agr	● ●	● ●	● ●	● ●	● ●	● ●	● ●
wo	● ●	● ●	○ ○	○ ○	○ ○	○ ○	○ ○
case	● ●	● ●	● ●	● ●	● ●	○ ○	○ ○
1wh	○ ●	○ ●	● ●	● ●	● ●	○ ○	○ ○
clf	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
syV	○ ○	● ○	○ ○	○ ○	○ ○	● ○	○ ○
OCl	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	● ○

agr: agreement cue disambiguates, e.g. English

wo: word order cue disambiguates, e.g. English

case: case cue disambiguates: e.g. German 'wer' (subject) vs 'wen' (object)

1wh: same morpheme for 'who' and 'which': e.g. Finnish 'kuka'

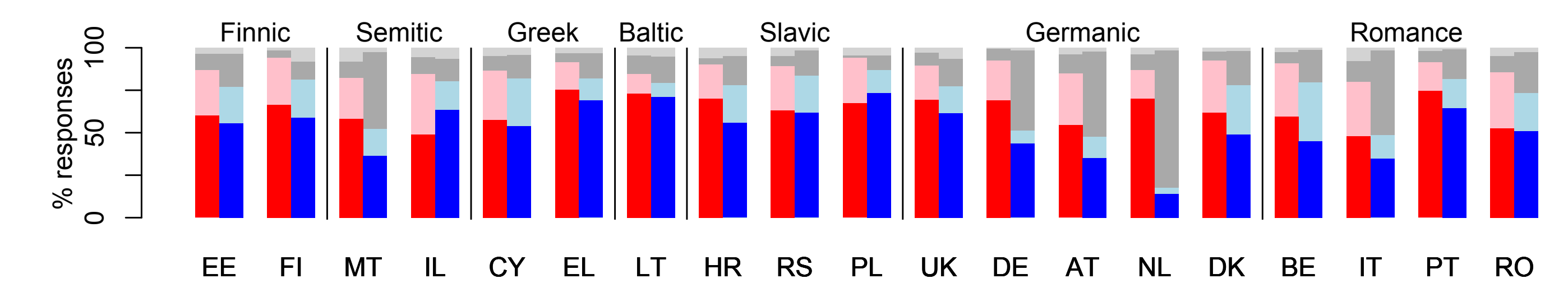
clf: cleft structure: e.g. Portuguese 'Quem é que as princesas estão a puxar?'

syV: synthetic verb form: e.g. English 'are bathing'

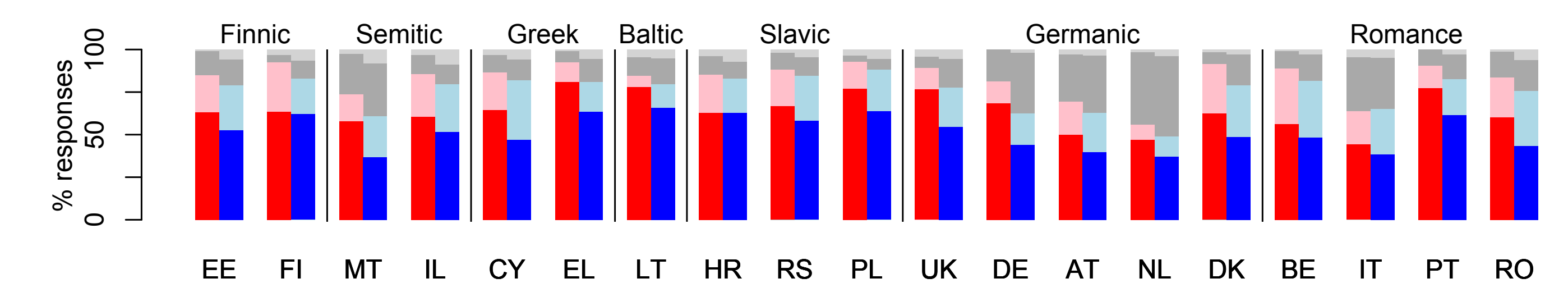
OCl: object clitic: e.g. Romanian 'Pe care balerină o trag doamnele?'

5. Results

Comparison of subject (red) vs object (blue)



Comparison of simple (red) vs complex (blue)



Legend: Dark red/blue – correct, light red/blue – number error, dark grey – reversal error, light grey – semantic verb error

6. Statistics for correct responses

Effects:

Expected: age, argument type, wh type

Furthermore: presence of case morphology, absence who-which distinction, synthetic verb forms

Summary of the fixed effects in the mixed logit models for Correct responses

Predictor	Coeff.	SE	Wald Z	p
Part a: (N= 7446, children=392, item=19, loglikelihood=-4692.2)				
(Intercept)	-4.06226	0.79870	-5.086	<0.001
Age	0.04776	0.01199	3.984	<0.001
Argument type	0.94123	0.16463	5.717	<0.001
Wh type	0.54416	0.10306	5.280	<0.001
Case	0.57532	0.15127	3.803	<0.001
1wh	0.61446	0.08875	6.924	<0.001
synthV	0.42762	0.11075	3.861	<0.001
Argument type by Case	-0.69618	0.10554	-6.596	<0.001
Note. Random effects for subjects and items had SD of 0.64 and 0.31, respectively				
Part b				
(Intercept)	-0.35	0.16	-2.12	0.03
Case	0.67	0.11	6.12	<0.001

- No effect of word order (wo), agreement (agr), and gender
- Confirmed by analyses of other response types