

Flogging a dead horse or tweaking the relevant details

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Agreement in Multivaluation Constructions: Frankfurt, April -
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Conjunct Agreement



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Conjunct Agreement

Corbett (1983) South Slavic languages show cases of agreement based on linear order: when two noun-phrases are conjoined, the verb can sometimes agree with the linearly closest one

Bock & Miller (1991) English speakers show cases of agreement based on linear order, called 'attraction', with the plural complement of noun phrases (e.g. *the key to the cabinets are ...*)

- How experimentally robust is linear conjunct agreement in South Slavic morphosyntax?
- Is it distinct from attraction?
- Is it something grammar needs to derive?
- What does this mean for theories of agreement?

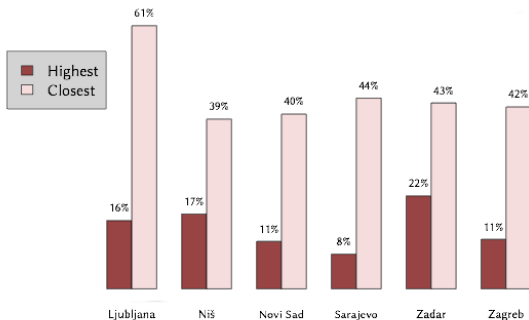
A number of studies

- A number of analyses proposed to model the variability in agreement strategies
- Bošković 2009, Franks & Willer Gold 2014, Puškar & Murphy 2015, Marušič et al. 2007/2015; Arsenijević & Mitić 2016 etc.
- Some questions did not seem settled
 - What exactly are the facts we need to model?
 - Is there variation among South Slavic languages?
- These questions were addressed by the EMSS project. Project findings published in Willer Gold et al. (2016/2018), Arsenijević et al. (2019)

EMSS project

- A series of experiments ($n=30 * 6$ sites for each exp.):
 - Design and methodology identical across sites with local adaptation of vocabulary and morphosyntax.
- **Exp1a**: production study – Coordinated Subject → Verb
- **Exp1b**: production study – Verb → Coordinated Subject
- **Exp2**: Grammaticality judgments – SV and VS
- **Exp3**: Picture matching study – testing interpretation of sentences with closest conjunct agreement – CCA
 - Exp1 and Exp2 published as Willer Gold et al (2016/2018)
 - Exp3 published as Arsenijević et al (2019)

Main results



Main claims

- CCA exists and is a robust grammatical option
- FCA and default are the other two options for agreement with a coordinated subject

EMSS conclusions

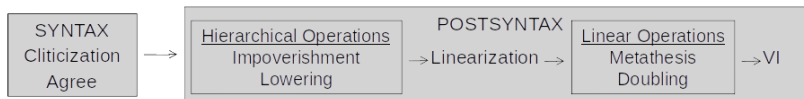
- **Linear agreement** is more frequent than hierarchical agreement
- The rate of **linear agreement** obtained is much higher than that usually found in attraction studies, suggesting it is a **distinct phenomenon**.
 - **Linear agreement** was judged as equally good as resolved agreement (and resolved agreement cannot be attraction).
- The first conjunct in a &P is not the head of the &P.
- **Linear agreement** is not a result of clausal elipsis, as proposed by Aoun, Benmamoun, & Sportiche (1994)

Decomposition of Agree

Agree is composed of two (sub-)operations

Agree-Link the purely syntactic establishment of a relation between a Probe and Goal(s); Case Licensing of arguments; Potential LF consequences of Agreement

Agree-Copy enacts the valuation of features on the Probe



Agree-Link part of Syntax constrained by Hierarchy, Minimality, Boundedness

Agree-Copy may happen before or after Linearization

How does it affect conjunct agreement

Participles enact Agree-Link with ConjP, but depending on how and when Agree-Copy takes place, different parts of ConjP may be targeted.

- ConjP calculates its number. Agree-Copy takes that value
 - ConjP cannot calculate gender → resolution to Masculine
 - Speakers who wish to avoid default/resolved Gender must open up the lid on the ConjP and choose one of the individual conjuncts during Agree-Copy
- If Agree-Copy happens before linearization → HCA
 - If Agree-Copy happens after linearization → CCA

What now?

- We have confirmed the data.
- The data support the theory.
- We should look for more data to test the theory.

Binominal NPs

- So far, all our subjects were coordinations of simple noun phrases with a single head
- Not all noun phrases are like that:
 - Nominal complements are of different types
 - PPs room with a view, house by the lake
 - Gen. DPs destruction of the city
 - Dat. DPs a gift to Mary
 - Nom. DPs Hotel California, Planet Earth

Binominal NPs

- In some cases the complement agrees with the head in case

NOM mesto_{NOM} Ljubljana_{NOM} = city Ljubljana

ACC mesto_{ACC} Ljubljano_{ACC}

GEN mesta_{GEN} Ljubljane_{GEN}

DAT mestu_{DAT} Ljubljani_{DAT}

- Here too, like with nominative cased complements
 - whenever the head noun is in subject position, the complement will also be in nominative case
- These are relevant as agreement seems to be restricted to nominative cased nouns

Binominal NPs

- Agreement is only in case, not in gender or number

NOM mesto_{Nom.N.SG} Jesenice_{Nom.F.PL}

GEN mesta_{Gen.N.SG} Jesenic_{Gen.F.PL}

DAT mestu_{Dat.N.SG} Jesenicam_{Dat.F.PL}

NOM vas_{Nom.F.SG} Bate_{Nom.F.PL}

NOM vas_{Nom.F.SG} Moškanjci_{Nom.M.PL}

- This varies and sometimes, the complement does not decline

GEN Mesta_{Gen.N.SG} Jesenice_{Nom.F.PL}

DAT Mestu_{Dat.N.SG} Jesenice_{Nom.F.PL}

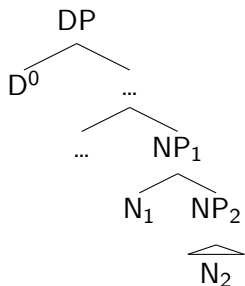
- This later pattern is actually more common

- There is variation in terms of which ones agree in case and which ones remain in nominative case

- (1) **človek**_M **žaba**_F – both decline
man frog = scuba diver
- (2) **prismoda**_F **Peter**_M – both decline
clumsy-guy Peter
- (3) **mesto**_N **Ljubljana**_F – both can decline
city Ljubljana
- (4) **občina**_F **Ljubljana**_F – only the head declines
municipality Ljubljana

- No generalization
- Difference in what look like structurally completely comparable examples, (3)–(4)

The structure of binominal NPs



- The second NP lacks some functional structure over it – it cannot be modified

(5) mesto_N (* bela_F) Ljubljana_F
 town white Ljubljana

(6) mesto_N Nova_F Gorica_F
 town new Gorica

- in this case 'Nova Gorica' is the name

The structure of binominal NPs

Note that there are no restrictions on the adjectival modification of the head noun in these cases

- (7) majhno devetkotno mesto Palmanova
small_{N.SG} enneagram_{N.SG} town_{N.SG} Palmanova_{F.SG}
 'small enneagram town Palmanova'

Agreement

- When in subject position – it's always the head noun that triggers plural agreement:

(8) **Gorica** je bila porušena.

Gorica_{F.SG} aux_{SG} was_{F.SG} destroyed_{F.SG}

(9) **Mesto** Gorica je bilo porušeno.

town_{N.SG} Gorica_{F.SG} aux_{SG} was_{N.SG} destroyed_{N.SG}

(10) **Bate** so bile porušene.

Bate_{F.PL} so_{PL} bile_{F.PL} porušene_{F.PL}.

(11) **Vas** Bate je bila porušena.

Vas_{F.SG} Bate_{F.PL} je_{SG} bila_{F.SG} porušena_{F.SG}.

- In **town** X binominals, it **town** is the head noun
- structurally this makes sense: **town** is located higher than X

Our question

What happens when these binominal NPs are coordinated?

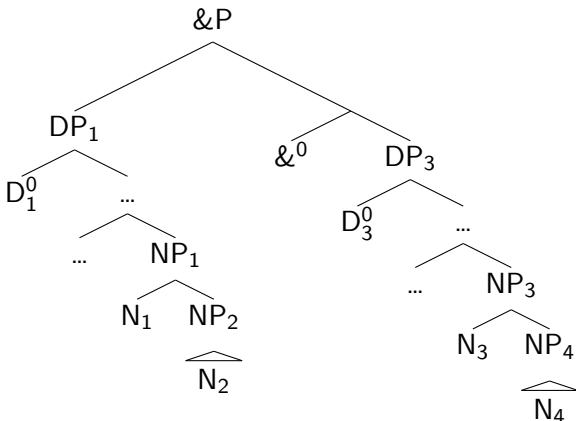
- Bošković (2009) argues any analysis invoking linearity makes the **wrong** prediction that agreement should be with the right-most nominal

(12) Sve varošice i sva sela
 all town.NOM.F.PL and all villages.NOM.N.PL
 Poljice su lijepa / * lijepe.
 Poljice.NOM.F.PL are beautiful.N.PL beautiful.F.PL
 ‘All towns and all villages named Poljice are beautiful.’

- This is true also of M.et al. 2015 & W-G.et al. 2016/2018:
- If Agree-Copy happens after linearization → CCA
- As the probe looks for the closest goal, it should target the second of the two nouns even though it is not the head

Coordinated binominal NPs

- Given the previous structure of binominals, when coordinated:



- and when this gets linearized, N_4 is the closest:

N1 N2 & N3 **N4** V

Coordinated binominal NPs

- This prediction is true only under the assumption that the structure of these binominal noun phrases is something like given
- a nominative noun inside a relative clause cannot participate in agreement, but this seems different. A relative clause involves a clause and clauses are phases etc.

(13) časopisi in zvezki, ki jih
 newspapers_{M.PL} and notebooks_{M.PL} that them
 skupaj držijo sponke, so ležali /
 together hold paperclips_{F.PL} AUX_{PL} laid_{M.PL}
 *ležale v kotu.
 laid_{F.PL} in corner

- phases are spelled out earlier ...

Coordinated binominal NPs

- The relevant examples:
 - In Slovenian, we need three conjuncts (to avoid dual)
 - the complement of the third conjunct needs to have a gender not shared by the head nouns

town_{N.SG} X & town_{N.SG} Y & town_{N.SG} Z_{F.PL} ...V?

or

X_{M.SG} & Y_{M.SG} & town_{N.SG} Z_{F.PL} ...V?

- Given the structure: *town* is the head of the noun phrase
→ agreement should be **N.PL** or else default **M.PL**
- Any instance of **F.PL** agreement can only result from agreement with the closest noun

Experiment 1

- Grammaticality judgment task (scale: 1 – 5)
- 4 items per condition (36 experimental items)

condition	prediction	structurally
town _N X _{F.PL} V _{F.PL}	bad	bad
town _N X _{F.PL} V _{N.SG}	good	good
town Z, town Y & town _N X _{F.PL} V _{F.PL}	good	bad
town Z, town Y & town _N X _{F.PL} V _{N.PL}	good	good
Z, Y & town X _{F.PL} V _{F.PL}	good	bad
Z, Y & town X _{F.PL} V _{M.PL}	good	good
town next to something	good	good

- 34 fillers (of these 6 control – 3 ok, 3*)
- 34 subjects – all high school students
- 1 excluded – »failed« at controls

Experiment 1 – examples

town_N X_{F.PL} V_{F.PL}

- (14) Občina Domžale bodo počastile nekaj
 municipality_{F.SG} Domžale_{F.PL} aux_{PL} honor_{F.PL} some
 odličnih alpinistov z občinskimi nagradami.
 excellent climbers with municipal awards
 'The municipality of Domžale will honor some excellent
 climbers with municipal awards.'

Experiment 1 – examples

town_N X_{F.PL} V_{SG}

- (15) Vas Rovte je prisotna v kulturnem
 village_{F.SG} Rovte_{F.PL} aux_{SG} present_{F.SG} in cultural
 zemljevidu Slovenije že stoletja.
 map Slovenia already centuries
 'The village of Rovte is present in the cultural map of
 Slovenia already for centuries.'

Experiment 1 – examples

Z, Y & town X_{F.PL} V_{F.PL}

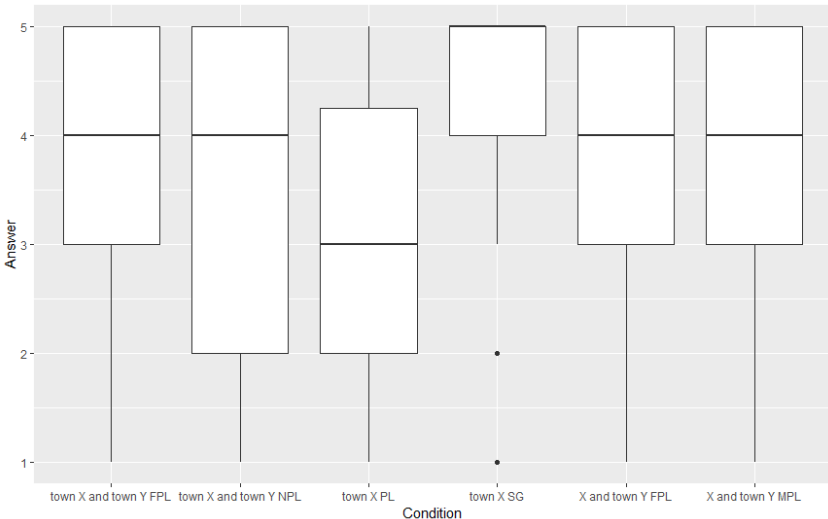
- (16) Duplek, Fram in kraj Hoče so pridobile
 Duplek Fram and town_{M.SG} Hoče_{F.PL} aux_{PL} won_{F.PL}
 organizacijo državnega prvenstva v balinanju.
 organisation national championship in bocce
 Duplek, Fram, and the town of Hoče won the organisation
 of the national championship in bocce.'

Experiment 1 – examples

town_{N.SG} Z, town_{N.SG} Y & town_N X_{F.PL} V_{N.PL}

- (17) Mesto Tolmin, mesto Idrija in naselje
 town_{N.SG} Tolmin, town_{N.SG} Idrija and settlement_{N.SG}
 Sečovlje so hotela združiti moči pri
 Sečovlje_{F.PL} aux_{PL} wanted_{N.PL} unite forces at
 prenovi svojih muzejev.
 renovation self's museums
 'The town of Tolmin, the town of Idrija, and the
 settlement of Sečovlje wanted to unite forces when
 renovating their museums.'

Experiment 1 – results



Experiment 1 – results

condition	predict.	struct.	result
town _N X _{F.PL} V _{F.PL}	bad	bad	2.97
town _N X _{F.PL} V _{N.SG}	good	good	4.33
town Z, town Y & town _N X _{F.PL} V _{F.PL}	good	bad	3.79
town Z, town Y & town _N X _{F.PL} V _{N.PL}	good	good	3.39
Z, Y & town _N X _{F.PL} V _{F.PL}	good	bad	3.85
Z, Y & town _N X _{F.PL} V _{M.PL}	good	good	3.86

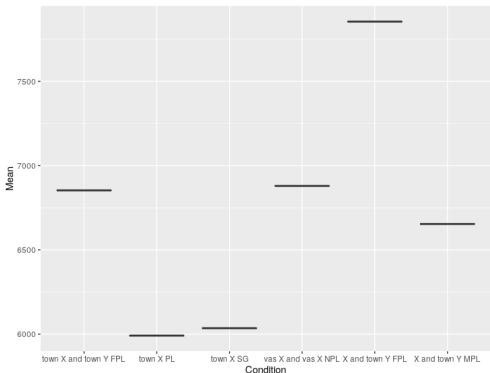
Experiment 1 – Statistics

- Statistically significant difference between coordinated and noncoordinated binominals
 - town_N X_{F.PL} V_{F.PL} vs. town Z, town Y & town_N X_{F.PL} V_{F.PL}:
 $t = 4.7072, df = 254.86, p < .005$
- No difference between MPL and FPL agreement in coordinations
 - Z, Y & town_N X_{F.PL} V_{M.PL} vs. Z, Y & town_N X_{F.PL} V_{F.PL}:
 $t = -0.053727, df = 261.95, p > 0.5$

Coordination behaves differently

Attraction?

- In case this is a result of attraction, we might expect faster responses in conditions in which verbal agreement is with the second noun – in FPL
- But as it turns out, FPL agreement with coordinated subject was the slowest condition



Next Experiment

- Results were a bit surprising
 - even though they were predicted
- There were some problems with the design
 - that I only discovered later
- I opted to redo the experiment
 - with several modifications

Experiment 2 & 3 – design

- 6 conditions

condition	prediction	structurally
Z, Y & town _N X _{F.SG} V _{M.PL}	good	good
X _{F.PL} V _{F.PL}	good	good
town _N X _{F.PL} V _{F.PL}	bad	bad
town _N X _{F.PL} V _{N.SG}	good	good
Z, Y & town X _{F.PL} V _{F.PL}	good	bad
Z, Y & town X _{F.PL} V _{M.PL}	good	good

- 5 items per condition
- 30 fillers

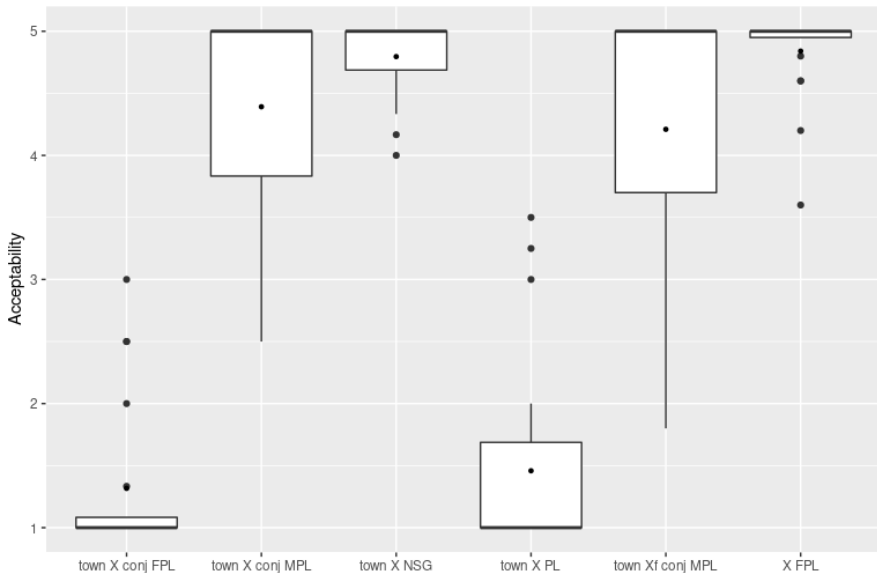
Experiment 2 & 3 – design

- Latin square design for the critical four conditions
 - town_N X_{F.PL} V_{F.PL}
 - town_N X_{F.PL} V_{N.SG}
 - Z, Y & town_N X_{F.PL} V_{F.PL}
 - Z, Y & town_N X_{F.PL} V_{M.PL}
- Each town X_{F.PL} subject paired with both NSG and FPL agreement
- Each Z, Y & town_N X_{F.PL} subject paired with both MPL and FPL agreement

Experiment 2 – design

- 25 subjects recruited online
- Experiment placed on KSEnJA (a website to post linguistic experiments)
- advertised on a mailing list mainly with high-school teachers of Slovenian
- Controls – required 80 % success rate
 - X_{F.PL} V_{F.PL} – ok
 - town_N X_{F.PL} V_{F.PL} – *
 - town_N X_{F.PL} V_{N.SG} – ok
- 5 excluded, as they failed on controls
- 20 subjects analyzed

Experiment 2 – Results



Experiment 2 – Results

condition	prediction	structurally	results
Z, Y & town _N X _{F.SG} V _{M.PL}	good	good	4.21
X _{F.PL} V _{F.PL}	good	good	4.84
town _N X _{F.PL} V _{F.PL}	bad	bad	1.38
town _N X _{F.PL} V _{N.SG}	good	good	4.79
Z, Y & town X _{F.PL} V _{F.PL}	good	bad	1.26
Z, Y & town X _{F.PL} V _{M.PL}	good	good	4.33

- Conditions that are structurally good are close to ceiling
- Conditions that are structurally bad are close to bottom
- No need to check for statistics ...

Experiment 2 – Evaluation

- Comparing Exp1 with Exp2 the picture is really different
- What went wrong?
- Subjects in Exp2 were (mostly) linguistically trained professionals
- Some were also probably professional proofreaders (judging from where it was advertised)
- Even though they were asked to judge the naturalness of the presented examples, potentially they couldn't avoid thinking logically and deciding based on that.
- Another repetition?

No diff between coordinated and non-coordinated binominals

Experiment 3 – design

- Same design as Experiment 2, but different recruiting
- 35 subjects recruited with Prolific (website)
- paid 1.25 GBP
- 23 subjects failed on controls
- 12 subjects analyzed

Introduction

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binominal NPs

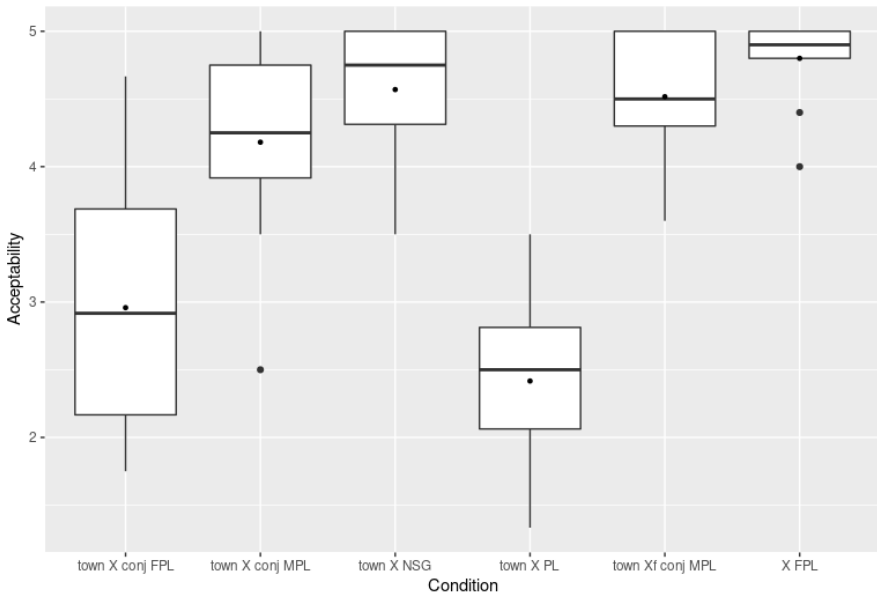
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Experiment

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Conclusion

○○



Experiment 3 – Results

condition	prediction	structurally	results
Z, Y & town _N X _{F.SG} V _{M.PL}	good	good	4.52
X _{F.PL} V _{F.PL}	good	good	4.8
town _N X _{F.PL} V _{F.PL}	bad	bad	2.39
town _N X _{F.PL} V _{N.SG}	good	good	4.61
Z, Y & town X _{F.PL} V _{F.PL}	good	bad	3.00
Z, Y & town X _{F.PL} V _{M.PL}	good	good	4.2

- Conditions structurally predicted to be good are good.
- The two that are most relevant for our comparison were judged differently

Experiment 3 – Statistics

- Statistically significant difference between coordinated and noncoordinated binominals
 - town_N X_{F.PL} V_{F.PL} vs. town Z, town Y & town_N X_{F.PL} V_{F.PL}:
t = 2.4609, df = 126, p-value < 0.05
- Statistically significant difference between MPL and FPL agreement in coordinations of relevant binominals
 - Z, Y & town_N X_{F.PL} V_{M.PL} vs. Z, Y & town_N X_{F.PL} V_{F.PL} :
t = -4.9932, df = 117.91, p- value < 0.001

Coordinated and noncoordinated binominals behave differently!
The difference is not so categorical as it was in Experiment 1, but it exists!

Conclusion

- The results are not so clear as one would hope, but ...
- But a difference between coordinated and noncoordinated binominals was detected.
- Note that if the difference was due to relative complexity of sentences, the longer coordinated examples should be judged worse of the two.

Prediction of the conjunct agreement theory that employs linear precedence are (at least) partially confirmed.

Thank You

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