Gender Agreement with Exclusive Disjunction in Slovenian

Franc Lanko Marušič[1]   Zheng Shen[2]

[1]University of Nova Gorica

[2]National University of Singapore

Why?

- We have been dealing with phi features for a long time in language sciences, e.g. [SG], [DL], [PL]; [MASC], [FEM], [NEUT]; [1ST], [2ND], [3RD].
- One way to look at how the features interact is to smash them into each other, i.e. by looking at constructions where two or more features need to fit in one slot:

(1) Multi-valuation:
    a. John is glad that **Mary**, and Bill is proud that **Sue** have/has been to China.
    b. Yatabe (2003); Kluck (2009); Grosz (2009, 2015); Belk & Neeleman (2018); Shen (2018, 2019)

(2) Conjunction agreement:
    a. A book **and** two notebooks are on the table.
    b. There is a book **and** two notebooks on the table.
    c. Corbett (1991); Aoun et al. (1994); Sobin (1997); Aoun et al. (1999); Munn (1999); Lorimor (2007); Bošković (2009); Marušič et al. (2015); Willer-Gold et al. (2016); Willer Gold et al. (2017); Murphy & Puškar (2018)

(3) Disjunction agreement:
    a. Two books **or** a notebook was/were left on the bus.
    b. You **or** I *am/*are going to win.
    c. Morgan (1972, 1984); Randall (2002); Peterson (2004); Morgan & Green (2005); Haskell & MacDonald (2005); Lorimor (2007); Garley (2008); van Koppen & Cremers (2008); Flouriaki & Kazana (2009); Koeneman (2010); Kazana (2011); Ivlieva (2013); Keung (2017); Keung & Staub (2018); Foppoloa & Staub (2020)

- Agreement with conjunction inspired various proposals with consequences on agreement mechanism, feature interaction, and structures of coordination.

- Comparing disjunction agreement with conjunction agreement sheds lights on these issues.

Why Disjunction in Slovenian?

- Gender agreement with conjunction in Slovenian has been investigated (probably) the most among languages.

- Base on conjunction, a handful of intricate proposals have been made regarding feature specification of coordinators, feature resolution.

- Not nearly as much work on disjunction has been done.

- Direct comparison of disjunction and conjunction agreement can shed new light on these issues.

- Slovenian: Masculine (M), Feminine (F), Neuter (N).
- Gender agreement on participles.
- Marušič et al. (2015) with the elicitation task: When both conjunct NPs are plural, the participle can agree with the highest conjunct (HCA), linearly closest conjunct (CCA), or get resolved to M (RES).

  (4) Knjige   in peresa so   se   podražil-i/-e/-a.
       books.F.PL and pens.N.PL AUX.PL REFL become.more.expensive-M.PL/-F.PL/-N.PL
       'Books and pens have become more expensive.'
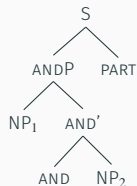
  (5) [NP$_1$ and NP$_2$]   (6) Conjunction reduction
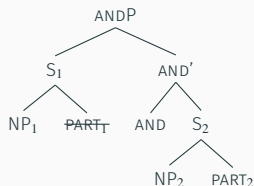
  (7) [Knjige ~~so   se   podražil-e~~]   in [peresa so   se
       [book.F.PL ~~AUX.PL REFL become.more.expensive-F.PL~~] and [pens.N.PL AUX.PL REFL
       podražil-a].
       become.more.expensive-N.PL]

- Arsenijević et al. (2019) with a picture matching task: ellipsis cannot explain all the CCA data under conjunction.

(8) Knjige   in peresa so   se   podražil-i/-e/-a.
     books.F.PL and pens.N.PL AUX.PL REFL become.more.expensive-M.PL/-F.PL/-N.PL
     'Books and pens have become more expensive.'

Marušič et al. (2015)

- gender features of conjuncts cannot be calculated on ANDP: [_ N AND F]
- Option 1: insert a default M value on AND: [$_M$ N AND F]
- Option 2: probe into the ANDP and matching with either the highest or the linearly closest conjunct, i.e. partial agreement: [N AND F]

Willer-Gold et al. (2016)

- use elicitation tasks to test gender agreement with conjunction in BCS (5 locations) and Slovenian (1 location);
- Option 1 + 2
- Option 3: resolution rules: [_ N AND F]

    (9) a.   MandF = M; FandM = M
         b.   MandN = N; NandM = N
         c.   FandN = N; NandF = N [$_N$ N AND F]

Bošković (2009) and Murphy & Puškar (2018) are left out of the discussion, given that they did not report experimental results.

What's done:

- Arsenijević & Mitić (2016) use experiments to test disjunction and conjunction agreement in BCS; but did not separate the two in the reported data.
- Harrison (2009) reports a series of experiments on Slovenian agreement including a direct comparison between gender agreement in conjunction and disjunction (her Experiment 9);

  1. only included F and M, rendering only 2 unambiguous cases as oppose to 12 if combinations of all three genders are included;
  2. the conjuncts are singular rather than plural, allowing potential interference from number agreement;
  3. used simple disjunction *ali* which allows the inclusive reading.

What's not:

- exclusive disjunction;
- no interference from number.

- Method: elicitation
  - The participant see a model sentence on the screen (10a), with a masculine singular noun phrase as the subject. Then they see a new replacement noun phrase at the bottom of screen (10b).

  (10) a. <u>Oreh</u>   bo posajen   za   hišo.
          walnut AUX planted.M.SG behind house
          'Walnut will be planted behind the house.'
       b. ali grmi   ali pa večje rože
          or shrub.M.PL or PA bigger flowers.F.PL
          'either shrubs or large flowers'

  - Their task is to produce an utterance in which they replace the subject of the model sentence with the new noun phrase.
- Materials
  - Exclusive disjunction construction *ali...ali pa...* 'either...or...' is used for the disjoined subjects.
  - 8 conditions: MORM, FORF, NORN, MORF, FORM, MORN, NORM, FORN. NORF was not included in the experiment due to a coding error.
  - 40 test items (5 x 8 conditions) + 45 filler items + 6 practice items = 91
  - All subjects are in PL. All subjects precede the verbs in all trials (SV order only).

Results

- 13 native speakers participated and all of them scored above 89% on the filler items.
- T-distribution comparing these results with 0 (one-tailed). **Bolded** results are all statistically different from 0 (in yellow), while the not-bolded results aren't (in gray).

	M	F	N
MorM	62 (100%)	0 (0%)	0 (0%)
ForF	3 (5%)	60 (95%)	0 (0%)
NorN	4 (6%)	0 (0%)	58 (94%)
MorN	24 (39%)	1 (2%)	37 (60%)
NorM	59 (94%)	0 (0%)	4 (6%)
MorF	29 (46%)	34 (54%)	0 (0%)
ForM	59 (94%)	2 (3%)	2 (3%)
ForN	11 (17%)	6 (9%)	48 (74%)
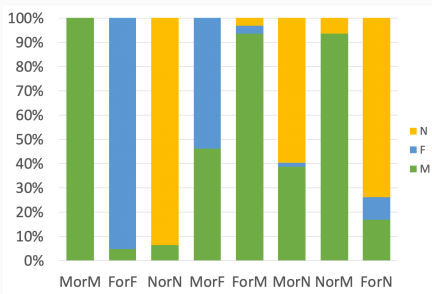
CCA is a stable agreement option in all conditions.

- unambiguous cases: F in MorF = 54%, N in MorN = 60%, N in ForN= 74%
- CCA can potentially result from a clausal ellipsis analysis (11a) and/or a conjoined subject analysis (11b).

  (11) a. [either shrubs$_M$ ~~will be planted$_M$ behind the house~~] or [large flowers$_F$ will be planted$_F$ behind the house].
        b. [either shrubs$_M$ or large flowers$_F$] will be planted$_F$ behind the house.

- Compared with conjunction, CCA takes a larger portion of the responses under disjunction:

	Marusic et al 2015	Willer-Gold et al 2016	Disjunction
F in MF	22%	35%	54% ↑
N in MN	31%	40%	60% ↑
N in FN	54%	68%	74% ↑

- Given (11), the increase can result from

  ❶ the fact that clausal coordination with ellipsis is more frequent with disjunction (11a);
  ❷ or that CCA is chosen more when agreeing with the disjoined subjects (11b);
  ❸ or both.

HCA are observed to a much lesser extent:

- Unambiguous cases: N in NorM = 6%, F in ForM = 3%, F in ForN = **9%**.

- Among them, only F in ForN is significantly different from 0.

- HCA is also the weakest option under conjunction, especially in conditions including M.

- Comparing with FandN, the low ratio of HCA under disjunction correlates with the increased preference for CCA:

F+N	Marusic et al 2015	Willer-Gold et al 2016	disjunction
CCA	52%	68%	74% ↑
HCA	22%	12%	9% ↓
RES	20%	18%	17%

- It is possible that HCA is a viable option. Acceptability judgments would be helpful.

Discussion: Default and RES

The label *resolved agreement* (RES) has been used to refer to different types of agreement.

- Both Marušič et al. (2015) and Willer-Gold et al. (2016): insert the default M on the AND head, labeled as Default agreement (DEF).

- This is motivated by the significant presence of M in NANDN, FANDF, and FANDN.

  (12)   M in FANDF = 15%; M in NANDN = 12%; M in FANDN = 36%. (Willer-Gold et al. 2016)

- Disjunction is different: M in FORF and NORN are not significantly different from 0.

  (13)   M in FORF = 5%; M in NORN = 6%, M in FORN = 17%

- It could be that unlike AND, no DEF for OR in Slovenian.

- But note that Willer-Gold et al. (2016) tested BCS in 5 locations and Slovenian in 1 location. If we only look at their Slovenian data:

  (14)   M in FANDF = 4%; M in NANDN = 3%; M in FANDN = 18%.

- Combining (13) and (14), there is no evidence of the insertion of M to AND or OR as a default in Slovenian.

- Willer-Gold et al. (2016) acknowledge this difference between BCS and Slovenian. They propose that the default M is dispreferred in Slovenian.

Discussion: RES

- Note that M is significant in both FANDN and FORN.

  (15)   M in FANDN = 18%; M in FORN = 17%

- If it's not the default insertion of M, what is the source of it?

- Willer-Gold et al. (2016) propose a set of resolution rules:

  (16)   a.   MANDF = M; FANDM = M
          b.   MANDN = N; NANDM = N
          c.   FANDN = N; NANDF = N

- We agree with Willer-Gold et al. (2016) that resolution rules are necessary, however, the disjunction data led us to a different set of resolution rules where mismatching values are all resolved to M:

  (17)   a.   MORF = M; FORM = M
          b.   MORN = M; NORM = M
          c.   FORN = M; NORF = M

- The significant presence of M in FORN amd FANDN is accounted for.

- Given the low percentage of HCA in general, the significant presence of M in MORF (46%) and MORN (39%) can also be accounted for.

- The existence of RES shows that clausal ellipsis cannot be the **only** structure for disjunction. Disjunction of NPs must be an option.

- It also shows that gender RES cannot be only for conjunction.

(18)   Willer-Gold et al. 2016, (10)

    a.   MandF = M; FandM = M

    b.   MandN = N; NandM = N

    c.   FandN = N; NandF = N

    d.   insertion of default M

(19)   Current proposal

    a.   MorF = M; ForM = M

    b.   MorN = M; NorM = M

    c.   ForN = M; NorF = M

    d.   no insertion of default M

It is not ideal to have two distinct sets of feature resolution rules for two coordinators.

Argument against (18) and in favor of (19):

- (18) is motivated by "the lower rate of M overall" with postverbal subjects ((20b)) than preverbal subjects (20a) (Willer-Gold et al. 2016, p. 215)

    (20)   a. $[NP_1$ and $NP_2]$ Part $(M\uparrow)$ b.   Part $[NP_1$ and $NP_2]$ $(M\downarrow)$

               (M = DEF + RES)   (M = DEF only)

- They propose that the resolution is unavailable with postverbal subjects (20b), so M loses one source, hence the decrease.

- But

    (21)   a. $[N_1$ and $F_2]$ Part $(M\uparrow)$ b.   Part $[N_1$ and $F_2]$ $(M\downarrow)$

               (M = DEF only)   (M = DEF only)

- The decrease of M is unaccounted for by (18).

- Assuming that resolution is blocked in post-verbal subjects, (19) (applied to conjunction) can account for the decrease of M in all conditions.

(18) Willer-Gold et al. 2016, (10)

    a. MANDF = M; FANDM = M

    b. MANDN = N; NANDM = N

    c. FANDN = N; NANDF = N

    d. insertion of default M

(19) Current proposal

    a. MORF = M; FORM = M

    b. MORN = M; NORM = M

    c. FORN = M; NORF = M

    d. no insertion of default M

Argument in favor of (18) and against (19):

- Willer-Gold et al. (2016) observe that N is more frequent than F when they are the first or the second conjunct.

	CCA		HCA	
N	45%	53%	8%	18%
F	25%	36%	3%	11%
N-F	20%	17%	5%	7%

- However, when only looking at Slovenian, the differences are reduced. Admittedly, N is always numerically higher than F.

	CCA		HCA	
N	40%	68%	6%	19%
F	35%	51%	2%	12%
N-F	5%	17%	4%	7%

- Taking stock:

	(18)	(19)
the lack of M in FF/NN	no	yes
decrease of M in postverbal subjects	no	yes
disjunction data	no	yes
the numerical difference between N and F	yes	no

Summary

Empirical findings:

- CCA is observed in disjunction across the board;
- HCA is only observed in one condition: F in FORN. The decrease correlates with the increased CCA.
- Focusing on the unambiguous cases of each agreement strategy: disjunction shows more CCA, less HCA and RES than conjunction.

Combining the experimental data and a closer look at the conjunction data, we propose:

1. No default insertion of M to the AND or OR head in Slovenian.
2. Feature mismatches are resolved to M, contra Willer-Gold et al. 2016.
3. Ellipsis cannot be the only structure of sentences with disjunctive subjects, given the existence of RES.
4. RES cannot be only for conjunction.

Possible next steps:

1. Test the missing condition: NORF
2. Use acceptability judgment tasks to test esp. the acceptability of HCA.
3. If ellipsis is blocked, what would the ratio look like?
4. Ongoing: number agreement with exclusive disjunction.
5. Ultimately: WHY does exclusive disjunction show more CCA than conjunction? This pattern is attested across languages, beyond Slavic, possibly universal.

Workshop on Agreement in Multivaluation Constructions
Frankfurt am Main, Germany.
May 19-20, 2020

Invited Speakers:
Barbara Citko (University of Washington)
Paula Fenger (University of Connecticut/Harvard University)
Caroline Heycock (University of Edinburgh)
Franc Marušič (University of Nova Gorica)
Alan Munn (Michigan State University)
Jana Willer-Gold (University College London)

Now accepting abstracts.
Deadline: November 15, 2020.

Thank you!

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