

Person and Number Agreement with Exclusive Disjunction in German

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Why disjunction agreement?

- How phi features interact?
- 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); Flouridi & Kazana (2009); Koenen (2010); Kazana (2011); Ivlieva (2013); Keung (2017); Keung & Staub (2018); Foppolo & Staub (2020)

Why agreement with *exclusive* disjunction?

- We know fairly a lot about conjunction agreement.
 - (4) Two books and a notebook **were**/***was** left on the bus.
- In a language, disjunction usually allows agreement patterns observed in conjunction
 - (5) Two books or a notebook **were**/**was** left on the bus.
- The overlap could result from the overlap between the conjunction interpretation and the inclusive disjunction.
 - (6) *John or Mary are tall enough.* is true even when John *and* Mary are both tall enough.
- Is the plural under disjunction made possible by the inclusive conjunction?

Why person and number in German?

- German is not as impoverished in agreement paradigms as English and not as complex as Slavic/Romance languages.
- There is idiosyncrasy in German conjunction agreement. Will disjunction agreement demonstrates that as well?
- Do person and number interact? If yes, in what ways?
- This study was done when I was working in Germany.

Strategy 1: Resolved agreement

	SG	PL
1	bin	sind
2	bist	seid
3	ist	sind

Table 1: German copula paradigm

- (7) a. Ich und du sind eingeladen.
1SG and 2SG be.1/3PL invited
- b. Ich und mein Freund sind eingeladen.
1SG and my friend be.1/3PL invited
- c. Du und dein Freund seid/sind eingeladen.
2SG and your friend be.2PL/be.3PL invited

- We can see that German conjunction agreement follow the resolution rules:

- (8) Number resolution rules
- [SG] and [SG] = [PL]
 - [PL] and [PL] = [PL]
 - [SG] and [PL] = [PL]
 - [PL] and [SG] = [PL]
- (9) Person resolution rules
- [1] and [2] = [1]
 - [1] and [3] = [1]
 - [2] and [3] = [2/3]
(see Driemel 2018 for an account)
 - partial hierarchy: $1 > 2 \geq 3$

- I will label agreement following these resolution rules as RES.
- Disjunction agreement has also been reported to allow RES.

What about exclusive disjunction? Survey 1

- Task: list all the acceptable forms:
 - (11) Entweder DP1 oder DP2 _____ eingeladen.
 either DP1 or DP2 _____ invited 'Either DP1 or DP2 is invited.'
- Survey 1 includes subjects with *matching person and number* as well as subjects with *matching person and mismatching number*; 6 participants except for 2PL 2SG (n=7)
- Forms that are not predicted by RES or CCA are in **red**.

	1SG 1SG	2SG 2SG	3SG 3SG	1PL 1PL	2PL 2PL	3PL 3PL
RES	n/a	seid	sind	sind	seid	sind
CCA	n/a	bist	ist	sind	seid	sind
Results	n/a	bist*6	sind*5	sind*6	seid*6	sind*6
		seid*2	ist*4			
		sind*2				
	1SG 1PL	1PL 1SG	2SG 2PL	2PL 2SG (7)	3SG 3PL	3PL 3SG
RES	sind	sind	seid	seid	sind	sind
CCA	sind	bin	seid	bist	sind	ist
Results	sind*6	sind*4	seid*6	seid*7	sind*6	sind*5
		bin*2	sind*1	bist*4		ist*2
		ist*1	ist*1	sind*1		

- Predicted forms from both RES and CCA are attested in disjunction agreement.

What about disjunction agreement? Survey 2

- Survey 2 looks at subjects with *matching number and mismatching person* as well as *mismatching number and person*.
- same task, n = 12 (except for 3PL 2PL: n = 13)

	1SG 2SG	1SG 3SG	2SG 1SG	2SG 3SG	3SG 1SG	3SG 2SG
RES	sind	sind	sind	sind/seid	sind	sind/seid
CCA	bist	ist	bin	ist	bin	bist
Results	sind*10	sind*9	sind*8	sind*6	sind*9	bist*6
	bist*6	ist*6	bin*4	ist*6	bin*4	seid*4
			N/A*2	seid*2	N/A*1	sind*4
			bist*1		ist*1	
	1PL 2PL	1PL 3PL	2PL 1PL	2PL 3PL	3PL 1PL	3PL 2PL
RES	sind	sind	sind	sind/seid	sind	sind/seid
CCA	seid	sind	sind	sind	sind	seid
Results	seid *11	sind*12	sind*10	seid*7	sind*12	seid*12
	sind*4		seid*1	sind*7		bin*1
			N/A*1			

Table 2: Number mismatch

- Again, both RES and CCA are attested.
- RES under disjunction works the same way as conjunction including the language specific idiosyncrasy: 2+3 = 2/3

What about disjunction agreement? Survey 2 cont.

- Table 3 shows conditions with *mismatching number and gender*. n = 12

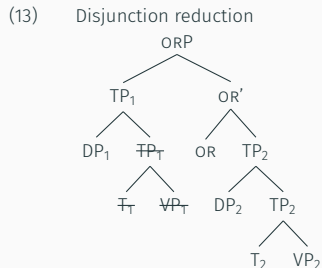
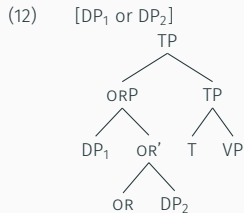
	1SG 2PL	1SG 3PL	1PL 2SG	1PL 3SG	2SG 1PL	2SG 3PL
RES	sind	sind	sind	sind	sind	sind/seid
CCA	seid	sind	bist	ist	sind	sind
Results	seid *11	sind*12	sind*8	sind*8	sind*11	sind*10
	sind*4		bist*7	ist*7	N/A*1	seid*1
	2PL 1SG	2PL 3SG	3SG 1PL	3SG 2PL	3PL 1SG	3PL 2SG
RES	sind	sind/seid	sind	sind/seid	sind	sind/seid
CCA	bin	ist	sind	seid	bin	bist
Results	sind*6	seid*7	sind*12	seid *12	sind*12	sind*6
	bin*4	ist*6		sind*1	bin*2	seid*5
	seid*3seid*3	sind*3				bist*4
	N/A*1					

Table 3: Person and number mismatch

- RES and CCA would cover all the cells, except for **one**.
- Person and number features behave the same way in each sentence, either both show RES or both show CCA.

What we can learn from the results: structure(s)

- At least two possible structures have been proposed for conjunction: one where two DPs form a constituent, and one involving conjunction reduction i.e. ellipsis. Same structures can be assumed for disjunction:



- It's been argued that (12) can generate both CCA and RES while (13) can only generate CCA.
- The existence of both RES and CCA argues that either both structures are possible, or at least (12) is possible, the jury is still out on (13).
- (13) cannot be the only available structure. (see also Arsenijević et al. 2019)

What we can learn from the results: RES

Feature resolution is possible even under exclusive disjunction for all the feature combinations. The inclusive interpretation cannot be the precondition for RES.

- (14) a. Entweder ich oder du sind eingeladen.
either 1SG or 2SG be.1/3PL invited
'Either I or you are invited.' (sind * 10, n=12)
- b. Entweder du oder ich sind eingeladen.
either 2SG or 1SG be.1/3PL invited
'Either you or I are invited.' (sind * 8, n=12)
- (15) a. Entweder ich oder die Frau sind eingeladen.
either 1SG or the woman be.1/3PL invited
'Either I or the woman are invited.' (sind * 9, n=12)
- b. Entweder die Frau oder ich sind eingeladen.
either the woman or 1SG be.1/3PL invited
'Either I or the woman are invited.' (sind * 9, n=12)

Both conjunction and disjunction observe the $2+3=2/3$ rule.

- (16) a. Entweder du oder die Frau sind/seid eingeladen.
either 2SG or the woman.3SG be.1/3PL/be.2PL invited
'Either you or the woman are invited.' (sind * 6, seid * 2, n=12)
- b. Entweder die Frau oder du sind/seid eingeladen.
either the woman.3SG or 2SG be.1/3PL/be.2PL invited
'Either you or the woman are invited.' (sind * 4, seid * 4, n=12)

What we can learn from the results: CCA

CCA is also possible for all the feature combinations, even without feature mismatch.

- (17) a. Entweder der Junge oder die Frau ist eingeladen.
either the boy or the woman be.3SG invited
'Either the boy or the woman is invited.' (ist * 4, n=6)
- b. Entweder ich oder du bist eingeladen.
either 1SG or 2SG be.2SG invited
'Either I or you are invited.' (bist * 6, n=12)

It's possible that the CCA under disjunction results from ellipsis.

- (18) Entweder ich ~~bin eingeladen~~ oder du bist eingeladen.

Ellipsis in general allows sloppy identity + morphological mismatch (SIMM) as in (19).

(20) shows that disjunction with CCA doesn't allow SIMM,

- (19) Frank hat sein bestes gegeben, und Mia ~~hat~~ auch ~~ihre~~ Bestes
Frank₁ have.3SG his₁.MSG best do, and Mary₂ have.3SG also her₂.MSG best
~~gegeben~~.
do
'Frank has done his best, and Mary too.' (n=2)
- (20) *Entweder Sally oder Frank hat sein bestes gegeben.
either Sally or Frank have.3SG his.MSG best do
'Either Sally or Frank did their best.' (n=2)

Ideally, we should show that **backward** ellipsis in German allows SIMM. But backward clausal ellipsis in German is hard to come by. So ellipsis is still possible for CCA with disjunction.

- The strategies that number and person use must be the same in one sentence: either both RES or both CCA. Mismatch between strategies is **not** allowed:
(21) a. Entweder du oder die Frau bist eingeladen.
either 2SG or the woman.3SG be.2SG invited
person RES, number CCA (bist * 1)
b. Entweder ich oder du seid eingeladen.
either 1SG or 2SG be.[2PL] invited
number RES, person CCA (seid * 0)
- This is compatible with the hypothesis that RES and CCA involve different structures, though that's not the only possible account.

A third option? Survey 3

Remember there were 3 participants who chose $seid_{2PL}$ for 2PL OR 1SG? I wanted to see if that's real.

14 participants from Vienna on 7 combinations.

n=14	1SG OR 2SG	2PL OR 1SG	2PL OR 1PL	1PL OR 2PL	2SG OR 3SG	3PL OR 2SG	2PL OR 3SG
RES	sind	sind	sind	sind	sind/seid	sind/seid	sind/seid
CCA	bist	bin	sind	seid	ist	bist	ist
Results	bist*11	bin*10	sind*14	seid*12	ist*9	sind*8	seid*10
	sind*9	sind*8		sind*6	seid*5	bist*7	ist*7
	bin*1	seid*2			sind*4	seid*5	sind*2
	ist*1				bist*1		

Table 4: Survey 3 (n=14)

The third option

- Table 5 combines Survey 2 and 3, bringing the n to 26.

n=26	1SG 2SG	2PL 1SG	2PL 1PL	1PL 2PL	2SG 3SG	3PL 2SG	2PL 3SG
RES	sind	sind	sind	sind	sind/seid	sind/seid	sind/seid
CCA	bist	bin	sind	seid	ist	bist	ist
Results	sind*19	bin*14	sind*24	seid*23	ist*15	sind*14	seid*17
	bist*17	sind*14	seid*1	sind*10	sind*10	bist*11	ist*13
	bin*1	seid*5	n/a*1		seid*7	seid*10	sind*5
	ist*1	n/a*1			bist*1		

Table 5: Survey 2 and 3, n=26

- seid* in 2PL OR 1SG : 5 out of 34 responses from 26 participants.
- 14.7% of the responses and 19.23% of the participants.
- Other unpredicted forms: 2.6% - 3.8% of the responses and 3.84% of the participants.
- If this is indeed a real option, what does it mean? (If you are not convinced, ignore the next four slides.)

The third option

- (22) a. Entweder ihr_{2PL} oder ich_{1SG} $sind_{1PL}$ eingeladen. (RES)
b. Entweder ihr_{2PL} oder ich_{1SG} bin_{1SG} eingeladen. (CCA)
c. Entweder ihr_{2PL} oder ich_{1SG} $seid_{2PL}$ eingeladen. (third option)
either 2PL or 1SG be.2PL invited
'Either you.pl or I are invited.'
- Ellipsis cannot generate (22c).
 - Highest/first conjunct agreement (HCA) can, but makes wrong predictions:
- (23) a. Either 1SG or 2SG V_{1SG}^*1 invited. (n=26)
b. Either 2PL or 1PL V_{2PL}^*1 invited. (n=26)
c. Either 2SG or 3SG V_{2SG}^*1 invited. (n=26)
d. Either 1SG or 2PL V_{1SG}^*0 invited. (n=12)
- It seems to be agreement with the first conjunct **only when** the first conjunct is PL and the second conjunct is SG.

The third option in Slovenian

A similar pattern is found in Slovenian conjunction agreement (Marušič et al. 2015).

- When both conjuncts are PL:
 - Number: plural; gender: RES to M, HCA, or CCA.
(24) FPL and NPL $V_{PL,M/F/N}$
- When conjuncts mismatch in number: one PL one SG
 - Option 1 – number: RES to PL, gender: RES to M;
(25) FPL and NSG $V_{M,PL}$
 - **Option 2** – number: RES to PL, gender goes with the PL conjunct
(26) FPL and NSG $V_{F,PL}$
 - **but not** – number RES to PL, gender goes with the SG conjunct
(27) *FPL and NSG $V_{N,PL}$
- gender depends on number – Consistency Principle in Slovenian:
 - $C1_{[NUM:A,GEN:X]}$ and $C2_{[NUM:B,GEN:Y]} T_{[NUM:A \rightarrow GEN:X]}$
 - $C1_{[NUM:A,GEN:X]}$ and $C2_{[NUM:B,GEN:Y]} T_{[NUM:B \rightarrow GEN:Y]}$

Back to the third option in German

- (28) a. Entweder ihr_{2PL} oder ich_{1SG} $sind_{1PL}$ eingeladen. (RES)
b. Entweder ihr_{2PL} oder ich_{1SG} bin_{1SG} eingeladen. (CCA)
c. Entweder ihr_{2PL} oder ich_{1SG} $seid_{2PL}$ eingeladen. (third option)
either 2PL or 1SG be.2PL invited
'Either you.pl or I are invited.'

German disjunction:

- ① number and person: RES;
- ② or: number and person: CCA;
- ③ or: number: RES or CCA to x, person goes with the DP with the x value
 - but only if there is a number mismatch: *2PL or 1PL V_{2PL}
- Person depends on number – Consistency Principle in German:
 - $C1_{[NUM:A,PER:X]}$ and $C2_{[NUM:B,PER:Y]}$ $T_{[NUM:A \rightarrow PER:X]}$ ($A \neq B$)
 - $C1_{[NUM:A,PER:X]}$ and $C2_{[NUM:B,PER:Y]}$ $T_{[NUM:B \rightarrow PER:Y]}$ ($A \neq B$, subset of CCA)

- Why only 2PL OR 1SG? In fact, all the combinations that can show the third option in German did:

(29) 1SG OR 1PL = 1PL (CCA)
1SG OR 2PL = 2PL (CCA)
1SG OR 3PL = 3PL (CCA)
2SG OR 2PL = 2PL (CCA)
2SG OR 1PL = 1PL (CCA)
2SG OR 3PL = 3PL (CCA)
3SG OR 1PL = 1PL (CCA)
3SG OR 2PL = 2PL (CCA)
3SG OR 3PL = 3PL (CCA)

(30) 1PL OR 1SG = 1PL (RES)
1PL OR 2SG = 1PL (RES)
1PL OR 3SG = 1PL (RES)
2PL OR 2SG = 2PL (RES)
2PL OR 1SG = 2PL (unambiguous)
2PL OR 3SG = 2PL (RES)
3PL OR 1SG = 3PL (syncretic)
3PL OR 2SG = 3PL (RES)
3PL OR 3SG = 3PL (RES)

Summary

What we know:

- Person and number agreement with exclusive disjunction in German allow resolved agreement following the same rules as the conjunction agreement.
 - Disjunction agreement cannot be entirely reduced to ellipsis.
 - RES is not made possible by the inclusive reading.
- Disjunction agreement additionally allow CCA, even without feature mismatch.
- Number and person agreement can be separated (number \gg person), if the two conjuncts differ in number,

What we don't know:

- Why does disjunction make CCA possible?
- Whether the third option is real (It's 5 speakers out of 26)
 - more participants, with more lexical variations.
 - other languages with less syncretism and more strict resolution rules. (Icelandic and Slovenian come to mind.)
- What makes the third option possible and how wide spread it is?
- Is Disjunction agreement part of grammar or not? How would we tell?
- How did children learn this? Or did they learn this?

Marušič, Franc Lanko and Zheng Shen. 2020. Gender Agreement with
Exclusive Disjunction in Slovenian.

Sept. 24, 2020 — 6pm UTC+9

The thirteenth conference on Syntax, Phonology, and Language Analysis
(SinFonIJA 13)

<http://www.nytud.hu/sinfonija13/index.html>

The research is partially supported by
the DFG grant *Toward a General Theory of Multi-Valuation*.

Workshop on Agreement in Multivaluation Constructions

Frankfurt am Main, Germany.

May 19-20, 2021

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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: Nov. 15, 2020

Thank you!

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