

# Disjunctions agree differently

Anke Himmelreich\*

## Abstract

In a recent cross-linguistic study, Himmelreich et al. (2024) found that conjunctions are more likely to show Resolved Agreement than disjunctions when agreeing with the finite verb as the subject. In this paper, I take this observation at face value and show that the asymmetry between conjoined and disjointed subjects can be derived by adopting the idea in Himmelreich & Hartmann (2023) that conjunctions can resolve for number, while disjunctions cannot. This ultimately leads to a higher number of configurations where disjuncts provide feature values for the verb than it is the case for conjuncts.

## 1. Introduction

This paper is meant to be an afterthought to a collection of recent research results on agreement with coordination, conducted at the Goethe University Frankfurt in the last few years (Himmelreich et al. 2021, Himmelreich & Hartmann 2023, Himmelreich et al. 2024). In our research, we have gathered a larger number of data from different languages regarding the agreement markers that can be found on verbs when they agree with a conjunction or disjunction. As in our previous studies, I will adopt the terminology proposed by Haspelmath (2004, 2007) and use the term *coordination* as a hypernym for conjunction and disjunction. Coordinations are syntactic constructions where two phrases of equal status are connected by a *coordinator* of the meaning “and” or “or”. I continue to refer to these parts generally as the *coordinands*,

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\*This work is inspired by my great time in Leipzig when I worked with Gereon as my supervisor and Leipzig was busy ordering grammatical operations. Working with Gereon as an undergrad student, a PhD candidate, and a postdoc for altogether 15 years has truly shaped my view of linguistics. Thank you Gereon for being a fantastic teacher. I would further like to thank Katharina Hartmann, Melissa Jeckel, and Johannes Mursell for collaborating with me on the projects that this paper builds on as well as Fabian Heck for helpful comments and suggestions. Any remaining errors are my own.

while I use the terms *conjunct* and *disjunct* when talking specifically about the parts of conjunctions or disjunctions respectively.

The topic of agreement with coordinations has received a large amount of attention in the past. Starting with empirical observations as early as in Koutsoudas (1968), Givón (1970, 1972), Vanek (1970), over the famous work done by Corbett (1983a,b) on agreement resolution as well as Aoun et al.'s (1994) discussion of *First Conjunct Agreement* in Arabic, various theories about the distribution of agreement variation have been proposed. I refer to Nevins & Weisser (2019) for an overview and references, particularly on theories of *Closest Conjunct Agreement*. But also agreement with disjunctions has already been investigated quite thoroughly. Some noteworthy studies include Peterson (1986), Sobin (1997), Flouraki & Kazana (2009), Smith et al. (2018), Fuß (2018), Felser & Jessen (2021), Marušič & Shen (2021), Foppolo & Staub (2020), Vogel (2023).

This paper is concerned with the distribution of two patterns we can find for agreement with coordinations: *Resolved Agreement* (RES) – the agreement with the entire coordination – and *Closest Coordinand Agreement* (CCA)<sup>1</sup> – the agreement with the coordinand which is linearly closest to the verb. The central empirical point of the discussion below is the finding in Himmelreich et al. (2024) that disjunctions are cross-linguistically significantly more likely to show the pattern of CCA than conjunctions (see a similar finding in Marušič & Shen 2021 for Slovenian specifically).

In this paper, I propose that the higher frequency of CCA with disjunctions can be derived from the assumption that disjunctions do resolve feature conflicts differently than conjunctions. Concretely, disjunctions do not form pluralities in contrast to conjunctions (see Schmitt 2013). The gist of the analysis is that disjunctions do not have a proper number feature. This affects verbal agreement: The verb can fully agree with conjunctions, but not with disjunctions and therefore targets the disjuncts in all cases. In configurations where agreement with the disjuncts is successful, we get CCA. As for conjunctions, the access to the conjuncts is more limited, given that a conjunction has a proper number feature and therefore provides all the features necessary for the verb.<sup>2</sup>

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<sup>1</sup>Closest Coordinand Agreement is used as a hypernym for the familiar *Closest Conjunct Agreement* in the case of conjunctions and *Closest Disjunct Agreement* in the case of disjunctions.

<sup>2</sup>This paper does not discuss to what extent language-specific differences in the syntax play a role for the agreement patterns. It is likely that different languages with flexible word orders

The paper is structured as follows: Section 2 summarizes the study of Himmelreich et al. (2024) and introduces the two patterns of agreement under discussion. Afterwards, in section 3, I develop an analysis based on the assumption that feature resolution works differently for disjunctions. Section 4 concludes.

## 2. Disjunctions agree differently

Himmelreich et al. (2021) collected data on verbal agreement with coordinated subjects from 27 languages in an online questionnaire with linguistically-informed native speakers.<sup>3</sup> Altogether they collected 154 datapoints. Each datapoint consists of an agreement pattern for a specific combination of coordination type, agreement feature, and word order for a language. The datapoints can be understood as summaries of the patterns, which are generalized from the collected sentences and judgments in the database.

Based on this, Himmelreich et al. (2024) distinguish a number of different strategies how a verb can agree with a coordinated subject. By far, the two most common strategies that languages use according to their findings are Resolved Agreement (present in 91% of all data) and Closest Coordinand Agreement (present in 34% of all data). Closest Coordinand Agreement means that the verb agrees with the linearly closest part of a coordination. An example of this is given in (1) from European Spanish disjunction, where the verb *correr* ('run') can agree with the 3SG pronoun *él* or with the 2SG pronoun *tu*, depending on which one is closer to the verb.<sup>4</sup>

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derive SV or VS orders differently. For example, in English, the subject moves to a preverbal position below the C head in matrix clauses, while in German – due to its V2 property – subjects have to move into the CP in order to precede the finite verb in C. Thus, specific details can vary between languages. The goal of this paper is to abstract away from such differences and to focus solely on the difference between conjoined and disjoined subjects, an issue orthogonal to the interaction of word order and agreement.

<sup>3</sup>All data are available on <https://www.multivaluation.de/database.php>

<sup>4</sup>In the language examples in this paper, the agreeing verbal form is in boldface. The agreement controller is underlined: If the coordinator is underlined, the example shows Resolved Agreement; if a coordinand is underlined, it shows CCA.

- (1) a. [ Tu o él ] **corre**.  
 you.SG or he run.3SG  
 ‘You or he runs.’  
 (Himmelreich et al. 2021:Spanish (European), (90))
- b. **Corres** [ tu o él ].  
 run.2SG you.SG or he  
 ‘You or he runs.’  
 (Himmelreich et al. 2021:Spanish (European), (113))

In contrast, Resolved Agreement means that the verb agrees with the entire coordination, the features of which are computed from the features of all coordinands. The most common example for this is plural agreement with a conjunction that consists of two singular conjuncts, as shown in (2) from German.

- (2) [ Der Junge und der Mann ] **rennen**.  
 the.SG boy.SG and the.SG man.SG run.3PL  
 ‘The boy and the man run.’  
 (Himmelreich et al. 2021:German (Standard), (1))

Generally, the rules under which Resolved Agreement is computed, can be summarized as in (3) (Himmelreich et al. 2024:80, based on Corbett 1983b:177ff.).

- (3) *Feature resolution for coordinations*
- |   |            |
|---|------------|
| a. NUMBER:                              | b. PERSON: |
| SG + SG = DUAL/PL                       | 1 > 2 > 3  |
| SG + NON-SG = PL                        | c. GENDER: |
| NON-SG + NON-SG = PL <i>non-</i>        | MASC > FEM |
| <i>sg</i> ∈ { <i>dual</i> , <i>pl</i> } |            |

Number reflects the sum of the number of the coordinands (see also Harbour 2020), whereas person and gender resolve to the highest value given in the coordinands according to the hierarchies in (3b,c).

Himmelreich et al. (2024) compare the frequency of Resolved Agreement and Closest Coordinand Agreement in different constructions. Many of the datapoints in Himmelreich et al. (2021) show mixed patterns, which are due to inter- or intraspeaker variation or which are due to specific combinations of feature values requiring a certain pattern compared to other combinations.

But there are also cases where Resolved Agreement and Closest Coordinand Agreement occur across all feature combinations. Pure Resolved Agreement makes out 59% of all data, while pure Closest Coordinand Agreement amounts to 6.5% of all data. When comparing the distribution among coordination types, Himmelreich et al. (2024) found that, while less frequent in total, CCA has a statistically significantly higher tendency to occur with disjointed subjects than with conjoined subjects (see also Marušič & Shen 2021 for the same findings in Slovenian). This is shown in table 1.

	<b>conjunction</b>	<b>disjunction</b>
RES	58 (73.42%)	33 (44.00%)
CCA	3 (3.80%)	7 (9.33%)

Table 1: Frequencies of RES and CCA with conjunctions and with disjunctions

Table 1 shows that out of the 154 datapoints in Himmelreich et al. (2021), 58 show Resolved Agreement with a conjunction, which equals 73.42% of all 79 conjunction datapoints, but only 33 with a disjunction, which equals 44% of the 75 datapoints for disjunction. As for CCA, 3 conjunction datapoints show CCA, that is 3.8%, but 7 disjunction datapoints show CCA, which equals 9.33%.

To exemplify this tendency, compare the Spanish disjunction data in (1) with the conjunction data in (4). While CCA is possible with disjunctions (1), it is out with conjunctions (4), where only the Resolved Agreement 2PL is possible.<sup>5</sup>

- (4) a. [ Tu y él ] **corréis**/\*corre.  
           you.SG and he run.2PL/run.3SG  
           ‘You and he runs.’  
           (Himmelreich et al. 2021:Spanish (European), (43)/(42))
- b. **Corréis**/\*corres [ tu y él ].  
       run.2PL/run.2SG you and he

<sup>5</sup>Himmelreich et al. (2024) further found that word order is a statistically significant factor for agreement with coordinations: If the verb precedes the coordination, CCA occurs more frequently than Resolved Agreement. The third factor, Himmelreich et al. (2024) investigate is whether the type of  $\phi$ -feature plays a role. They were not able to find a difference between number, person, and gender, when it comes to Resolved vs. Closest Coordinand Agreement.

‘You and he runs.’

(Himmelreich et al. 2021:Spanish (European), (67)/(65))

Looking at the data in Himmelreich et al. (2021) more closely, we can further observe that there are no languages that have pure Resolved Agreement with disjunctions, but CCA with conjunctions. Given this, we can formulate the generalization in (5).

(5) *Generalizations*

- a. Disjunctions show Closest Coordinand Agreement more frequently than conjunctions.
- b. If a language shows Resolved Agreement with disjunctions, it also shows Resolved Agreement with conjunctions.

In the rest of this paper, I would like to propose an analysis based on Himmelreich & Hartmann’s (2023) proposal that the difference between conjunctions and disjunctions with respect to agreement stems from the plural properties of conjunctions, which are absent in disjunctions.

### 3. Why disjunctions agree differently

#### 3.1. A difference between conjunctions and disjunctions

Himmelreich & Hartmann (2023) found that disjoined subjects consisting of two singular noun phrases can either cause singular agreement or plural agreement on the finite verb in German, see (6b). This is different from simple conjunctions in German that are incompatible with singular agreement, see (6a).

(6) *German* (Himmelreich & Hartmann 2023:2, (1))

- a. *Conjunctions*
  - (i) [ Das Regal und der Tisch ] **werden** morgen  
the shelf.SG and the table.SG will.be.PL tomorrow  
geliefert.  
delivered  
‘The shelf and the tables will be delivered tomorrow.’

- (ii) [ Das Regal und der Tisch ] \***wird** morgen  
the shelf.SG and the table.SG will.be.SG tomorrow  
geliefert.  
delivered  
‘The shelf and the tables will be delivered tomorrow.’
- b. *Disjunctions*
- (i) [ Das Regal oder der Tisch ] **werden** morgen  
the shelf.SG or the table.SG will.be.PL tomorrow  
geliefert.  
delivered  
‘The shelf or the tables will be delivered tomorrow.’
- (ii) [ Das Regal oder der Tisch ] **wird** morgen  
the shelf.SG or the table.SG will.be.SG tomorrow  
geliefert.  
delivered  
‘The shelf or the tables will be delivered tomorrow.’

Himmelreich & Hartmann (2023) propose that the difference in agreement is not the result of a structural difference between conjunctions and disjunctions – for example phrasal coordination vs. coordination reduction – but that the difference has to do with the features on the coordinator. They show that a conjunctive *and* has the ability to form pluralities (see Schmitt 2013, Haslinger et al. 2019 among others), whereas disjunctions are not able to do this (Himmelreich & Hartmann 2023:18–21). But they propose that both conjunctions and disjunctions share the property to combine members of the same set of alternatives.

To represent these properties, Himmelreich & Hartmann (2023) suggest that there are two types of  $\phi$ -feature sets, one representing the  $\phi$ -features of the entities, called  $\phi_{\text{ind(ividual)}}$  and one representing the alternatives, called  $\phi_{\text{alt(ernative)}}$ .  $\phi_{\text{ind}}$ -features represent a plural entity if the number feature bears the value plural. It is a singular entity if the number feature is singular.  $\phi_{\text{alt}}$ -features that contain a plural number feature represent sets of alternatives.

Following Himmelreich & Hartmann (2023), conjunctions have both  $\phi_{\text{ind}}$  and  $\phi_{\text{alt}}$ -feature sets, while disjunctions only have the  $\phi_{\text{alt}}$ -set, which ultimately means that disjunctions cannot form a plural entity due to the lack of  $\phi_{\text{ind}}$ . This difference is schematized in (7). Note that non-coordinated DPs (meaning the coordinands in (7)) are not assumed to represent alternatives.

(7) *Conjunctions vs. disjunctions* (based on Himmelreich & Hartmann 2023:27, (30))

- a. *Conjunction: Alternative number + individual number*  
 $[DP_{[\phi_{ind}:PL]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$
- b. *Disjunction: Alternative number + no individual number*  
 $[DP_{[\phi_{ind}:PL]} \text{ or } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL]}$

In the following, I will build on this idea and develop an analysis that derives the higher frequency of CCA with disjunctions for languages with a simple binary number distinction.<sup>6</sup>

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<sup>6</sup>There are only very few data for agreement with coordinations from languages that have more number values. For conjunctions, it seems fairly straightforward that the number feature represents the sum of the parts (e.g. two singulars conjoined equal a dual, and any other combination a plural, see Harbour 2020 for more details), but the picture is less clear for disjunctions.

Himmelreich et al. (2021) have data from Modern Standard Arabic – the only language in their database that has a dual – that show that number agreement for disjunctions behaves the same as for conjunctions, see (8).

- (8) a. [ alwaladu w-arrajulu ] **yarkudʕa:ni**.  
 boy.SG and-man.SG run.3DU  
 ‘The boy and the man run.’ (Himmelreich et al. 2021:Arabic (Modern Standard), (9))
- b. [ alwaladu ʔaw arrajulu ] **yarkudʕa:ni**.  
 boy.SG or man.SG run.3DU  
 ‘The boy or the man run.’ (Himmelreich et al. 2021:Arabic (Modern Standard), (17))

Himmelreich & Hartmann (2023), on the other hand, provide data from Slovenian that show that dual agreement with SG-SG disjunctions is more marked than for conjunctions.

- (9) a. [ Grmovje ali drevo ] **bo posajeno / ʔbosta posajeni**  
 shrubs.N.SG or tree.N.SG will.SG planted.N.SG / will.DU planted.N.DU  
 za hišo.  
 behind house  
 ‘A shrub or a tree will be planted behind the house.’ (Slovenian, Himmelreich & Hartmann 2023:35, (51))
- b. [ Grmovje in drevo ] \***bo posajeno / bosta posajeni**  
 shrubs.N.SG and tree.N.SG will.SG planted.N.SG / will.DU planted.N.DU  
 za hišo.  
 behind house  
 ‘A shrub and a tree will be planted behind the house.’ (Slovenian, Himmelreich & Hartmann 2023:35, (52))



### 3.2. Assumptions

The analysis developed below follows the main idea of Marušič et al. (2015), namely that  $\phi$ -Agree is possible before or after linearization. The account is based on Arregi & Nevins's (2012) idea of a split Agree operation: Agree-Link applies in the syntax and creates dependencies between the probe and the goal. Agree-Copy applies post-syntactically before or after linearization and copies the feature values from the goal onto the probe. For us, the only relevant relationship is Agree-Copy, for which I use the term Agree simplifyingly. That means that all the relevant operations in this paper are post-syntactic operations.<sup>7</sup>

Furthermore, following Himmelreich & Hartmann (2023), I suggest that the verb targets both  $\phi_{\text{ind}}$  and  $\phi_{\text{alt}}$  in separate operations. This means that there is not only a binary distinction between the orders of operations, but that we can order the three relevant operations in six different ways, as listed in (10).

(10) *Orders*

- |    |               |                 |                 |
|----|---------------|-----------------|-----------------|
| a. | ALT-Agree     | < IND-Agree     | < linearization |
| b. | IND-Agree     | < ALT-Agree     | < linearization |
| c. | linearization | < ALT-Agree     | < IND-Agree     |
| d. | linearization | < IND-Agree     | < ALT-Agree     |
| e. | ALT-Agree     | < linearization | < IND-Agree     |
| f. | IND-Agree     | < linearization | < ALT-Agree     |

As for the feature values, I assume that number on  $\phi_{\text{alt}}$  is predefined as [PL] (cf. Himmelreich & Hartmann 2023).<sup>8</sup>

Regarding the accessibility of features, I assume that, before linearization, both the features on the coordination phrase as well as the features on the coordinands are in principle accessible to the verb. However, features on the coordination phrase are structurally closer to the verbal probe than the features

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Ultimately, more work on number agreement with disjunctions is needed to see whether number resolution is identical in disjunctions and conjunctions or whether there is a difference. I leave this issue to future research.

<sup>7</sup>Consequently, there is no direct interaction between (syntactic) word order related operations and agreement. See section 3.4 for a more detailed discussion of CCA and word order.

<sup>8</sup>To my knowledge, there are no data that show that person and gender resolve differently in disjunctions. I therefore assume that both features resolve under the same rules in (3) on  $\phi_{\text{ind}}$  and  $\phi_{\text{alt}}$ .

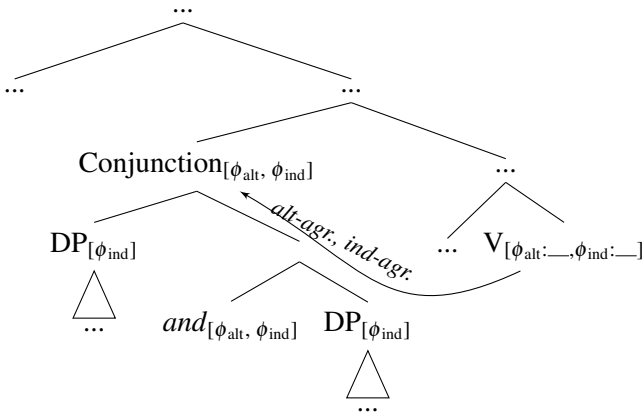
on the coordinands. That means that the A-over-A-principle (Chomsky 1964) holds.

Turning to the relative distance between the coordinands, I assume that they are equidistant to the verbal probe and discuss this assumption further below in section 3.4. After post-syntactic linearization, however, only the linearly closest  $\phi$ -features are accessible to the verbal probe (see Marušič et al. 2015).

Finally, I assume that once the verbal probe has  $\phi$ -feature values, it can only continue to collect matching  $\phi$ -features. For example, when the verbal  $\phi_{alt}$ -probe has already been valued by [PL], neither the  $\phi_{alt}$ -probe nor the  $\phi_{ind}$ -probe can receive a [SG] value.<sup>9</sup>

These assumptions derive an important difference between conjunctions and disjunctions. Before linearization, the verbal probe can only access the  $\phi$ -features of the conjunction, since it provides the verbal probe with both  $\phi_{ind}$  and  $\phi_{alt}$ . In contrast, disjunctions do not have  $\phi_{ind}$ , which is why the verbal probe can access the coordinands even before linearization. The difference is depicted in the abstract schemas in (11) and (12).<sup>10</sup>

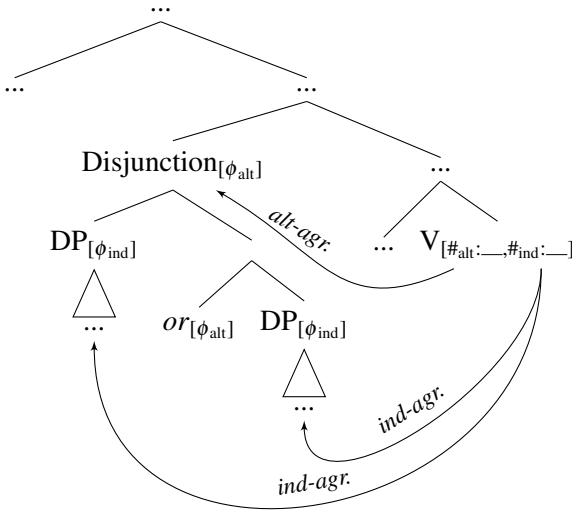
(11)



<sup>9</sup>This also means that there can be configurations where either of the two  $\phi$ -feature sets remains unvalued. I assume that this does not lead to a crash (cf. Preminger 2010, 2011, 2014), but that the missing feature value is doubled from the valued probe by default. In the derivations in section 3.3, however, I will not indicate this default valuation to avoid confusion.

<sup>10</sup>The structures in (11) and (12) follow the idea of an asymmetric structure for coordinations, cf. Munn (1993), Johannessen (1996, 1998). Note further that the structural details of verbal agreement do not matter for the purposes of this paper. This is why an abstract head V is assumed as the verbal probe that carries the unvalued  $\phi$ -features.

(12)



With this assumptions in place, we can derive the higher tendency for CCA with disjunctions.

### 3.3. Deriving the difference

In what follows, I demonstrate what happens under the six different orders of operations in (10). The derivations below distinguish two cases: (i) coordinations that consists of two singular DPs and (ii) coordinations that consist of a singular and a plural DP. Coordinations that only consist of plural phrases are trivial: They always result in plural agreement and do not allow for a distinction of Resolved Agreement and CCA. The  $\phi$ -feature configurations for these two cases are given in (13).<sup>11</sup>

- (13) a. *sg-sg-conjunction*:  
 $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:SG]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$
- b. *sg-pl-conjunction*:  
 $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$

<sup>11</sup>As mentioned in footnote 8, I assume that person and gender features resolve the same for  $\phi_{ind}$  and  $\phi_{alt}$ . I will therefore simplify the derivations and ignore person and gender.

- c. *sg-sg-disjunction*:  
 $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
- d. *sg-pl-disjunction*:  
 $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$

### 3.3.1. Agree before linearization

We start with the cases where both Agree operations apply before linearization. In the first order,  $\phi_{\text{alt}}$  is valued before  $\phi_{\text{ind}}$ . The step-by-step feature valuations for the four coordination cases under discussion are given in (14).

(14) ALT-Agree < IND-Agree < linearization (8a)

- a.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$  (*Agree with coordination*)  
 2. IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 3. Linearization  
 Agreement Pattern: RES
- b.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$  (*Agree with coordination*)  
 2. IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 3. Linearization  
 Agreement Pattern: RES
- c.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$  (*Agree with coordination*)  
 2. IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$  (*\*Agree with coordinand*)  
 3. Linearization  
 Agreement Pattern: RES
- d.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$  (*Agree with coordination*)  
 2. IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with 2nd coordinand*)  
 3. Linearization  
 Agreement Pattern: RES

The first two derivations in (14a,b) show what happens with conjunctions. Here, the verbal probe targets only the features on the coordination phrase.

The  $\phi_{\text{ind}}$ -features of the coordinands are irrelevant, as they are further away than the  $\phi_{\text{ind}}$ -features of the coordination phrase. Thus, we get Resolved Agreement in both cases. With disjunctions in (14c,d), on the other hand, the  $\phi_{\text{ind}}$ -features of the coordinands are accessible as there are no  $\phi_{\text{ind}}$ -features on the coordination phrase itself. However, since  $\phi_{\text{alt}}$  is valued first, only plural values are further possible on  $\phi_{\text{ind}}$  of the verbal probe. As such, the result must also be Resolved Agreement in both cases.

Next, we turn to what happens if IND-Agree happens before ALT-Agree. This is shown in the derivations in (15).

(15) IND-Agree < ALT-Agree < linearization (8b)

- a.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \textit{and} \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 2.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 3.Linearization  


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 Agreement Pattern: RES
- b.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \textit{and} \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 2.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$  (*Agree with coordination*)  
 3.Linearization  


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 Agreement Pattern: RES
- c.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \textit{or} \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{SG}]}$  (*Agree with coordinands*)  
 2.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{SG}]}$  (*\*Agree with coordination*)  
 3.Linearization  


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 Agreement Pattern: CCA
- d.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \textit{or} \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{SG/PL}]}$  (*Agree with coordinands*)  
 2.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---/PL}][\phi_{\text{ind}}:\text{SG/PL}]}$   
 (*%Agree with coordination*)  
 3.Linearization  


---

 Agreement Pattern: CCA/RES

As for the conjunctions in (15a,b), the result is identical to (14a,b). The only difference in the derivation is that  $\phi_{\text{ind}}$  is valued before  $\phi_{\text{alt}}$ . The result for

disjunctions is different, however: In the case of (15c),  $\phi_{\text{ind}}$  receives a [SG] value, which is incompatible with the value [PL] from  $\phi_{\text{alt}}$ . The result therefore must be agreement with the disjuncts and not Resolved Agreement. In the case of mismatching number features on the coordinands, it depends on which coordinand values  $\phi_{\text{ind}}$  on the verbal probe. If it is [SG], we get the same result as in (15c); if it is [PL], we get Resolved Agreement on the surface.

At this point it is unclear, which disjunct provides the values for the verbal probe in (15c,d). In (15), linear order cannot be decisive, because linearization is the last operation to apply. In section 3.4, I discuss the choice between the coordinands for IND-Agree in more detail and follow a suggestion by Fuß (2024) how the values of the linearly closest coordinand are picked despite Agree applying before linearization.

### 3.3.2. Agree after linearization

The next case is comparatively simple: If both Agree operations apply after linearization as in (8c,d), only the  $\phi_{\text{ind}}$ -features of the linearly closest coordinand are accessible to the verbal probe. The  $\phi_{\text{alt}}$ -features cannot be accessed anymore and are thus not relevant for agreement. The result is the same for conjunctions and disjunctions: We get CCA in all cases. Note that if the closest coordinand supplies the value [PL] for the verbal  $\phi_{\text{ind}}$ -probe, the agreement will be derivationally CCA, but be superficially identical to Resolved Agreement.

### 3.3.3. Split agreement

The last set of cases in (16) involves a split of the Agree operations: One applies before linearization, the other after.

(16) ALT-Agree < linearization < IND-Agree (8e)

- a.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
1. ALT-Agree  $\rightarrow \text{V}_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{—}]}$  (*Agree with coordination*)
  2. Linearization
  3. IND-Agree  $\rightarrow \text{V}_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{—}]}$  (*\*Agree with coordinand*)
- 
- Agreement Pattern: RES

- b.  $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]}$  (*Agree with coordination*)  
 2. Linearization  
 3. IND-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]/PL}$  (*%Agree with coordinand*)  
 Agreement Pattern: RES
- c.  $[DP_{[\phi_{ind}:SG]} \text{ or } DP_{[\phi_{ind}:SG]}]_{[\phi_{alt}:PL]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]}$  (*Agree with coordination*)  
 2. Linearization  
 3. IND-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]}$  (*\*Agree with coordinand*)  
 Agreement Pattern: RES
- d.  $[DP_{[\phi_{ind}:SG]} \text{ or } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL]}$   
 1. ALT-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]}$  (*Agree with coordination*)  
 2. Linearization  
 3. IND-Agree  $\rightarrow V_{[\phi_{alt}:PL][\phi_{ind}:\_]}/PL$  (*%Agree with coordinand*)  
 Agreement Pattern: RES

When ALT-Agree applies before linearization, we get Resolved Agreement in all cases, since the first value on the verbal probe is [PL], which cannot be overwritten by a [SG] value. In (16b,d), a [PL] value on  $\phi_{ind}$  coming from the closest coordinand is possible, but doesn't change the outcome.

The final possible order of the three operations is the opposite of the order in (16).

(17) IND-Agree < linearization < ALT-Agree (8f)

- a.  $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:SG]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$   
 1. IND-Agree  $\rightarrow V_{[\phi_{alt}:\_] [\phi_{ind}:PL]}$  (*Agree with coordination*)  
 2. Linearization  
 3. ALT-Agree  $\rightarrow V_{[\phi_{alt}:\_] [\phi_{ind}:PL]}$  (*\*Agree with coordination*)  
 Agreement Pattern: RES
- b.  $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$   
 1. IND-Agree  $\rightarrow V_{[\phi_{alt}:\_] [\phi_{ind}:PL]}$  (*Agree with coordination*)  
 2. Linearization  
 3. ALT-Agree  $\rightarrow V_{[\phi_{alt}:\_] [\phi_{ind}:PL]}$  (*\*Agree with coordination*)  
 Agreement Pattern: RES

- c.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG}]}$  (*Agree with coordinand*)  
 2.Linearization  
 3.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG}]}$  (*\*Agree with coordination*)  
 Agreement Pattern: CCA
- d.  $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$   
 1.IND-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG/PL}]}$  (*Agree with coordinand*)  
 2.Linearization  
 3.ALT-Agree  $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG/PL}]}$  (*\*Agree with coordination*)  
 Agreement Pattern: CCA

In the case of (17), ALT-Agree applies after linearization. Since at this point,  $\phi_{\text{alt}}$  on the coordination phrase cannot be accessed anymore, it doesn't interact with IND-Agree. Looking at the cases of conjunction in (17a,b), there are  $\phi_{\text{ind}}$ -features on the coordination phrase, which therefore must value the  $\phi_{\text{ind}}$ -probe on the verb. The result is Resolved Agreement. With disjunctions, it is different. The  $\phi_{\text{ind}}$ -probe is valued by a coordinand and after linearization the  $\phi_{\text{alt}}$ -features of the disjunction are no longer available.

A summary of the derivations so far is given in table 2. As shown in the table, any orders where IND-Agree applies first, conjunctions will show Resolved Agreement, whereas disjunctions show CCA. This means that disjunctions are overall more likely to show CCA than conjunctions, assuming that the orders are equally distributed among languages. Second, we can see that in all orders where disjunctions show Resolved Agreement, conjunctions also show Resolved Agreement. If we assume that the order of operations is language-specific, this would mean that no language could have CCA with conjunctions, but Resolved Agreement with disjunctions. Thus, the analysis derives both generalizations in (5).

### 3.4. First Coordinand Agreement and CCA before linearization

The analysis developed so far only touches upon the actual complexity of agreement with coordinations. More empirical work needs to be done to establish a reliable database and to see how much variation of agreement strategies there actually is. In the rest of this section, I would like to discuss one issue that is left open by the present theory: the difference between CCA



			SG-SG-conj	SG-SG-disj	SG-PL-conj	SG-PL-disj
ALT	< IND	< LIN	RES	RES	RES	RES
IND	< ALT	< LIN	RES	CCA	RES	RES/CCA
LIN	< ALT	< IND	CCA	CCA	CCA	CCA
LIN	< IND	< ALT	CCA	CCA	CCA	CCA
ALT	< LIN	< IND	RES	RES	RES	RES
IND	< LIN	< ALT	RES	CCA	RES	CCA

Table 2: Summary of the derivations

and First Coordinand Agreement (FCA, or Highest Coordinand Agreement as Marušič et al. 2015 call it). So far, the analysis is built on the idea that all coordinands are equidistant and possible goals for the verbal  $\phi_{\text{ind}}$ -probe. Under this assumption it is unclear how IND-Agree before linearization actually ends up as CCA. One might rather expect a pattern of FCA for IND-Agree before linearization.

Empirically, true FCA is extremely rare in Himmelreich et al.'s (2021) dataset. As Marušič et al. (2015) note, true FCA can only be distinguished from CCA under an SV order. One case in Himmelreich et al.'s (2021) comes from North Levantine Arabic (18), where FCA is only possible with a 2SG-3SG-disjunction (18b) (a 3SG-2SG-disjunction doesn't allow it) and highly marked for conjunctions (18a).

- (18) a. [ʔnta w huwe ] ʔam **t-erkud-u**/ʔʔt-erkud  
you.MASC and he PROG 2.MASC-run-PL/2.MASC-run  
‘You and he are running.’ (Himmelreich et al. 2021:Arabic (North Levantine), (25))
- b. [ʔnta ʔaw huwe ] ʔam **t-erkud-u/t-erkud**  
you.MASC or he PROG 2.MASC-run-PL/2.MASC-run  
‘You or he are running.’ (Himmelreich et al. 2021:Arabic (North Levantine), (37))

Nevertheless, work by Marušič et al. (2015), Marušič & Shen (2021) on Slovenian gender agreement, work by Willer-Gold et al. (2016) on Bosnian-Croatian-Serbian gender agreement and also work by Fuß (2018), Fuß (2024) on German person-number agreement report FCA (or Highest Conjoint Agreement) as a robust pattern.

One obvious way to allow FCA in the account developed so far would be to redefine the distances of the coordinands to the verbal probe. The first coordinand *c*-commands the second coordinand in the structures in (11) and (12). Thus IND-Agree before linearization could be defined as targeting only the highest coordinand, thereby making FCA possible.

However, the analysis so far predicts that FCA should not be possible with conjunctions, as  $\phi_{\text{ind}}$  on the coordination phrase blocks the access to  $\phi_{\text{ind}}$  on the coordinands before linearization. This prediction is indeed confirmed by the Arabic data in (18), but derives neither the Slovenian data in Marušič et al. (2015), Marušič & Shen (2021) nor the German data in Fuß (2024). At this point, I leave this issue open for further research to see how robust true FCA in the world's languages is, particularly in the construction investigated in Himmelreich et al. (2021, 2024), which differs from the participial construction in Marušič et al. (2015), Marušič & Shen (2021).<sup>12</sup>

Ignoring the issue of FCA for now, the question is how CCA can technically be achieved in orders with early IND-Agree. For the analysis above, I assumed that the coordinands within the coordination phrase are equidistant to the verbal probe for the purposes of Agree. Thus, the verb could in principle  $\phi_{\text{ind}}$ -agree with either coordinand. This would give rise to the four configurations in (19), of which (19b,c) do not follow the CCA pattern.

- (19) a. V [ DP or DP ]  
 b. \*V [ DP or DP ]  
 c. \* [ DP or DP ] V  
 d. [ DP or DP ] V

Following the account in Fuß (2024), we could assume that the verbal probe cannot decide at this point (perhaps because of the equidistance of the coordinands) and must consequently take on the values of all coordinands. As long as the values match, this is not a problem, but should there be a mismatch, the derivation must be ruled out or a repair mechanism must set in. Fuß (2024:68ff.) suggests that the values are stored as ordered pairs, with the first value coming from the first coordinand, the second coming from

<sup>12</sup>Technically, it seems possible to extend the present analysis by the idea that feature resolution on the coordinator is an operation of its own (cf. Murphy & Puškar 2018) and can apply before or after Agree. If the resolution of the  $\phi_{\text{ind}}$ -features on the conjunctive coordinator applies after IND-Agree, the conjunction does not have  $\phi_{\text{ind}}$ -features at the point of Agree and should then behave like a disjunction, allowing agreement with a conjunct.



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