

Agreement patterns of coordination

ANKE HIMMELREICH, MELISSA JECKEL & JOHANNES MURSELL
(GOETHE-UNIVERSITÄT FRANKFURT)

1 Introduction

Agreement with coordinated subjects has been a topic of interest for many decades in linguistics.¹ Coordinations are complex linguistic constructions, where two parts are connected by a coordinator like the conjunctive *and*, the disjunctive *or*, or the adversative *but*.² In cases of coordinated subjects, the finite verb agrees with a coordination in person, gender, and number in languages that have verbal agreement. With this comes the question of what the ϕ -features of a coordination are and how they are determined. It seems that the features depend both on the features of the *coordinands* (the parts of the coordination as a hypernym for conjuncts and disjuncts, see Haspelmath 2004 for the terminology) and the type of coordinator, so whether the coordination is a conjunction or a disjunction. Example (1) illustrates this for English.

- (1) a. [*The boy and the man*] **are**/***is** running to the village.
b. [*The boy or the man*] **are**/**is** running to the village.

While the number of two conjoined singulars must result in plural agreement in English, singular agreement is optionally possible under disjunction (Peterson 1986, Haskell and MacDonald 2005, Foppolo and Staub 2020), is sometimes claimed to be the only option (Fowler 1983: 189, Morgan 1985: 234) for some cases, and sometimes, subject disjunctions with mismatching numbers are even claimed to be generally ineffable (Sobin 1997: 320).

¹Before starting, we should admit to deliberately dropping one of our co-authors for the purpose of this paper: Katharina. The paper finally should finish up what we couldn't finish up during the DFG-funded project *A General Theory of Multivaluation* led by Katharina. We just hope she's happy seeing a written version of this and doesn't hold it against us that we dropped her to avoid that she authors a paper in her own festschrift.

²For the purpose of this paper, we ignore comitative constructions of the type *X with Y*, even though we cannot fully exclude that some of the languages we investigate use them to express coordinative meaning in English.

According to the literature, agreement with coordinations that have coordinands mismatching in number, gender, or person features is subject to variation across languages, although no explanations have been offered as to why languages vary in the way that they do.

This paper presents some broader empirical findings about the variation of agreement resolution and establishes some generalizations about the factors that influence the choice of the resolution strategy.

In Section 2, we are introducing various agreement strategies and possible factors that could influence agreement strategies. Section 3 presents our methodology: Instead of looking closer at a small number of languages, we conducted online questionnaires and classic data elicitations to collect comparable data on agreement resolution in 27 languages. Based on this, Section 4 summarizes our findings regarding the factors influencing agreement. Concretely, we aim to investigate what decides or not decides between *Resolved Agreement* on the one hand, where the ϕ -features seem to be computed out of the features of all coordinands, and *Closest Coordinand Agreement* on the other, where the verb agrees with the coordinand that is closest to it, ignoring the other coordinands. We will show that both the type of coordination and the word order influence the agreement strategy. Concretely, we show that Closest Coordinand Agreement is more likely to occur when the coordinated subject follows the verb and independently more likely to occur under disjunction, while resolved agreement is more probable when the coordinated subject occurs first or in conjunctions.

2 Agreement strategies of coordination

This section introduces the construction investigated in this paper and summarizes the agreement strategies and potentially determining factors.

2.1 The construction

For the purposes of this research, we are looking into structures with coordinated subjects. Specifically, we investigate the construction in (2), where a coordinated subject, consisting of two coordinands, agrees with the simple intransitive verb *run*.

- (2) a. [*The boy* _{ϕ_1} *and the man* _{ϕ_2}] *run* _{$\phi_?$} .
 b. [*The boy* _{ϕ_1} *or the man* _{ϕ_2}] *run* _{$\phi_?$} .

This construction can be altered according to the factors outlined in Section 2.2.

2.2 Factors for the agreement strategy

We hypothesize that the choice of the agreement strategy can depend on four factors. The first potential factor concerns language variation. Given the Borer-/Chomsky Conjecture in (3), we assume that syntactic mechanisms, such as agreement, should apply in all languages similarly, as language variation is restricted to the featural make-up of functional heads, but does not affect the syntactic mechanisms themselves.

- (3) **Borer/Chomsky Conjecture** (as formulated in Obata et al. 2015: 3)
 Syntactic parameters are restricted to variation in the morphological features of functional syntactic heads. (Borer 1984, Chomsky 1995)

However, the realization of agreement is a matter of morphology. Previous studies on agreement with coordinations have usually only looked at one or very few languages at once (e.g. Aoun et al. 1994, Munn 1999, Bošković 2009, Bhatt and Walkow 2013, Marušič et al. 2015, Willer-Gold et al. 2016, Palmović and Willer-Gold 2016, Fuß 2018, Murphy and Puškar 2018, Nevins and Weisser 2018, Arsenijević et al. 2019, Marušič and Shen 2021, Himmelreich and Hartmann 2023, Shen 2023). Comparing these previous works, it seems obvious that languages do show variation (both across and within languages). Thus, we deduct that language is a potential factor for determining the strategy for agreement with coordinations. What needs to be seen is the extent to which languages differ and whether related languages show similar behaviors. In order to investigate the differences, the agreement must be studied in as many different languages as possible. The difficulty here is that grammars barely have any information on which agreement forms speakers choose with coordinated subjects, leading to the need to specifically elicit such data.

The next factor concerns the agreement features involved, concretely number, person, and gender (or alternatively noun class). Besides looking at the features separately, it is also worth looking at feature interactions: Marušič et al. (2015) have shown that, in some languages, there is a connection between gender and number in that gender actually depends on number. They showed for Slovenian that Closest Conjunct Agreement, First Conjunct Agreement, Resolved Agreement, and Default Agreement are all possible depending on the right configuration of ϕ -features.

Furthermore, word order (SV vs. VS) might be a factor influencing the choice of the agreement strategy. Aoun et al. (1994) were among the first to show that word order differences can impact the agreement strategy: Various Arabic dialects exhibit Resolved Agreement under SV order and CCA under VS order.

Lastly, the type of coordination (concretely conjunction vs. disjunction)

might also be a factor that has an impact on the agreement strategy. Marušič and Shen (2021) showed that, in Slovenian, both coordination types behave the same when it comes to the range of agreement strategies (CCA, FCA and Resolved Agreement). However, they found that disjunctions show a greater tendency for CCA than conjunctions. Note that there is very little work on the syntactic and semantic differences between disjunctions and conjunctions. For some work see Payne (1985), Haspelmath (2007), Schmitt (2013).

To summarize, for each language, we can recognize three factors: agreement feature(s), coordination type, and word order with the values indicated in (4).

- (4) a. COORDINATION TYPE: conjunction, disjunction
 b. AGREEMENT FEATURE: number, person, gender
 c. WORD ORDER: SV, VS

The goal is to find out which agreement strategies are used by different languages in the various combinations of the factors and whether there are generalizations regarding which of these factors determine the choice of the agreement strategies, which we describe in the next subsection.

2.3 Agreement strategies

When it comes to the strategies for agreement with coordinations, there are seven agreement strategies which are logically possible. In this section, we show the agreement target (the finite verb) in bold face and the agreement controller with an underline. The coordination is bracketed. Unless cited otherwise, examples in this section were elicited as part of the broader data collection that we discuss in Section 3.³

The first set of strategies can be summarized as single coordinand agreement strategies, where the verb agrees with only one of the coordinands in the coordination. The first strategy in this set is *First Coordinand Agreement* (FCA). Here, the finite verb agrees with the linearly first coordinand independent of word order. An example of this strategy is given in (5) on the basis of Turkish.⁴

- (5) a. ?[O ve ben] **koşuyor**.
 he and I run.3SG
 ‘He and I run.’
 b. Köye doğru **koşuyor** [o ve ben]
 to village run.3SG he and I
 ‘He and I run to the village.’ (Turkish)

³We would like to thank all people participating in our surveys, whether the languages were explicitly mentioned here or not. Interpretation and analysis of the data are due to us and not the speakers. Any errors in the examples below are our own.

⁴We would like to thank Derya Nuhbalaoğlu-Ayan for the Turkish data.

In (5), the verb *koşmak* ('run') only agrees with the first coordinand. This is quite evident in the case of (5-a), where the verb agrees in 3SG with the first coordinand and ignores the 1SG second coordinand.

Similarly, one could imagine the opposite of FCA: *Last Coordinand Agreement* (LCA). Here, the verb would always agree with the second coordinand. We can illustrate this hypothetical pattern in (6) with German sentences, where the verb *werden* ('become') agrees in 2SG with the second coordinand *du* ('you'). Note, however, that (6) is not the actual German pattern.⁵

- (6) a. [Ich oder du] **wirst** krank.
I or you become.2SG sick
'I or you get sick.'
- b. Krank **wirst** [ich oder du].
sick become.2SG I or you
'I or you get sick.'

The third possibility to agree with only one coordinand is *Closest Coordinand Agreement* (CCA). Here, the choice between the coordinands depends on linear closeness, which means that the verb agrees with the first coordinand under VS word order and with the last coordinand under SV word order. We illustrate this strategy with data from European Spanish in (7).⁶

- (7) a. ?[Yo o él] **corre**. b. ?**Corro** [yo o él].
I or he run.3SG run.1SG I or he
'I or he runs.' 'I or he runs.' (European Spanish)

In (7-a), the verb *correr* ('run') agrees with the last coordinand *él* ('he'), because it is the linearly closest target under SV order. Under the VS order in (7-b), the verb agrees with the closer *yo* ('I').

Before coming to the resolved agreement strategies, we should note that we explicitly distinguish CCA from FCA and from LCA. The difference, as we define it, is that in the case of FCA or LCA, the coordinand to agree with is fixed, independent of word order. Specifically, the case of FCA has been noted in Marušič et al. (2015) and Marušič and Shen (2021) to be a different strategy which they gave the term *Highest Conjunct Agreement*, taking into account the widely held assumption of an asymmetric coordination structure as proposed

⁵Fuß (2018: 210) notes in fact that LCA seems to be excluded in German. However, he provides one example, (i), that might involve LCA (ibid, fn. 25).

(i) [Ihr, oder du,] **schreibst** hier ...
you.PL or you,SG write.2SG here ...

⁶We would like to thank Jennifer Tan for providing the Spanish data for us.

in Munn (1993), where the first conjunct is the structurally higher conjunct.⁷

Turning to the set of resolved agreement strategies, we have four different types that we can identify. The first one is what is standardly known as *Resolved Agreement*. In this strategy, the verb seems to agree with the entire coordination. The ϕ -features of this coordination can be computed by various rules (see Corbett 1983: 177ff.). With number, the value reflects the sum of the numbers of the individual parts (Harbour 2020). The general pattern for this is given in (8-a), for the most frequent number values singular, dual, and plural. For the other ϕ -features, gender and person, hierarchies are used to determine the resolved value of the coordination. The most common ones are given in (8-b) for person and (8-c) for gender. The rule in these cases is that the resolved value represents the value of the coordinand that is highest on the hierarchy.

- | | | |
|-----|--|---|
| (8) | a. NUMBER:
SG + SG = DUAL/PL
SG + NON-SG = PL
NON-SG + NON-SG = PL
<i>non-sg</i> \in { <i>dual</i> , <i>pl</i> } | b. PERSON:
1 > 2 > 3
c. GENDER:
MASC > FEM |
|-----|--|---|

To illustrate this, (9) provides examples from Modern Standard Arabic with a conjunction. In (9-a) we have a conjunction of two 3SG. In (9-b-c), the two conjuncts are 1SG and 2SG respectively.⁸

- | | | |
|-----|--|--------------------------|
| (9) | a. [<u>al-walad-u</u> <u>wa-r-radgul-u</u>] jarkudaani .
the-boy-NOM and-the-man-NOM run.3DU
'The boy and the man run.' | |
| | b. [<u>?anta</u> <u>wa-?anaa</u>] narkud^su .
you and-I run.1DU~PL
'You and I run.' | |
| | c. [<u>?anaa</u> <u>wa-?anta</u>] narkud^su .
I and-you run.1DU~PL
'I and you run.' | (Modern Standard Arabic) |

What can be observed in (9-b-c) is that the person agreement on the verb is determined by the hierarchy in (8-b), where 1ST person wins over 2ND person. The number value follows the rules in (8-a), with two singulars adding up to dual in Modern Standard Arabic.

⁷Under this assumption, Highest Conjunct Agreement is equal to First Conjunct Agreement.

⁸We would like to thank Rukayah Alhedayani for providing these data for us.

⁹Note that there is no separate dual form for first person in Modern Standard Arabic.

Another possibility for resolving mismatching values is to render agreement impossible, ending up with *Ineffability*. The only way to express this might be to use a different construction such as clausal coordination to have one verb in each coordinand. This is exemplified in (10) for Mussau-Emira, an Austronesian language spoken in Papua New Guinea.¹⁰ Instead of saying *we and they run*, speakers use the clausal conjunction *we run and they run*.

- (10) [Ita/ami **ilou** me ila tee la **ilou**].
 we.INCL/we.EXCL run.PL and they also they run.PL
 ‘We and they run.’ (Mussau-Emira)

A variant of the Ineffability strategy is one where mismatches render agreement impossible, unless the verb can bear an agreement marker that is syncretic for the ϕ -features of both coordinands. For our purposes, we call this strategy *Ineffability Without Syncretisms*. These syncretism effects are also commonly found outside of coordination in other agreement and case constructions with multiple targets, e.g. free relatives (cf. Riemsdijk 2006) and specificational copular clauses (cf. Sigurðsson and Holmberg 2008, Hartmann and Heycock 2017).

Evidence for this type of syncretism effect in coordination comes from German disjunctive subjects (see Himmelreich and Hartmann 2023) in (11). While both non-syncretic forms in (11-a) are not completely ruled out by speakers according to a judgment study, their uses are quite marked. A syncretic form like in (11-b) is generally more acceptable.

- (11) a. [Ich oder mein Kollege] ??habe/??hat gestern einen
 I or my colleague have.1SG/3SG yesterday a
 Fehler gemacht.
 mistake made
 ‘I or my colleague made a mistake yesterday.’
 b. [Ich oder mein Anwalt] soll morgen dem
 I or my lawyer should.1SG~3SG tomorrow the
 Richter Bescheid sagen.
 judge notice say
 ‘I or my lawyer should notify the judge tomorrow.’ (German)

Finally, the last one of the resolved strategy type is *Default Agreement*, which simply uses a default form available in the language when the agreement target is coordinated or when there is a mismatch.

¹⁰We would like to thank John Brownie for providing data and information about Mussau-Emira in the first questionnaire.

For this strategy, we present the Somali example in (12).¹¹

- (12) a. [Wiilka ama ninka] **ayaa orda.**
 boy.SG or man.SG DEF run.DEF
 ‘The boy or the man run.’
- b. [Wiilasha ama ninka] **ayaa orda.**
 boy.PL or man.SG DEF run.DEF
 ‘The boys or the man run.’
- c. [Wiilka ama nimanka] **ayaa orda.**
 boy.SG or man.PL DEF run.DEF
 ‘The boy or the men run.’ (Somali)

The agreement form used is neither singular nor plural but is a separate form and might be described as a default form. Of course, in many languages, the default agreement form is 3SG (see for example Béjar 2003, Preminger 2014: 129). To identify that we have default agreement, one would expect such a form to be equally available for example in a 1PL+2SG coordination.

To summarize, there are seven strategies that we expect to find for agreement with coordinations. They can be grouped into two types: single coordinand agreement strategies and resolved strategies. Table 1 summarizes these strategies.

STRATEGY	PATTERN	
First Coordinand Agreement (FCA)	[<u>C₁</u> + C ₂] Verb	Verb [C ₁ + <u>C₂</u>]
Last Coordinand Agreement (LCA)	[C ₁ + <u>C₂</u>] Verb	Verb [C ₁ + <u>C₂</u>]
Closest Coordinand Agreement (CCA)	[C ₁ + <u>C₂</u>] Verb	Verb [<u>C₁</u> + C ₂]
Resolved Agreement (RES)	[<u>C₁</u> + <u>C₂</u>] Verb	Verb [<u>C₁</u> + <u>C₂</u>]
Ineffability (INEFF)	[<u>C₁</u> + C ₂] Verb	Verb [<u>C₁</u> + C ₂]
Ineffability w/o Syncretisms (INEFFSYN)	[<u>C₁</u> + C ₂] Verb	Verb [<u>C₁</u> + C ₂]
Default Agreement (DEF)	[<u>C₁</u> + C ₂] Verb	Verb [<u>C₁</u> + C ₂]

Table 1: Overview of agreement strategies

Of course, it is possible that languages vary between the strategies they choose and it is possible that languages combine different strategies depending on the factors discussed in Section 2.2, specifically the coordinator, the ϕ -features

¹¹ We would like to thank Abdalla Jama Aden, Abduqadir Ahmed, Yasin Jama and one anonymous Somali speaker for the Somali data as well as Morgan Nilsson for providing us with the contacts to the speakers.

and the order of verb and coordination. In the rest of this paper, we present a study that tries to investigate these questions further. Section 3 summarizes the data collection we did to get an empirical basis and Section 4 presents the results of a statistical analysis of these data to find correlations between the different structural factors and the agreement strategy.

3 The survey

In order to test which of the four potential factors (language, agreement feature, coordination type, word order) actually play a role for the agreement strategy, we tried to elicit the relevant data in as many languages as possible. Since the relevant constructions are rarely discussed in language grammars and individual elicitation testing all the different options can take a long time, we opted for eliciting data and information via online surveys. The results of these surveys were fed into a database. In this section, we present the methods of our data collection (Section 3.1) and briefly summarize the structure and functions of the database we developed (Section 3.2).

3.1 Methods of data collection

3.1.1 Online questionnaires

In a first attempt to elicit data, we developed a questionnaire on Google Forms. The link was posted on LinguistList and shared directly with linguists. The main goal of this questionnaire was to get an overview of some data and to get in contact with speakers with linguistic backgrounds from various languages, or linguists who have worked on different languages and know how agreement with coordination works.

This first questionnaire contained two parts: In the first part, participants were asked to translate English sentences into their respective languages. The sentences were variations of the constructions in (2), described in Section 2.1, which consisted of a coordinated subject and the verb *run*.

Afterwards, the participants were asked to answer more general questions about the agreement patterns with coordinated subjects.

With the first questionnaire, however, we ran into two major problems. First, the translation part did not contain all the combinations of the factors coordinator, agreement feature, and word order. While this was intentional to keep the questionnaire shorter and less time consuming for the participants, it resulted in an incomplete set of data. The second problem was caused by the level of difficulty of the question part, which was too difficult for most participants to answer and again resulted in incomplete answers.

Despite these shortcomings, however, we were able to gather a fairly large amount of data and contacts of various speakers with some linguistic background.

In order to overcome the problems of the first survey, we developed a second online questionnaire that solely focused on translating and rating natural language sentences.¹²

The questionnaire works as follows: If there is no information yet on a language, speakers are asked to translate 18 simple sentences from English into their language. These sentences consist of a subject, the verb *run*, and the prepositional phrase *into the village*. The goal of this part is to elicit the complete agreement paradigm as well as all word forms necessary to construct coordinated subjects. In this part, we also try to find out whether languages allow different word orders, particularly VS orders. Based on the results, we semi-automatically generate sentences in the respective target language for part two of the questionnaire.

In the second part, speakers are asked to rate sentences from their language on a scale from 1-5 (5 being the best possible rating): The sentences vary regarding the coordinated noun phrases, the coordination type (*and* or *or*), verbal agreement, and word order (VS or SV).

The sentences are presented in blocks, where each block has the same sentence, but with different agreement options. The blocks are presented in random order, which reduces the problem of the speakers seeing a sequence of minimal pairs. Finally, the rating results are automatically saved once a block is finished. That means that speakers do not have to finish the entire questionnaire completely. The rating results are then analyzed manually and the ratings are mapped to categories of grammaticality.

Obviously, this method of data collection has the problem that speakers are not supervised and might misunderstand the task, which, in our opinion, does not offset the advantage of being able to gather very large amounts of data.

3.1.2 One-one-one elicitation

In order to supplement the questionnaires, we also scheduled one-on-one elicitation sessions with a few speakers. These elicitation sessions were held via video conference or in person. The speakers were asked to translate basic English sentences consisting of the coordinated subject and the verb *run*. Additionally, they were supposed to judge the sentences as to whether they found them grammatical, ungrammatical, or marked. All in all, the tasks were identical to the tasks in the second version of the online questionnaire.

¹²The questionnaire is still online and can be filled out under <http://www.multivaluation.de/questionnaire.php>.

Due to the large amount of data, the sessions were very time consuming, taking altogether around 4 hours, which made it harder to get judgments from multiple speakers of one language. Also, speakers had to answer immediately and needed a lot of concentration since the sentences were very similar to each other. Finally, the speakers in these sessions had a more complex task, doing both translations as well as ratings of different agreement options.

Altogether, the combination of online questionnaires and one-on-one elicitations allowed us to quickly gather a larger amount of data on agreement with coordinated subjects. In a next step, we manually glossed and analyzed the data regarding the agreement strategies found with different feature combinations and stored the information in a database to find generalizations.

3.2 The database

3.2.1 Structure of the database

The results of the data collection were fed into a read-only database, programmed with PHP (<http://www.multivaluation.de/database.php>). The database consists of two parts: The first part is a simple csv-file (= *comma separated value* file) that stores information bundles consisting of the language with the language family, the agreement feature (person, number, gender), the word order (SV or VS), the coordination type (disjunction or conjunction), and the agreement strategy, which was determined manually. The users can then filter this information for certain values and receive a count and percentage of the co-occurring factors.

The second part of the database consists of a set of language files which contain more details about the respective language and the agreement strategies, including language examples.

4 Results

Based on the 154 entries in the csv-file of the database, this section presents some generalizations we can draw from this. Please note that, in this section, the percentages show the share that a language, a language family, a feature, a coordination type, a word order, or an agreement strategy has in the total number of results.

4.1 Overview

Before discussing the different factors individually, we would like to present an overview of the data first. Currently, the database contains information on 27 languages from the seven language families given in (13). Obviously, the

database is not typologically balanced, as the majority of entries are from Indo-European and Afro-Asiatic (specifically Semitic) languages. The main reason for this is simply the lack of accessible and reliable data from a large amount of languages.

(13) **7 language families:**

Indo-European	94 (61.04%)	Afro-Asiatic	39 (25.32%)
Turkic	8 (5.19%)	Isolate	4 (2.60%)
Uralic	4 (2.60%)	Panoan	3 (1.95%)
Austronesian	2 (1.30%)		

As for the agreement features, we see that gender agreement shows up less than number and person agreement, see (14). This is expected, since verbal gender agreement is less common in the world's languages.

(14) **3 agreement features:**

Number	72 (46.75%)
Person	69 (44.81%)
Gender	13 (8.44%)

Coming to word order, the majority of the data show SV order. This is due to the first survey that did not include any VS orders. Hopefully, we can overcome this problem by collecting more data. Still, the data suffice to draw conclusions about the factor word order.

(15) **2 word orders:**

SV	107 (69.48%)
VS	47 (30.52%)

Next, the information regarding coordination type is very balanced as nearly all languages have equal constructions for conjunctions and disjunctions.

(16) **2 coordination types:**

and	79 (51.30%)
or	75 (48.70%)

Finally, we can look at the overall distribution of the agreement strategies. There are two main observations. First, the most common strategy is Resolved Agreement: 90.92% of all patterns involve Resolved Agreement. Second, it

is very common that a language uses more than one strategy at once: 31.82% show mixed patterns. Table 2 shows the distribution in detail.¹³

RES	91 (59.09%)	(RES) (CCA)	11 (7.14%)
CCA	10 (6.49%)	RES CCA	9 (5.84%)
RES (CCA)	7 (4.55%)	(RES) (INEFF)	4 (2.60%)
RES > (CCA)	3 (1.95%)	INEFF	2 (1.30%)
RES > (CCA) (FCA)	2 (1.30%)	RES FCA CCA DEF	2 (1.30%)
DEF	2 (1.30%)	(RES) (INEFF) (FCA)	2 (1.30%)
RES > (FCA)	1 (0.65%)	RES CCA (LCA)	1 (0.65%)
(RES) (INEFF) (CCA)	1 (0.65%)	CCA > RES	1 (0.65%)
(RES) CCA	1 (0.65%)	CCA > (RES)	1 (0.65%)
(RES) CCA (LCA)	1 (0.65%)	(RES) (CCA) DEF	1 (0.65%)
(RES) (CCA) (FCA)	1 (0.65%)		

Table 2: Distribution of agreement strategies

In the rest of this section, we take a closer look at the two most common agreement strategies, Resolved Agreement and Closest Coordinand Agreement. We analyze the collected data to see if any of the structural factors – agreement feature(s), coordination type, word order – plays a role for determining the agreement strategy. For this, we will ignore mixed patterns and solely focus on patterns where the two strategies each occur in isolation. While this is not a complete analysis of the data, it hopefully provides an insight into the question of what matters for agreement with coordinations.

4.2 Effects of agreement features

For testing the effects of the different features involved in agreement, we filtered the data for number, person, and gender, respectively. The results are shown in the table in (17). The first number represents the total number of results found, the second number shows the proportion of the total number of results found for a feature.

¹³Table 2 is to be read as follows ($S \in \{\text{RES}, \text{CCA}, \text{FCA}, \text{LCA}, \text{DEF}, \text{INEFF}\}$): S means that the strategy occurs in all combinations; (S) means that the strategy occurs only in some combinations; $S1 > S2$ means that strategy $S1$ is preferred over strategy $S2$; $S1 | S2$ means that strategy $S1$ and $S2$ are equally possible.

(17)

	number	gender	person
RES	38 (52.78%)	10 (76.92%)	43 (62.32%)
CCA	4 (5.56%)	2 (15.38%)	4 (5.80%)

To analyse the data, a Fisher's exact test¹⁴ was used, as the overall number of the results is too low for a Chi-Square test. The test revealed that the agreement feature is not a significant factor for the choice between Resolved and Closest Coordinand Agreement ($p = 0.721$).

4.3 Effects of coordination type

We analyzed the influence of the coordination type in the same way as we did with agreement features. The results are given in (18).

(18)

	conjunction	disjunction
RES	58 (73.42%)	33 (44.00%)
CCA	3 (3.80%)	7 (9.33%)

With a Fisher's exact test, we found the difference between conjunction and disjunction in our data to be statistically significant ($p = 0.0304$). This suggests that disjunctions are more prone to Closest Coordinand Agreement than conjunctions, which are more likely to show Resolved Agreement. This is in line with the findings of Marušič and Shen (2021) that showed a greater tendency for CCA in Slovenian disjunctions compared to conjunctions.

4.4 Effects of word order

Finally, the effects of word order need to be investigated. Using the same method as above, our database gave us the following results.

(19)

	SV	VS
RES	77 (71.96%)	14 (29.79%)
CCA	2 (1.87%)	8 (17.02%)

¹⁴All Fisher's exact tests were performed with the following online tool: <https://www.quantitativeskills.com/sisa/statistics/fiveby2.htm>

The influence of word order turned out to be statistically significant in a Fisher's exact test ($p < 0.001$). This suggests that there is a greater tendency for Resolved Agreement under SV order than under VS order and vice versa, CCA is more likely to show up under VS order than under SV order.

5 Summary and outlook

In this paper, we have presented some results from our research about agreement with coordinated subjects in the world's languages. The main goal of our investigations was to see which of the factors language, agreement feature, word order, and coordination type determine the agreement strategy. For the purposes of this paper, we concentrated on the structural factors that determine the choice between Resolved Agreement (agreement with the entire coordination where the features of the coordinands determine the features of the coordination) and Closest Coordinand Agreement (agreement with the linearly closest coordinand). We provided some data that suggest that the coordination type as well as the word order independently effect the choice. What remains to be seen is whether these observations can be maintained even for a larger and more balanced set of data and how these observations tie in with syntactic theories of agreement and the structure of coordinations. Lastly, we would like to thank Katharina greatly for making the project a success and we hope that she enjoys reading this paper.

References

- Aoun, J., E. Benmamoun, and D. Sportiche (1994). Agreement, word order, and conjunction in some varieties of Arabic. *Linguistic Inquiry* 25, 195–220.
- Arsenijević, B., J. Willer-Gold, N. Aljović, N. Čordalija, M. K. Vukosav, N. Leko, F. Malenica, F. L. Marušić, T. Milićev, N. Milićević, P. Mišmaš, I. Mitić, A. Peti-Stantić, B. Stanković, J. Tušek, and A. Nevins (2019). Elided clausal conjunction is not the only source of closest-conjunct agreement: A picture-matching study. *Syntax* 23(1), 78–104.
- Béjar, S. (2003). *Phi-syntax: A theory of agreement*. Ph. D. thesis, University of Toronto.
- Bhatt, R. and M. Walkow (2013). Locating agreement in grammar: an argument from agreement in conjunctions. *Natural Language & Linguistic Theory* 31, 951–1013.
- Borer, H. (1984). *Parametric syntax: case studies in Semitic and Romance languages*. Dordrecht: Foris.
- Bošković, Ž. (2009). Unifying first and last conjunct agreement. *Natural Language & Linguistic Theory* 27, 455–496.
- Chomsky, N. (1995). *The minimalist program*. Cambridge, MA: MIT Press.

- Corbett, G. G. (1983). *Hierarchies, targets and controllers: Agreement patterns in Slavic*. London: Croom Helm.
- Foppolo, F. and A. Staub (2020). The puzzle of number agreement with disjunction. *Cognition* 198, 1–20.
- Fowler, H. R. (1983). *The Little, Brown handbook*. 2nd ed. Boston: Little, Brown.
- Fuß, E. (2018). Sprachliche Variation. In A. Wöllstein, P. Gallmann, M. Habermann, and M. Krifka (Eds.), *Grammatiktheorie und Empirie in der germanistischen Linguistik*, pp. 185–224. Berlin: De Gruyter.
- Harbour, D. (2020). Conjunction resolution is nonsyntactic, say paucals. *Glossa: a journal of general linguistics* 5, 18.
- Hartmann, J. M. and C. Heycock (2017). Variation in copular agreement in Insular Scandinavian. In H. Thráinsson, C. Heycock, H. Petersen, and Z. Hansen (Eds.), *Syntactic variation in Insular Scandinavian*, pp. 233–276. Amsterdam: Benjamins.
- Haskell, T. R. and M. C. MacDonald (2005). Constituent structure and linear order in language production: Evidence from subject-verb agreement. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 31(5), 891–904.
- Haspelmath, M. (2004). Coordinating constructions: An overview. In M. Haspelmath (Ed.), *Coordinating constructions*. Amsterdam: Benjamins.
- Haspelmath, M. (2007). Coordination. In T. Shopen (Ed.), *Language typology and syntactic description*, pp. 1–51. Cambridge: Cambridge University Press.
- Himmelreich, A. and K. Hartmann (2023). Agreement with disjointed subjects in German. *Glossa: a journal of general linguistics* 8(1), 8504.
- Marušič, F., A. Nevins, and B. Badecker (2015). The grammars of conjunction agreement in Slovenian. *Syntax* 18(1), 39–77.
- Marušič, F. and Z. Shen (2021). Gender agreement with exclusive disjunction in Slovenian. *Acta Linguistica Academica* 68(4), 516–535.
- Morgan, J. (1985). Some problems of determination in English number agreement. In B. B. G. Alvarez and T. McCoy (Eds.), *Proceeding of the First Eastern States Conference on Linguistics*, pp. 69–78. Columbus, OH: Ohio State University.
- Munn, A. (1993). *Topics in the syntax and semantics of coordinate structures*. Ph. D. thesis, The University of Maryland.
- Munn, A. (1999). First conjunct agreement: Against a clausal analysis. *Linguistic Inquiry* 30(4), 643–668.
- Murphy, A. and Z. Puškar (2018). Closest conjunct agreement is an illusion. *Natural Language & Linguistic Theory* 36, 1207–1261.
- Nevins, A. and P. Weisser (2018). Closest conjunct agreement. *Annual Reviews of Linguistics* 5(1), 1–25.
- Obata, M., S. Epstein, and M. Baptista (2015). Can crosslinguistically variant grammars be formally identical? Third factor underspecification and the possible elimination of parameters of UG. *Lingua* 156, 1–16.
- Palmović, M. and J. Willer-Gold (2016). Croatian mixed-gender conjunct agreement: An ERP study. *Journal of Slavic Linguistics* 24, 137–160.
- Payne, J. (1985). Complex phrases and complex sentences. In T. Shopen (Ed.), *Language typology and syntactic description*. Cambridge: Cambridge University Press.
- Peterson, P. (1986). Establishing verb agreement with disjunctively conjoined subjects:

- Strategies vs. principles. *Australian Journal of Linguistics* 6, 231–249.
- Preminger, O. (2014). *Agreement and its failures*. Cambridge, MA: MIT Press.
- Riemsdijk, H. v. (2006). Free Relatives. In M. Everaert and H. v. Riemsdijk (Eds.), *The Blackwell companion to syntax*, pp. 338–382. Oxford: Blackwell.
- Schmitt, V. (2013). *More pluralities*. Ph. D. thesis, Universität Wien.
- Shen, Z. (2023). Conjunction agreement and the coordinate structure constraint. *Glossa: a journal of general linguistics* 46, 1.
- Sigurðsson, H. Á. and A. Holmberg (2008). Icelandic dative intervention: Person and number are separate probes. In R. D’Alessandro, S. Fischer, and G. H. Hrafnbjargarson (Eds.), *Agreement restrictions*, pp. 251–280. Berlin: De Gruyter Mouton.
- Sobin, N. (1997). Agreement, default rules, and grammatical viruses. *Linguistic Inquiry* 28(2), 318–343.
- Willer-Gold, J., B. Arsenijević, M. Batinić, N. Čordalija, M. Kresić, N. Leko, F. L. Marušić, T. Milićev, Milićević, N. I. Mitić, A. Nevins, A. Peti-Stantić, B. Stanković, T. Šuligoj, and J. Tušek (2016). Conjunct agreement and gender in South Slavic: From theory to experiments to theory. *Journal of Slavic Linguistics* 24(1), 187–224.

