HOW ARE NUMBER AND PERSON ORDERED IN THE VERBAL AND PRONOMINAL DOMAIN IN ROMANIAN?

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Abstract: On the basis of an experimental test conducted on 20 Romanian native speakers, asking them to compare degrees of ungrammaticality of phi-feature violations, the current paper shows that Person violations are felt as more blatant than Number violations and takes this as evidence for a Number > Person ordering in the syntactic representation of agreement in Romanian. Moreover, it argues for the existence of an anchoring between the morphosyntactic and the speech act participant representation of Person Agreement (Sigurdsson 2004).

Keywords: degrees of ungrammaticality, ordering, phi-features, agreement.

1. AIM

The aim of this paper is to present the results of testing whether Person violations are harder to process than Number violations by means of a novel methodology involving ungrammaticality judgments. In addition, the paper tries to correlate these results with the idea of a syntactic hierarchy for the two features. There is fascinating evidence to this point coming from the current psycholinguistic and neurolinguistic literature (Nevins 2007, Mancini & al. 2011 a, b, Mancini et al. 2014 a.o.) and various theoretical arguments and discussions (Zwicky 1977; Corbett 2000; Smith et al. 2016). However, rather than delving into psycholinguists or neurolinguistics, this paper focuses on whether there is speaker awareness of such a hierarchy. In so doing, the paper devises a test which resorts to asking speakers to compare degrees of ungrammaticality of phi-feature violations. The existence of biases towards the violation of a certain feature rather than another are taken to show speakers' subconscious awareness of an existing (possibly structural) hierarchy of phi-features. Speaker awareness, together with corroborating evidence from psycholinguistics, neurolinguistics and morphology serve as evidence for the Number> Person order in the syntactic representation of agreement in Romanian. A possible reason for this might be that the parser is sensitive to locality and the lowest (more local) feature has to be satisfied first, as not checking it would result in severe ungrammaticality.

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RRL, **LXIV**, *2*, p. 199–207, Bucureşti, 2019

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2. WHY UNGRAMMATICALITY JUDGMENTS?

A first question is why use ungrammaticality judgments. The motivation for using such a procedure is related to the fact that it is not always that clear whether a structure sentence is grammatical or not. For Chomsky (1957), grammaticality judgments are tools linguists can use in order to get to a speaker's linguistic competence. Furthermore, Chomsky (1957) argues *wh*-extraction often leads to different results in acceptability, suggesting that acceptability is gradient:

(1) ? Which friend has Thomas painted a picture of?

Ungrammaticality may thus be thought of as a matter of gradience, and, hence, more similar to a cline, along which the violation of the checking of a certain feature is more acceptable than the violation of another. Essentially, investigating ungrammaticality judgments may be thought to reveal something fundamental about which syntactic rules/ features are more important, or which structures are in the local domain of a certain category, and which are not.

3. THE FALSE CHOICE TEST

The test used in this paper is not novel in itself but it is novel in its application. It is a false choice test, where subjects were asked to make a choice between two bad (i.e. ungrammatical) choices. Similar tests have been used a lot in the acquisition literature, where the terminology in practice is that of *felicity judgment test* (FJT): subjects have to choose the more felicitous sentence out of two. One typical example is the FJT used by Foppolo, Guasti & Chierchia (2012), where children witness a fight between two puppets: Puppet 1 utters a sentence and Puppet 2 utters a sentence as well, and children have to choose which of the two sentences best fits the picture they have in front of them. The false choice test representing the focus of this paper is quite similar, with the exception that each of the two sentences the subjects get to choose from are ungrammatical. Moreover, given the fact that the subjects are not children, but adults, there was no need to design the experiment by making use of puppets. Adults may answer acceptability questions even if they do not witness a puppet fight, whereas, for kids, the fun ingredient is essential.

3.1 Participants

The participants in the experiment were 20 Romanian native speakers (Range: 18–67;2, Mean age: 32), former and current students of the Faculty of Foreign Languages.

3.2. Procedure

Subjects were asked to choose the "lesser evil" out of two ungrammatical sentences, i.e. the sentence that seemed less ungrammatical to them out of a set of two ungrammatical

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ones. Subjects were told that, even though both of the sentences are ungrammatical, they still have to choose the one that seems better, according to them. Making subjects choose one variant out of two, when, in fact, they may deem both sentences equally ungrammatical might seem to force upon the speakers the idea that there is a difference in ungrammaticality between the sentences. However, it was thought that, if the forced choice results in all or the majority of speakers choosing one variant as less ungrammatical, this would actually reveal the existence of a real difference between the degrees of ungrammaticality of the sentences.

3.3. Materials

Subjects were given 6 pairs of sentences, each pair consisting of a sentence where there is person, but not number agreement between the subject and the verb, and a sentence with number, but not person agreement between the subject and the verb (see (2a) vs (2b), (3a) vs (3b)):

(2) a. *Ei citeşte o carte.
3rd .MASC.PL. read- 3rd .SG. ART-FEM.SG. book
b. *Ei citim o carte.
3rd .MASC.PL. read- 1st .PL. ART-FEM.SG. book
(3) a. *Eu dansăm zilnic.
1st. SG. dance- 1st.PL. daily
b. *Eu dansezi zilnic.
1st. SG. dance- 2nd.SG. daily

A pair of sentences was tested for each pronoun, except the feminine 3rd singular one, so as to avoid possible gender effects (see **ANNEX**).

Table 1

Pronominal paradigm for the Nominative

Person	Singular	Plural
1	eu	noi
2	tu	voi
3	el(masc) ea (fem)	ei (masc) ele (fem)

3.4. Results

The results show that Person violations generate more serious perturbations than a Number anomaly. For each pair of sentences, it was always the case that more than 70% of the speakers chose the variant with the Number violation as the more acceptable ungrammatical utterance (see **Table 2**):

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Table 2

Number of subjects considering the Number violation less blatant.

Pair of Ss	Number of subjects for whom the Number violation is less blatant
A	26/ 30 (86.66%)
B	23/ 30 (76.66%)
C	21/ 30 (70%)
D	24/30 (80%)
E	24/ 30 (80%)
F	27/30 (90%)

The mean number of subjects picking the Number violation as less blatant per pairs of sentences was 24.166/ 30 (80.55%). The sentences with Person violations that were chosen as correct more, but still not enough to overturn the result of the ungrammaticality task were:

(4) *Tu dorm.
2nd.SG. sleep-1st.SG.
(5) *El găteşti tot timpul.
3rd.MASC. SG. cook-2nd.SG. all time-the

They are sentences where the verbal form is somewhat more similar, phonetically, to the correct verbal form corresponding to the subject pronoun (*dormi*-2nd.SG, *găteşte*-3rd.SG). In all the other cases, almost all speakers unanimously picked the Number violation utterance as less anomalous.

4. ACCOUNT

4.1 Mancini et al. (2014)'s account

4.1.1 *There is anchoring between the morphosyntactic and the speech act participant representation characterizing person agreement*

Mancini *et al.* (2014) account for speakers' choice of Number violations as less anomalous by arguing that a Person violation disrupts the evaluation of the perspective from which a sentence is reported (Sigurdsson 2004), while a Number violation only changes the Number property of the subject of predication. A broken anchoring between the morphosyntactic and the speech act participant representation that characterizes Person Agreement leads to the parser's inability to associate arguments with speech participants and their roles and to identify the subject. Mancini et al. (2014) correlates this difference in sensitivity to violation to a hierarchy between Person and Number, adopting Sigurdsson's (2004) decomposition of phi-features:

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(6) a. Infl = Pers(on)$_S$, Num(ber)$_S$, M(ood), T(ense)
b. v = Pers(on)$_O$, Num(ber)$_O$, Asp(ect), v
(7) [CP ... [IP Pers$_S$, Num$_S$, M, T, Pers$_O$, Num$_O$, Asp … [vP … v … (partial clause structure)
(8) [CP ... speech event features [IP … [vP ...]]]
(9) [CP Force … Λ_A, Λ_P … Top … ST … SL [IP … Perss … Nums … M … T … [vP …]]], where ST= time of speech, SL= location of speech, Λ_A= the logophoric agent, Λ_P= the logophoric patient

Sigurdsson (2004) proposes that:

(10) a. An event participant (argument) is valued under Theta-Person matching as being either [+Person] or [-Person].
b. Only [+Person] arguments are potential speech participants, that is, they are the only arguments that undergo Λ-matching.

The matching relations are the ones in (11):

(11) a. θ = +Person = +ΛA, –ΛP: 1P by computation
b. θ = +Person = –ΛA, +ΛP: 2P by computation
c. θ = +Person = –ΛA, -ΛP : 3P by computation
d. θ = –Person = (0ΛA, 0ΛP): 3P by default

The correlation is not pragmatic, but strictly inferential relationship: if the referent of the event role (θ- role) is identical to the referent of ΛA, we get 1st person, if it is identical to the referent of ΛP, we get 2nd person, otherwise, we get 3rd person.

4.1.2. *Evidence in favour of ΛA, ΛP, ST, SL (Sigurdsson 2004)*

Sigurdsson (2004) brings various kinds of evidence in favour of the existence of ΛA (the logophoric agent), ΛP (the logophoric patient), ST (speech time), SL (location of speech), such as (i) logophoric matching or (ii) speech event binding.

(i) Logophoric Matching

(12) a. He said to me that he loved me.
b. He said to me: “I love you”.

The difference between (12a) and (12b) cannot be accounted for in terms of “direct” binding relations between the overt arguments, but rather LOGOPHORIC MATCHING: if any clause has a local speech event, and, second, if the local speech event of subordinate clauses is ANAPHORIC, i.e. if its features are bound (hence “redefined”) by preceding elements. Notably, in some languages, regular subordinate clauses show the same shift of pronoun reference as does direct speech in languages like English (Subbarao 2002). “Direct” binding could again not account for such facts:

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(13) a. Punjabi:
Gurnekne aakhiaa ki mãi jããvaagaa.
Gurnek:ERG said that I go:FUT:1M.SG
"Gurneki said that he would go." (also: "… I would go.")
b. Persian:
Ali be Sara goft ke man tora doost daram.
Ali to Sara said that I you friend have.1SG
"Ali told Sara that he likes her." (also: ."‥ that I like you.")
c. Kurdish (Sorani):
Ali ba Sara goti ke men tovem xosh garaka.
Ali to Sara said that I you pleasant need-is
"Ali told Sara that he likes her." (also: " ... that I like you.")
d. Hindi-Urdu:
Saritane kahaa thaa ki mainN aapse kal miluungii.
Sarita:ERG said had that I you-with tomorrow will-meet
"Sarita had told me that she'd meet me tomorrow." (also: " … that I will meet you tomorrow.")

(ii) Speech event binding

Speech event binding may be found at the level of tenses, pronouns or time adverbials. An example of speech time binding can be seen in (14), where *hún* is bound by different elements and, consequently, gets different readings:

(14) a. Ég sá að hún fór.
I saw that she left.IND.PAST
"I saw that she was leaving."
b. Ég vonaði að hún færi.
I hoped that she left.SUBJ.PAST
"I hoped that she was leaving/would leave."

Subordinate speech time binding involves binding by either the Speech NOW or the matrix grammatical tense, not by both.

At the pronominal level, an interesting phenomenon exemplifying speech event binding is long distance reflexization, in languages like Icelandic:

(15) Jón heimtar að María raki sig/hann.
John demands that Mary shaves SELF/him
"John demands that Mary shaves him."

The reflexive *sig*, which is usually strictly clause bounded, may be bound by the matrix subject. The fact that it can be bound across a potential binder this seems to blatantly violate standard conceptions of locality and the Minimal Link Condition. But, if one thinks that the use of the long distance anaphor reflects on the mind of the matrix subject *Jón*, and the subordinate event is seen from his point of view, not the speaker's, then it can be assumed that the speech event contains a point of view feature, POW, that is usually bound

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by the overall logophoric agent, but may be bound by a superordinate subject in long distance reflexivization contexts.

As far as time adverbials are concerned, (16) provides an example of how binding can take place:

(16) a. Yesterday, 4th of July, John said to me: "I'll meet you here tomorrow".
b. Yesterday, 4th of July, John said to me that he would meet me here tomorrow.

In (16a), *tomorrow* refers to 5th of July, while it refers to 6th of July in (16b). Hence, the reference of *tomorrow* is anchored with John in (16a), but with the speaker (overall logophoric agent) in (16b).

Sigurdsson (2004) orders Person above Number in the syntactic hierarchy. Heim and Kratzer (1998) also adopt a Person-Number hierarchy and argue that phi-features are syntactically adjoined to pronominals and their semantic contribution is a presupposition that restricts the range of the assignment of values to variables. For instance, they put forth the following structure for the pronoun *she*:

(17) [third person] DP> [feminine] DP> [singular] DP

While there is serious empirical and theoretical motivation behind Sigurdsson (2004)'s account, it is not the only possible analysis. The issue at stake is, of course, establishing what the exact ordering between Person and Number .

4.2. My account: Number> Person

While I adopt Sigurdsson's (2004) idea that there is anchoring between the morphosyntactic and the speech act participant representation characterizing Person Agreement, I depart from Sigurdsson (2004) in assuming a different ordering for Person and Number. More exactly, instead of assuming Person is above Number, several arguments will be brought for the idea that Number is above Person within the pronominal and the verbal inflection domains.

Within the pronominal domain, Number can be argued to be above Person based on morphological and semantic arguments.

(i) Morphological argument: PL contains SG in pronouns

A first morphological argument is that, if the plural contains the singular morphologically and the singular is considered the default (Ackema & Neeleman 2017), then Number should be placed above Person:

(18) a. el< ille (3rd. MASC.SG.), ei< illī (3rd.MASC.PL.) (Romanian< Latin)
b. ea< illa (3rd.FEM.SG.), ele< illae (3rd.FEM.PL.) (Romanian< Latin)

Please note there is further evidence to this point coming from other languages, such as Mandarin Chinese, Trumai, Korean, Canela-Kraho, Miskitu a.o. (see WALS).

(ii) Morphological argument: PL contains SG in nouns

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A second morphological argument drawing on the approximate identity between nouns and pronouns is that, if nouns have a default 3rd person feature value (Corbett 2000), then, when one adds the number morphology, the structure will have Number> Person rather than the other way round. Interestingly, some languages form the plural of pronouns with the same morpheme that is used with nouns (or certain noun classes) e. g. Mandarin Chinese (Corbett 2000:76):

(19) a. SG PL (Pronouns)
1 wǒ wǒ -men
2 nǐ nǐ-men
3 tā tā-men

b. xuésheng
student
xuésheng-men
student-PL

(iii) Semantic argument

It makes more sense to argue that you first establish the person of the subject and then the number than the other way round.

All these arguments suggest the structural positioning of Person lower down in the tree (Number> Person).

At the verbal inflectional level, the Number> Person ordering is also supported by the above-mentioned semantic argument. Moreover, it seems desirable for the elegance of the system to argue that the pronominal domain and the verbal inflectional domain are symmetrical (see Abney 1987), exhibiting the same internal Number> Person ordering:

(20) [CP Force … ΛA, ΛP … Top … ST … SL [IP … Numss … Perss … M … T … [vP …]]]

As the structure is built, step-by-step, it is very important to build it correctly, or else the derivation will crash, and agreement will fail. Since Number and Person seem to have separate agreement demands, if Person agreement fails, it will do so at an earlier stage, thus triggering a more powerful effect, while, if Number agreement fails, it will do so at a later stage, triggering a less powerful effect[2]. Locality seems to play a part in a Number> Person account, and the closest projection to N has stricter demands, which need to be fulfilled immediately.

In conclusion, first, one needs to establish the perspective from which a sentence is reported, and, only then, does one establish the number of the predication subject. There is an anchoring between the morphosyntactic and the speech act participant representation of Person Agreement (Sigurdsson 2004) but Number occurs above Person, not below Person. This provides additional structural motivation for why Person violations are more blatant than Number violations, as attested both by neurolinguistic and psycholinguistic data, and by the ungrammaticality judgments experiment in this paper.

[2] In a nanosyntactic fashion, where Number and Person are further decomposed into "tinier" features (PL>SG> Speaker> Addressee> Participant (Blix 2016, Wyngaerd 2018, partly inspired by Harley & Ritter 2002), building Person in a wrong manner equates to placing the wrong bricks in the build-up of a castle, which might cause it to crumble altogether.

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ANNEX

A. 1. *Eu dansăm zilnic. 1st.SG. dance-1st.PL. everyday 2. *Eu dansezi zilnic. 1st.SG. dance-2nd.SG. everyday	D. 1. *Noi visez oi. 1st.PL. dream-1st.SG. sheep-PL. 2. *Noi visaţi oi. 1st.PL. dream-2nd.PL. sheep-PL.
B. 1. *Tu dormiţi prea mult. 2nd.SG. sleep-2nd. PL. too much 2. *Tu dorm prea mult. 2nd.SG. sleep-1st.SG. too much	E. 1. *Voi citim o poezie pe zi. 2nd.PL. read-1st.PL a-FEM.SG. poem on day 2. *Voi citeşti o poezie pe zi. 2nd.PL. read-2nd.SG. a-FEM.SG. poem on day
C. 1. *El gătesc tocăniţă 3rd.MASC.SG. cook-3rd.PL. stew mereu. always 2. *El găteşti tocăniţă 3rd.MASC.SG. cook-2nd.SG. stew mereu. always	F. 1. *Ei citeşte o carte. 3rd.MASC.PL. read-3rd.SG a-FEM.SG. book 2. *Ei citim o carte. 3rd.MASC.PL read-1st.PL a-FEM.SG. book

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