

The interpretation of null subjects in Romanian.

An information-structure approach for comparative analysis.*

Abstract

This paper explores the *acceptability* and *interpretation* of referential null subjects in Romanian in different syntactic conditions and distinct clause types (matrix clauses, embedded under bridge verbs, embedded under factive verbs and adverbial clauses). Based on the results of an original online survey (carried out by almost 80 respondents), it is shown that Romanian is a consistent *pro*-drop language, in which no partial *pro*-drop properties can be found. Furthermore, the results emerged from the analysis provide significant support to the validity of an information-structure approach to the interpretation of null subjects, in which the Topic Criterion (Frascarelli 2007), the formation of Topic chains and the existence of silent Topics play a crucial role.

Keywords

null subjects, consistent/partial *pro*-drop, Topic Criterion, Topic chain, A-Topic, G-Topic, silent Topic, locality

1. The Null Subject Parameter and the interpretation of Null Subjects from an IS-perspective

1.1 A short overview

In its original formulation (Perlmutter 1971), the *pro*-drop parameter aimed to capture the empirical observation that in some languages a *definite, referential, pronominal subject* must be expressed in all finite clauses.¹ This observation was resumed, extended and re-elaborated in the form of the ‘Extended Projection Principle’ in Chomsky (1982) as an addendum to the former Projection Principle (Chomsky 1981), a basic tenet in Generative Grammar. Since then, the interest in null subjects has never decreased and several works have attempted to define the formal properties that determine the setting of its different options, yielding consistent, partial, radical, semi-*pro*-drop and non-*pro*-drop languages (for background details, discussion and references, cf. Holmberg et al. 2009, Biberauer et al. 2010, Cognola and Casalicchio 2018).

Since the seminal work carried out by Jaeggli and Safir (1989) and Rizzi (1982, 1986), the Null Subject Parameter (NSP) has been claimed to be

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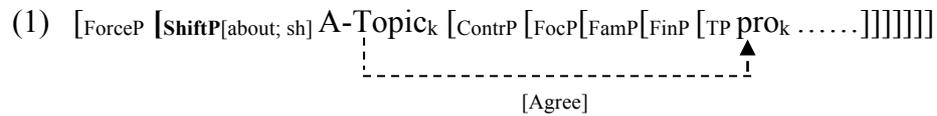
¹ In this work we concentrate on referential null subjects; other types such as arbitrary and expletive null subjects are left off.

dependent on the φ -features that are specified or encoded in the relevant licensing head (i.e., the Inflectional head node).

Assuming a novel approach, Frascarelli (2007) moves the focus of analysis from licensing to the *interpretation of licensed nulls subjects*. That is to say, assuming with Holmberg (2005) that the licensing of a null subject (hereafter, NS) depends on the presence of a D-feature in T, Frascarelli concentrates on *how* a licensed NS can be correctly given a referential index.²

In this respect, an information-structure (IS) strategy is proposed, according to which the interpretation of a referential NS depends on a matching relation ('Agree', in minimalist terms; cf. Chomsky 1995) between *pro* and a specific type of Topic, that is to say, the *Aboutness-shift* Topic (A-Topic). The latter is characterized in Frascarelli and Hinterhölzl (2007) as the Topic merged in the highest Topic position in the C-domain (ShiftP; cf. (1) below), whose head is specified for the [about(ness); sh(ift)] features. This means that the A-Topic is endowed with the discourse property of proposing "what the sentence is about" (using Reinhart's 1981 definition), also providing a 'file card' for the mental folder in which relevant information is stored.

² As a matter of fact, φ -features only provide functional information about the person, number and gender of a null subject, but they do not explain how it can be syntactically 'anchored' to the intended antecedent in a consistent pro-drop language.



1.2 The Topic Criterion and the formation of Topic chains

Since every predicational (i.e. non-thetic) sentence must have a topic (cf., among others, Kuroda 1965; Lambrecht 1994, Krifka 2007) and Agree is a local relation, the matching relation illustrated in (1) must be realized for every occurrence of an NS.

Nevertheless, conversation implies a *multi-clausal domain* in which different propositions might ‘be about’ the same Topic. In this case, the established A-Topic is kept *continuous* across sentences and needs not be overtly realized in the subsequent C-domains. Hence, *silent* (i.e., null) *copies of an established A-Topic* must be assumed.

This framework of analysis is formalized in the so-called Topic Criterion, which accounts for the IS-identification of a referential *pro*:

(2) **Topic Criterion** (re-elaborated from Frascarelli 2007 [35])

- a) The high Topic field in the C-domain contains a position in which the [aboutness; shift] feature is encoded and matched (via Agree) by the local (3rd person) NS;

- b) When continuous, the A-Topic can be null (i.e., silent).

Furthermore, from a conversational dynamics perspective, Bianchi and Frascarelli (henceforth, B&F 2010) have later provided evidence that the A-Topic is a *conversational move* insofar as topic selection is a *speech act itself* (cf. Krifka 2001: 25). Consequently, its realization is dependent on illocutionary force and, as such, restricted to *root clauses*. This is formalized as follows:

(3) **Interface Root Restriction (IRR; B&F 2010, [41])**

Information Structure phenomena that affect the conversational dynamics (CG management) must occur in clauses endowed with illocutionary force that implement a conversational move.

Topic continuity thus gives rise to the creation of *Topic chains*, which must be started from root (or root-like) clauses and include overt and silent copies that provide a *local antecedent* to the NSs realized in the relevant chain:

(4) **Topic Chain Condition** (Frascarelli 2018 [19])

- a) An A-Topic-chain can only be started from a root (or root-like) C-domain;
- b) The A-Topic heading the Topic chain can be silent.

Frascarelli's (2007) theory has been supported by comparative analyses on a number of typologically different languages and, though her proposal dealt with *consistent* NS languages in its original formulation (i.e., with languages that can realize NS in all syntactic conditions), subsequent evidence has been provided showing that the Topic Criterion (2) should be considered as a *macro-parameter* and that the Topic Chain Condition (4) can account for the interpretation of NSs in *partial* and *radical* NS languages as well (Frascarelli 2018; Frascarelli and Jiménez-Fernández 2019, Frascarelli and Casentini 2019). In this picture, partial and radical properties rely on IS conditions, while differences depend on interface conditions (PF visibility) and independent syntactic restrictions (cf. cited works for details).

In this work we will contribute to this comparative analysis and evaluate the Topic Criterion in Romanian, a Romance language for which no systematic analysis has ever been dedicated to the interpretation of NSs and the creation of Topic chains. Relevant data for analysis will be drawn from the original experiment illustrated in Section 2 below.

2. The Experiment: structure and methodology

2.1 Objective and working hypothesis

The present experiment basically replicates the survey originally designed and carried out in Frascarelli (2018) to compare Italian, a consistent NS language, with partial *pro*-drop in Finnish and Russian. The objective is to evaluate the acceptability and interpretation of NSs in Romanian and see whether and to what extent Romanian can be considered a consistent *pro*-drop language. To this purpose, the experiment has been translated and distributed to a large number of native informants, so as to check their judgements on a number of matrix and subordinate clauses, in which the indicative mood is always used.³ The results obtained have been thus systematically compared with the data collected for Italian, Finnish and Russian.

2.2 Structure and informants

³ Hence, clauses featuring the subjunctive mood have not been tested. This decision was chiefly due to the necessity of realizing a *systematic comparison* between Romanian and the languages tested in previous experiments, in which the same questionnaire has been used. Nevertheless, we reckon that this limitation does not lessen the significance of results and the validity of relevant conclusions, since the indicative is the most frequent mood, used for factual statements and positive beliefs, and it can be found in all languages. Hence, we surmise that the syntactic behaviour emerged from the present analysis can provide a reliable characterization of the *pro*-drop quality of Romanian.

The test was loaded on a dedicated website and distributed online (hence, participation was free and no selection was imposed). We could thus collect 215 full questionnaires, even though only **79** of them were completed and could be thus considered for analysis. Though anonymous, the questionnaire included a preliminary section asking for demographic and sociolinguistic information (age, sex, provenience, education, familiarity with linguistics), which is given in Table 1 below:

<i>TOT</i>	<i>Age (av.)</i>	<i>sex</i>		<i>education</i>		<i>field</i>		<i>Linguistics competence</i>
		M	F	univ.	other	human.	other	Yes
79	32	19%	81%	93%	7%	85%	15%	74%

Table 1 - Background data on informants⁴

The questionnaire included 7 conditions (listed below). Each condition was tested through two target sentences and each sentence was used twice in order to analyse the interpretation of either an NS or an overt pronoun in the same clausal type, namely:

- (a) in the complement of a bridge verb,
- (b) in the complement of a factive verb,

⁴ As for provenience, 90% of informants were resident in Bucharest area, which can be plausibly considered as representative of the standard variety of Romanian. Of course, dialectal variation can be an interesting subject for future research (we thank an anonymous reviewer for this suggestion).

- (c) double embedded with an intervening 3rd singular pronoun,
- (d) having an embedded DP as intended antecedent,
- (e) in a temporal adverbial clause (with and without an overt Topic in initial position),
- (f) in a conditional adverbial clause,
- (g) in a matrix sentence without an overt Topic.

The test thus included a total of 28 target sentences (a necessary limitation to avoid tiredness), to which 6 distractors have been added, for a total of 34 tokens.⁵ Target sentences were conveniently distanced and randomized and, importantly, informants could not ‘go back’ in the survey (hence, they could not confront, ‘correct’ or double-check their former answers). All sentences were preceded by a context introducing possible antecedents.

⁵ An anonymous reviewer has pointed out that the number of fillers is too limited for a scientific experiment. We acknowledge that fillers should be at least 50% of total sentences; nevertheless we decided to reduce their number to avoid a lengthy test, which is very likely to be left uncompleted by informants. Furthermore, we reckon that each of the seven conditions tested in the experiment could serve as a ‘distractor’ for the others, since informants were confronted with different constructions and phenomena and no sing-song effect could be produced.

Acceptability was expressed on a Likert scale from 0 to 4 (with 0 being totally unacceptable, and 4 totally acceptable)⁶. Only with a positive evaluation (i.e., either 3 or 4) would a sub-question follow, asking for the subject of the action expressed in the target sentence. Three alternatives were given and informants were asked to indicate one of them.

3. Data Analysis: Results and Discussion

3.1 NS in the complement of a bridge verb

The first structural context we deal with is the case of a *pro* sitting in the complement of a ‘bridge verb’. As is generally known, this is a ‘root-like’ context, insofar as it allows for the realization of a number of phenomena that are only allowed in root sentences and in a subset of root-like subordinate clauses.⁷ Importantly, one of such phenomena concerns the

⁶ We preferred to use the notion of ‘acceptability’ rather than ‘grammaticality’ since a Likert scale implies the possibility of a *gradient* evaluation for the sentences under examination, while grammaticality requires a clear-cut judgment, which could bias the present investigation.

⁷ The ‘bridge’ term traditionally refers to verbs allowing for long-distance dependencies (i.e., verbs of saying and opinion, like *say* and *think*, whose complement clauses do not form a ‘barrier’ for movement). Hence, the most used syntactic diagnostics to evaluate verbs as belonging to this group is checking whether they can be subject to long movement

realization of an A-Topic in the relevant embedded C-domains (cf. B&F 2010). Let us then consider sentence (5) and the interpretations provided for NSs in Table 2 below (here and in the rest of the paper, Romanian results are

operations, like in (i):

- (i) [What_{t_k} do you **think** [t_k that Mary **said** [t_k that Ann gave John t_k for his birthday party]]]?

However, to provide a comprehensive list of bridge verbs is not easy. In fact, a very debated topic in the literature is exactly whether a verb should join the bridge class or not for its semantic properties. For example, it seems to be generally agreed that verbs with a more factive interpretation (Kiparsky and Kiparsky 1970) permit extraction more readily, so that predicates of stating and thinking are usually better than verbs of asking. Furthermore, frequency also plays a role: if a verb is sufficiently frequent it becomes more transparent to movement.

Given the above, the following list can be provided for Romanian, since these verbs are generally considered as bridge verbs *cross-linguistically*: *spune* ('say'), *afirma* ('assert'), *explica* ('explain'), *crede* ('believe'), *gândi* ('think'), *nega* ('deny'), *admite* ('admit'), *confrima* ('confirm'), *conveni* ('agree').

In investigations dedicated to root phenomena, complements of bridge verbs play a major role since they have a 'quasi-root' character, that is to say, they allow for the realization of root operations, while this is not possible in complements of factive or volitional verbs (cf., among others B&F 2010; Gärtner 2001; Haegeman 2002; Emonds 2004; Meinunger 2004; Heycock 2006).

compared with the Italian, Russian and Finnish data originally presented in Frascarelli 2018).⁸

(5) [John is telling Mary news about two common friends, Leo and his brother, since he met Leo some days before. John says:]

- a. *Leo_k ha detto che **pro** ha comprato una casa* (ITA)
- b. *Leo a zis că **pro** a cumpărat o casă* (ROM)
- c. *Leo_k kertoi, että **pro** oli ostanut talon* (FIN)
- d. *Lev_k skazal čto **pro** kupil dom* (RUS)

‘Leo_k said that he_k/his brother_z bought a house.’⁹

⁸ Notice that the ‘pro’ notation was not used in the survey, to avoid confusions with the informants (possibly not familiar with linguistic terms). However, it is used now to illustrate the relevant examples, for the sake of analysis.

⁹ Notice that the four languages under examination will be always illustrated in the order given in (5). Hence, this indication will be not provided in the examples below, for the sake of space.

		<i>Leo</i>		<i>his brother</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	31	24%	40	31%	57	45%
ROM	79/79	26	33%	26	33%	27	33%
FIN	273/273	188	69%	38	14%	47	17%
RUS	53/53	26	50%	7	12%	20	38%

Table 2 – NS embedded under a matrix bridge verb

As is shown, this clausal type allows for embedded NSs in all the languages under examination, with interpretive differences, though. In particular, while in partial NS languages (Finnish and Russian) the matrix Topic-‘subject’ is more frequently selected for the antecedent role, no preference can be detected in Romanian (like in Italian), in which answers are equally distributed between the three options, showing that, in the absence of the prosodic cues that characterize an A-Topic, ambiguity dominates (consistent with Frascarelli’s 2018 conclusions).

These results also show that an NS is *not necessarily subject-oriented* in consistent *pro*-drop languages (differently from what is claimed in Filiaci et al. 2013) and that the interpretation of an NS never depends on overt

syntactic control.¹⁰ In this respect, statistical analysis shows that Romanian and Italian are equivalent, since the difference between the informants who selected *Leo* and those who selected *his brother* is not significant according to the Fisher Exact Test ($p = 0.5837$), as well as the difference between the informants who judged *both options* as possible and those who selected either *Leo* or *his brother* ($p = 0.1144$ and $p = 0.3924$, respectively).

Let us now consider the case in which an overt pronoun is realized in the embedded clause, to see whether any difference can emerge with respect to an NS. Consider (6) below and the data in Table 3 (the context is the same as in (5) above):

- (6) a. *Leo_k ha detto che lui ha comprato una casa*
 b. *Leo a zis că el a cumpărat o casă*
 c. *Leo_k kertoi, että hän oli ostanut talon*
 d. *Lev_k skazal čto on kupil dom*
- ‘Leo_k said that he_k/his brother_z bought a house.’

¹⁰ Incidentally notice that ‘his brother’ is a possible antecedent in Finnish and in Russian as well. Hence, partial *pro*-drop languages also show some form of ‘gradience’ in this respect (on this notion, see below in the Conclusions).

		<i>Leo</i>		<i>his brother</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	35	27%	36	28%	57	45%
ROM	79/79	32	40%	32	40%	15	20%
FIN	273/273	60	22%	22	8%	191	70%
RUS	53/53	20	38%	3	6%	30	56%

Table 3 – overt pronoun embedded under a matrix bridge verb

Table 3 shows that in Romanian, like Italian, overt pronouns are *not discourse-context oriented* and that, as emerged for NSs, no preference is attested for either exclusive referential interpretation. As a matter of fact, the difference between the figures recorded for *Leo* and those recorded for *his brother* is absolutely not significant ($p = 1.0000$), in both languages.

Nevertheless, in this case Romanian shows a significant difference with respect to Italian (and the other languages examined) concerning the selection of the ‘both’ option: while this answer is dominant in Italian, a specific referential option is preferred in Romanian (whereas any option is equally fine with an NS, cf. Table 2 above). Indeed, the difference between the values scored for the ‘both’ option in Italian and in Romanian with

respect to either *Leo* and *his brother* are statistically significant (i.e., $p = 0.0011$ and $p = 0.0013$, respectively).¹¹

This difference seems to show that in Romanian overt pronouns trigger a *focus* interpretation, possibly connected with a *corrective effect*, which makes the ‘both’ option (almost) immaterial. However, since no context is provided in the experiment, this interpretation only relies on the discourse role assigned to the matrix subject (*Leo*) by informants: if it is considered an A-Topic, coreference with a focused pronoun is excluded (since A-Topics can only form Topic chains), if it is seen as a background element, coreference with *lui* can be triggered¹²

Based on the data just discussed, we can conclude that, in the absence of interface (prosodic) cues, Romanian (like Italian) equally admits as a

¹¹ On the other hand, it should be noticed that, when an exclusive referential reading is at stake, partial *pro*-drop languages decidedly select an *overt* Topic as an external antecedent (*Leo*, in this case), a preference that is statistically extremely significant in Finnish ($p < 0.0001$) and very significant in Russian ($p = 0.0010$). The interface requirement for an overt antecedent seems to be a specific condition of partial NS languages (Frascarelli and Jiménez-Fernández 2019). The fact that an overt antecedent is not preferred to a silent one in Romanian provides additional evidence that this language has no partial *pro*-drop qualities.

¹² Though interesting, a throughout treatment of this case is beyond the purposes of the present paper. This issue is therefore left open for future research on the interaction between antecedent selection of overt pronouns and (embedded) Correction. We thank an anonymous reviewer for this suggestion.

possible antecedent for a *pro*(noun) either an overt A-Topic (i.e., the Topic-‘subject’ in the matrix clause,¹³ cf. (7a) below) or a silent A-Topic, referring to an entity that is part of the context but is not overtly realized in the relevant matrix C-domain (as in (7b)). According to the framework assumed, Romanian thus qualifies as a consistent *pro*-drop language.

(7a) [_{ShiftP} **Leo**_k [_{TP} *pro*_k *a zis* [_{ForceP} [_{Force} ‘*că*’ [_{ShiftP} <**Leo**>_k [_{TP} *pro*_k /**el**_k *a cumpărat o casă*]]]]]]]

(7b) [_{ShiftP} <**his brother**_k> [_{TP} *Leo a zis* [_{ForceP} [_{Force} ‘*că*’ [_{ShiftP} <**his brother**_k> [_{TP} *pro*_k /**el**_k *a cumpărat o casă*]]]]]]]

3.2 NS in the complement of a factive verb

Let us now examine the interpretation of an NS that is embedded under a factive verb. This condition is particularly interesting since the complement of a factive verb is presupposed information (cf. Meinunger 2004) and, as

¹³ In this respect, it is important to remember that referential subjects in NS languages are assumed to be sitting in an A’-position (cf. Frascarelli 2007); this means that a preverbal DP like *Leo* in (5)-(6) is in fact a Topic (while an NS is merged in the canonical subject position). Nevertheless, since the ‘*pro*’ notation was not used in the survey (cf. note 8), matrix Topics appear as preverbal ‘subjects’ in the target sentences.

such, it does not have root-like properties.¹⁴ This means that the C-domain of a clause embedded under a factive verb cannot host an A-Topic (contrary to the complements of bridge verbs, cf. (7a-b) above), but only G-Topics,¹⁵ which can be linked to a silent A-Topic in the matrix C-domain.

¹⁴ As in the case of bridge verbs, a commonly agreed definition and an exhaustive list of factive verbs are hard to provide (for important discussion, cf. Meinunger 2004). Indeed, semantic properties play a central role also in the definition of this verb class, which generally includes emotive and ‘truly’ factive verbs (contrary to bridge verbs, no assertion is made when true factives are used; cf. Kiparsky and Kiparsky 1970). What is expressed is a fact, an emotion or a state of mind (i.e., something that cannot be negated). Commonly assessed factive verbs are *displace* (‘resent’), *regret* (‘regret’), *neplâcere* (‘be sorry’), *fii surprins* (‘be surprised’), *deranja* (‘bother’), *deplânge* (‘deplore’), *fii jignit* (‘take offence’).

Syntactic heuristic for this verb type is the block imposed on long movement operations and root phenomena, like VP preposing, as is shown respectively in (i)-(ii) below:

(i) *[What_k do you **regret** [t_k that Mary **said** [t_k that you might want t_k for your birthday party]]]?

(ii) *I **resent** that never in my life did I do something like that.

¹⁵ The G-Topic can be considered as a D-linked constituent, either in a ‘strong’ (Heim 1982) or in a weak/familiar sense (Roberts 2003). According to Frascarelli and Hinterhölzl’s (2007) typology, (at least) two types of G-Topics should be distinguished: (i) *Aboutness* G-Topics, which are part of a topic chain and, as such, they serve a *continuity* function as ‘low copies’ of an established A-Topic; (ii) *Background* G-Topics, which are not linked to the current A-Topic and serve to retrieve given/ background information.

For the sake of space, we will not show the data concerning one level of embedding, since they basically show the same results illustrated for bridge verbs in Section 3.1 above, and pass immediately to consider the interpretation of an NS in complex sentences with two controlling antecedents (condition (c) in Section 2.2):

(8) [Jari is going with Leo to the race]

- a. *Jari_k si dispiace che Leo_z pensa che **pro** perderà la gara*
- b. *Lui Jari îi pare rău că Leo crede că **pro** va pierde concursul*
- c. *Jaria_k harmittaa, että Leo_z ajattelee, että **pro** häviää kilpailun*
- d. *Iari_k¹⁶ žal čto Lev_z думаet čto **pro** proigaet corebnovanje*

‘Jari_k is sorry that Leo_z thinks that he_k/he_z will lose the race.’

		<i>Jari</i>		<i>Leo</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	20	16%	45	35%	63	49%
ROM	79/79	21	27%	45	57%	13	16%
FIN	273/273	32	12%	167	61%	74	27%
RUS	53/53	5	10%	28	53%	20	37%

Table 4 – NS double embedded under a matrix factive verb

¹⁶ The ‘intended’ subject of the factive predicate ‘be sorry’ in Russian is marked with a DAT Case.

As we can see, the embedded antecedent (*Leo*) is selected by the majority of Romanian informants, with a difference that is statistically significant with respect to either the matrix subject (*Ion*; $p = 0,0180$) or the ‘both’ option ($p = 0.0003$), as in partial NS languages. Hence, in this case, Romanian shows a crucial difference with Italian.

Since the Topic-‘subject’ embedded under a factive verb cannot be an A-Topic (but only a G-Topic), this result leads to conclude that the relevant chain is headed by a *silent A-Topic*, which is in the C-domain of the bridge verb, as is shown in (9a) below:

(9a) $[_{TP} \text{ lui Jari } \hat{i} \text{ pare } \hat{r}\hat{a}u \text{ } [_{\text{ForceP}} \text{ } \hat{c}\hat{a} \text{ } [_{\text{FamP}} \text{ } Leo_k \text{ } [_{\text{backgr}}] \text{ } [_{TP} \text{ } t_k \text{ } crede \text{ }]]]]]]$
 $[_{\text{ForceP}} \text{ } \hat{c}\hat{a} \text{ } [_{\text{ShiftP}} \text{ } \langle \mathbf{Leo}_k \rangle \text{ } [_{TP} \text{ } pro_k \text{ } va \text{ } pierde \text{ } concursul \text{ }]]]]]]$

In other words, the DP *Leo*, which is background information in the first embedded clause, is (silently) proposed for a topic shift after the bridge verb.

The preference for this interpretation seems to show that Romanian is sensitive to a *locality* requirement, so that the *closest* link is more frequently selected for antecedence in a Topic chain (like in partial *pro*-drop languages). On the other hand, this requirement does not seem to be operative in a language like Italian, in which no significant difference is attested between

the equivalent of sentence (9a) and a Topic chain that is headed by a silent A-Topic in the matrix C-domain (as in (9b) below):

(9b) [_{ShiftP} <Jari_z> [_{TP} *lui Iari_z îi pare rău* [_{ForceP} *că* [_{FamP} *Leo_k* [_{backgr}] [_{TP} *t_k crede* [_{ForceP} *că* [_{FamP} <Jari_z> [_{about}] [_{TP} *pro_z va pierde concursul*]]]]]]]]]¹⁷

We will resume and discuss in more detail this locality requirement and its consequences in the Conclusions (Section 4).

Finally, when an overt pronoun is present in the relevant target sentence, like in (10) below, co-reference with the matrix Topic-‘subject’ is preferred (47%) with respect to the closest DP *Leo* (32%).¹⁸ Even though this difference is not statistically significant ($p = 0.1833$), we can take it as the sign of a slight obviative tendency for overt pronouns in Romanian, so that the furthest referent is preferred.

¹⁷ Notice that Aboutness G-Topics are merged in Spec,FamP since they are always part of a Topic chain. On the other hand, Background G-Topics are merged in Spec,TP and can be either moved to the C-domain or realized in situ, in cross-linguistic variation (cf. Jiménez-Fernández and Miyagawa 2014).

¹⁸ For the sake of space, we will not provide a Table to illustrate this case and refer to Frascarelli (2018) for comparative details.

(10) *Lui Ion îi pare rău că Leo crede că el va pierde concursul*

3.3 NS in adverbial clauses

It is generally agreed in the literature that adverbial clauses are not endowed with illocutionary force; hence, they cannot host A-Topics according to the IRR (3). Furthermore, Haegeman (2004, 2012) argues for an important distinction between central and peripheral adverbial clauses according to which, while the left periphery of central adverbials totally lacks the functional projections encoding speaker-related functions (speech time, epistemic modality, illocutionary Force) and are within the scope of operators, peripheral adverbial clauses seem to admit the realization of (some) root phenomena.

Since we were interested in examining the interpretation of NSs in non-root adverbial clauses (i.e., in structural contexts that do not allow for an A-Topic in the embedded C-domain), we limited our survey to central adverbial clauses, considering in particular temporal and conditional clauses (cf. conditions (e) and (f) in Section 2.2. above).¹⁹ Specifically, central clauses

¹⁹ An anonymous reviewer points out the importance of showing, through relevant diagnostics, that temporal and conditional clauses in Romanian behave like in English, so as to validate their use in the present experiment. We thank the reviewer for this suggestion but, for space reasons, we must limit this comparison to a single phenomenon, namely *argument fronting*. As is shown below, this phenomenon is blocked in Romanian as in English,

were tested in two structural conditions: with the adverbial clause in a post-matrix position (which is considered as ‘basic’ in Haegeman 2012) and with the adverbial clause in a pre-matrix position (which is usually defined as ‘fronted’), so as to check the interpretive effect of a supposed movement operation.

3.3.1 *Conditional clauses*

When the conditional clause is located in post-matrix position, the NS was accepted by 100% of informants in all the languages examined (including partial *pro*-drop ones). Consider the target sentence in (11) and the interpretive data shown in Table 5 below:

proving that conditional adverbial clauses resist root phenomena, as is expected for central adverbial clauses (relevant examples have been provided and double-checked by native informants):

- (i) a. **Am crezut că în timp ce eu acest ziar citeam tu merseseși la bancă.*
b. *I thought that while this paper I was reading you had gone to the bank.
- (ii) a. **I-am spus lui John că dacă aceste examene nu voi trece nu putem merge în vacanță vara viitoare.*
b. *I told John that if these exams I won't pass we cannot go on vacation next summer.

For a wider discussion of the semantic, discourse and interface characterization of central and peripheral clauses, the interested reader is referred to Frascarelli (2019).

(11) [Pedro’s friends meet for a beer. They know that Leo is still at work

with his boss. They hope he can join them later. One of them says:]

a. *Leo può venire se pro finisce il lavoro*

b. *Leo poate să vină dacă pro termină treaba*

c. *Leo voi tulla jos pro saa työn tehtyä*

d. *Lev možet prijti, esli pro zakačivaet raboty*

‘Leo_k can come if (he_k/his boss) finishes the work.’

		<i>Leo</i>		<i>his boss</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	84	66%	16	12%	28	17%
ROM	79/79	48	61%	19	24%	12	15%
FIN	273/273	210	77%	17	5%	46	17%
RUS	53/53	30	56%	13	25%	10	19%

Table 5 – NS embedded in a post-matrix conditional clause

As is shown, the values scored by the matrix preverbal DP (*Leo*) in adverbial clauses are dominant, with a difference with respect to those attested with bridge verbs (cf. Table 2) that is extremely significant in Italian and Finnish ($p < 0.0001$) and significant in Romanian ($p = 0.0472$) and Russian ($p = 0.0304$). This means that the possibility of establishing ‘his boss’ as a silent head for the Topic chain is very low in all the languages examined, irrespective of their *pro*-drop quality. This result strongly supports the non-

availability of A-Topics in central adverbial clauses and the validity of the present IS-approach to the interpretation of NSs.

Let us now consider the values attested for the pre-matrix position in Romanian, compared to consistent Italian and partial NS languages (the context being the same):

- (12) a. *Se pro finisce il lavoro, Leo_k può venire*
 b. *Dacă pro termină treaba Leo poate să vină*
 c. *Jos pro saa työn tehtyä, Leo_k voi tulla*
 d. *Esli pro zakačivaet raboty, Lev_k možet priiti*
 ‘If (he_k/his boss_z) finishes the work, Leo_k can come.’

		<i>Leo</i>		<i>his boss</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	84	66%	16	12%	28	17%
ROM	79/79	30	38%	35	44%	14	18%
FIN	131/273	34	26%	63	48%	34	26%
RUS	25/53	7	28%	14	56%	4	16%

Table 6 – NS embedded in a pre-matrix conditional clause

As we can see, while in partial *pro*-drop languages an NS located in a pre-matrix adverbial clause is only accepted by (circa) 50% of informants, this syntactic condition is totally fine for Romanian and Italian informants.

As for interpretation, no significant difference can be attested in Romanian between an external and a clause-internal antecedent. This result is in line with the analysis provided for the interpretation of NSs embedded under factive verbs and, as such, fully expected: in both cases *a silent A-Topic* is the *closest link* for the NS. This means that the embedded DP *Leo* can be either interpreted as an Aboutness G-Topic (13a), which maintains the chain started by the silent A-Topic – or as a Background G-Topic, without significant preferences:²⁰

(13a) [ShiftP <Leo_j>[CP *se pro_j finisce il lavoro*] [FamP **Leo_k** [IP *pro_k può venire*]]
 [about; sh] [about] G-Topic

(13b) [ShiftP <**his boss_j**> [CP *dacă pro_j termină treaba*] [FamP *Leo_k* [IP *tu_k poate să vină*]]
 [about; sh] [backgr] G-Topic

²⁰ In Italian, on the other hand, the DP *Leo* in the matrix clause is mostly interpreted as an Aboutness G-Topic (interpretation (13a)), in line with the results attested for the post-matrix position (cf. Table 5 above). However, no structural or interface reasons can be found for such a tendency, which should be therefore ascribed to a general preference for a *continuing function of G-Topics in Italian* (to be checked in future analyses, possibly based on corpus linguistics).

Furthermore notice that the interpretive difference attested for partial *pro*-drop languages (preferring an external referential reading, as in (13b)) shows that in Romanian and Italian the preverbal position of adverbial clauses is not derived, hence no trace is left in post-matrix position and no intervenience effect (cf. Haegeman 2012) can be determined by the DP *Leo*. This supports the hypothesis that pre-matrix adverbial clauses in Romance languages can be considered as ‘Frames’, merged in a dedicated position in the C-domain (cf. Frascarelli 2017). This is not apparently the case in languages like Finnish and Russian, in which the pre-matrix position is also characterized by low acceptance values (cf. Frascarelli 2018 for relevant discussion).

Since the results obtained with conditional clauses are very consistent across the two adverbial types, in the following section we will discuss temporal clauses for different conditions, in order to add additional data and arguments for the present proposal.

3.2.2 *Temporal clauses*

As is indicated in condition (e) in Section 2.2, we wanted to check whether and to what extent the presence of an overt A-Topic, which can only be

interpreted as the subject of the adverbial clause, can be accepted as a chain head. A sample sentence for this condition is given in (14):²¹

- (14) a. **Anna, mentre **pro** va a scuola, Maria mangia una mela*
b. **Ana, în timp ce **pro** se duce la școală, Maria mănâncă un măr.*
c. **Anna, kun **pro** menee kouluun, Marja syö omenan.*
'Anna_k, when (she_k/she_z) is going to school, Mary_z eats an apple'

Interestingly, this sentence was utterly rejected by informants in the three languages examined and, specifically, by 91% of Italian, 87% of Romanian and 96% of Finnish speakers.

In the light of the present approach, this result can find an immediate explanation, since the initial DP *Anna* cannot be an antecedent for the relevant NS. More precisely because (i) if located in the adverbial C-domain, the relevant DP cannot be an A-Topic (cf. IRR (3)), (ii) if located in the matrix C-domain, it would have no syntactic role in the matrix sentence and, finally, (iii) if considered as a Hanging Topic, it cannot serve as antecedent for *pro* (as is argued in Frascarelli 2007). Therefore, this result and relevant considerations strongly support the Topic Criterion (2) and the Topic Chain condition (4), with particular reference to (a) the dedicated IS-function of A-

²¹ This condition was not tested in the Russian experiment.

Topics as antecedents for *pro* and (b) their exhaustive location in C-domains that are endowed with illocutionary force.

Additional support to the present argumentation is given by the fact that a sentence like (15) is fully accepted (100%) by both Italian and Romanian speakers, while the corresponding Finnish example (15c) only scored 43%:

- (15) a. *Maria, mentre Anna va a scuola, **pro** mangia una mela*
b. *Maria, în timp ce Ana se duce la școală, **pro** mănâncă un măr*
c. *Maria, kun Ana menee kouluun, **pro** syö omenan*
'Mary_k, when Anna_z is going to school, (she_k/she_z) eats an apple'

This result is predicted by the present approach because the DP *Maria* can be interpreted as an A-Topic connected with the matrix NS. On the other hand, this condition obtains marginal effects in a partial *pro*-drop language like Finnish, due to the pre-matrix position of the adverbial clause, which create intervenience effects (the interested reader is referred to Frascarelli 2018 for discussion on this point).

3.4 *Embedded DP as an intended antecedent*

Let us now consider the judgments provided for sentences designed to check the necessity (or, at least, the relevance) of syntactic control for the licensing

and interpretation of an NS in Romanian (that is to say, condition (d) in §2.2).

Consider the following sentence, in which a DP modifier (i.e., a DP embedded in a complement PP) is proposed as a non c-commanding antecedent:

- (16) a. *Il discorso di Leo ha chiarito che **pro** non è colpevole*
 b. *Discursul lui Leo a clarificat că **pro** nu este vinovat*
 c. *Leo-n puhe tek-i selvä-ksi, ett-ei **pro** ole syyllinen*
 ‘**Leo_k**’s talk made it clear that (he_k/sb. else) was not guilty’

This type of sentence was accepted by Romanian and Italian informants (while it is very marginal in Finnish), and the interpretation provided bluntly excludes the necessity of overt syntactic control. This provides additional support to the Topic Criterion (2) and, in particular, to the necessity of assuming silent A-Topics. Consider Table 7 below:

	ACCEPT	<i>Leo</i>		<i>Sb else</i>		<i>both are possible</i>	
		Nr	%	Nr	%	Nr	%
ITA	128/128	26	20%	24	19%	78	61%
ROM	79/79	24	30%	33	42%	22	28%
FIN	131/273	47	36%	14	11%	70	53%

Table 7 – NS with a non-commanding covert antecedent

The values attested for the non c-commanding DP *Leo* in Romanian are roughly the same as those obtained for the c-commanding preverbal subject DP in bridge constructions (cf. Table 2 above). This provides substantial evidence that the licensing and interpretation of an NS in *pro*-drop languages does not depend on syntactic control in *pro*-drop languages.

3.5 NS embedded in clauses without an overt Topic in the matrix C-domain

The data examined in the previous sections consistently supported the existence of silent A-Topics, in line with the Topic Criterion (2). As a consequence, when an NS is realized in a matrix clause, a silent A-Topic must be assumed in the relevant C-domain. This is illustrated in (17) for Italian and represented in (17’):

- (17) *Vorrei presentarti Leo_k. È*
 want.COND.1SG introduce.INF-2SG.IOCL Leo be.3SG
il mio miglior amico.
 the my best friend
 ‘I’d like to introduce Leo_k.to you. (he_k) is my best friend.’

- (17’) *Vorrei presentarti Leo.*

[_{ShiftP} <Leo_k> [_{TP} pro_k è *il mio miglior amico*]]

So far, Romanian has shown the properties of a consistent *pro*-drop language, with a (significant) structural preference for the closest antecedent (due a locality requirement; cf. Section 3.2). Given the above, the realization of an NS in a matrix clause that does not contain an overt A-Topic in its-C-domain is expected to be fully accepted in Romanian.

Let us then consider the results obtained with sentences in which a matrix NS (with no Topic) is preceded by a sentence including two plausible overt antecedents, with different syntactic functions. The first case to be examined is one in which the choice is between two argument DPs:

- (18) a. *Jari ha parlatu a Leo ieri.*
Ora pro ha capito cosa è successo.
- b. *Jari a vorbit cu Leo ieri.*
Acum pro a înțeles ce s-a întâmplat.
- c. *Jari puhui Leolle eilen.*
Nyt pro ymmärtää, mi-tä tapahtu-i.
- d. *Jari pogovoril co L'vom bčera.*
Teper' pro ponjal, čto proizošlo

‘**Jari_k** talked to **Leo_z** yesterday. Now (he_k/he_z) understood what happened.’

	ACCEPT	<i>Jari</i>		<i>(to) Leo</i>		<i>both are possible</i>	
		Nr	%	Nr	%	Nr	%
ITA	128/128	67	53%	19	15%	42	32%
ROM	79/79	31	39%	26	33%	22	31%
FIN	87/273	23	26%	12	14%	52	60%
RUS	33/53	13	39%	4	13%	16	48%

Table 8 –NS in a matrix clause hosting no overt Topic

The results obtained show that silent A-Topics are fully accepted as antecedents for a matrix *pro* in Romanian, as expected. Furthermore, when it comes to interpretation, Romanian informants do not show any significant preference for the syntactic functions of the overt DPs in the preceding clause. This result shows that syntactic functions are not relevant for the interpretation of an NS, like in Italian.

Let us turn now to a case in which the selection is between an argument and a non-argument DP, while the NS is embedded under a matrix clause whose C-domain contains no overt Topic, as in (19) below:

- (19) a. *Jari è andato al cinema con Leo.*
*So che **pro** era molto contento.*
- b. *Jari a fost la cinematograful cu Leo.*
*Știu că **pro** era foarte bucuros.*
- c. *Jari meni elokuviin Leon kanssa.*

Tiedän, että **pro** oli oikein iloinen.

d. *Jari* pošol b kino co L'vom.

Ja znaju, čto **pro** byl očen' rad.

‘**Jari_k** went to the cinema **with Leo_z**. I know that (he_k/he_z) was very happy.’

	ACCEPT	<i>Jari</i>		<i>(with) Leo</i>		<i>both are possible</i>	
		Nr	%	Nr	%	Nr	%
ITA	128/128	61	48%	7	6%	60	46%
ROM	79/79	31	39%	26	33%	22	31%
FIN	73/273	6	9%	14	18%	53	73%
RUS	21/53	5	26%	2	9%	14	65%

Table 9 – NS in an embedded clause hosting no overt Topic

As we can see, while this sentence type determines a decrease of acceptance in partial NS languages, due to the syntactic embedding of the NS, this structural condition does not minimally affect Romanian, providing further evidence for its consistent *pro*-drop quality. As for interpretation, Romanian shows *exactly* the same percentage values attested in the previous case (cf. Table 8 above), confirming the non-relevance of syntactic functions for antecedence selection.

To conclude the present analysis, let us briefly concentrate on consistent *pro*-drop languages and check whether a ‘*by*-subj’ can be selected as an

antecedent in Romanian. This possibility has been attested for Italian (cf. Frascarelli 2018), even though it was argued to be totally excluded in previous works (cf. Samek-Lodovici 1996). Consider sentence (20) below:

(20) a. *Il convegno è stato presentato da Marco.*

*Poi **pro** è andato a fare lezione.*

b. *Seminarul a fost prezentat de către Marco.*

*După aceea **pro** s-a dus să țină cursul.*

‘The conference was presented **by Marco**_k. Then (he_k/sb. else) went to hold his class.’

		<i>(by) Marco</i>		<i>Sb. else</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	93/128 (73%)	93	100%	0	0%		0%
ROM	61/79 (78%)	57	94%	4	6%		0%

Table 10 – *by*-SUBJ as an antecedent for NS

As we can see, this is the only case in which acceptance is not full in Romanian (as well as in Italian), though definitely above marginality. This shows that a syntactic ‘block’ cannot be assumed (*pace* Samek-Lodovici 1996) but, rather, an interpretive restriction that is operative (for some speakers) at the interface between discourse and syntax.

Let us finally see whether an overt Topic, which is not connected with the subject position, can interfere and/or be preferred as an antecedent for an NS. A sample sentence is given in (21):

(21) a. *A Leo non ha ancora parlato Marco:*

pro è sempre così occupato!

b. *Cu Leo, Marco încă nu a vorbit*

pro este mereu atât de ocupat !

‘**Marco_k** has not talked yet **to Leo_z**: (he_k/he_z) is always so busy!’

		<i>Marco</i>		<i>(a) Leo (Topic)</i>		<i>both are possible</i>	
	ACCEPT	Nr	%	Nr	%	Nr	%
ITA	128/128	60	47%	35	27%	33	37%
ROM	79/79	25	32%	34	43%	20	25%

Table 10 – NS in a matrix clause hosting a non-subject Topic

As is shown Italian and Romanian show a different behaviour in this case. Specifically, Italian speakers prefer to link the NS to a silent A-Topic that is coreferent to the (postverbal) subject in the previous sentence (cf. (22a)) and this preference is significant with respect to the selection of either the PP Topic ($p = 0.0305$) or the ‘both’ answer ($p = 0.0208$). On the other hand,

Romanian informants take the overt (non-subject) Topic in the previous clause (*cu Leo*) as the most feasible discourse connection (as in (22b)), even though no significant differences can be attested in this case:

- (22a) *A Leo non ha ancora parlato Marco*
 [_{ShiftP} <Marco>_k [_{TP} pro_k *è sempre così occupato*]]
- (22b) *Cu Leo, Marco încă nu a vorbit*
 [_{ShiftP} <Leo>_k [_{TP} pro_k *este mereu atât de ocupat*]]

This difference might be connected to a preference for discourse-driven continuity in Romanian, as well as to word order and its connection to information structure, a working hypothesis to be explored in future research.

To conclude, the data examined clearly attest Romanian as a consistent *pro*-drop language, in which the selection of the Topic heading the chain is not driven by syntactic functions and is only dependent on IS conditions.

4. The Topic Criterion as a macro-parameter for NS languages:

Conclusions and paths for future research

In Section 1 we assumed, following Frascarelli (2007, 2018), that the interpretation of NSs (and weak pronouns) depends on IS conditions and, specifically, on the Topic Criterion (2) and the Topic Chain Condition (4).

Different structural conditions have been thus examined in order to check whether NSs could be accepted in Romanian as they are in a consistent NS language like Italian and what interpretation they are given in the absence of prosodic cues (as in the case of the present experiment).

Data have shown that NSs are fully accepted by Romanian informants in all the conditions examined, irrespective of either the type of embedding or the syntactic function of the intended antecedent (except for the case in which the latter is a *by*-phrase, accepted by 3 informants out of 4, like in Italian). As for interpretation, the antecedent heading the chain, which is necessarily located in a sentence endowed with illocutionary force, can be either overt or silent. In this respect, no significant preference has been attested for Romanian.

However, since acceptability and antecedent selection are characterized by *gradient* judgments, it is interesting to notice that Romanian shows a preference for the *closest* possible link (cf. Sections 3.2, 3.4). This means that, when an NS is double embedded under a bridge verb (as in (23) below), the interpretation illustrated in (24b) is preferred to the one in (24a):

(23) *Marco a zis că Leo crede că va câștiga concursul*

‘Marco_k said that Leo_z thinks that he_k/he_z is going to win the race.’

(24a) [ShiftP **Marco**_z [about; sh] [TP pro_z a zis [CP că [FamP <Marco>_z [about]

[_{FamP} **Leo**_{k[backgr]} [_{TP} *t_k crede* [_{CP} *că* [_{FamP} <**Marco**>_{z[about]}
 [_{TP} *pro_z va căștiga concursul*]]]]]]]]]

(24b) [_{FamP} **Marco**_{z[backgr]} [_{TP} *t_z a zis* [_{CP} *că* [_{ShiftP} **Leo**_{k[about; sh]}
 [_{TP} *pro_k crede* [_{CP} *că* [_{FamP} <**Leo**>_{z[about]} [_{TP} *pro_z va căștiga*
concursul]]]]]]]]]

As is shown, in (24a) *Marco* is the A-Topic heading the Topic chain. It is merged in the matrix ShiftP and repeated as (silent) Aboutness G-Topics in the two embedded C-domains (each entering a local Agree relation with the relevant subject *pro*); the DP *Leo*, on the other hand, is a Background G-Topic and, as such, it does not interfere in the chain.

Conversely, the second interpretation is the one in which the antecedent of the NS is the closest DP *Leo* (remember that the complement CP of bridge verbs is a quasi-root context), which is the A-Topic heading the chain. This interpretation is preferred with respect to the previous one with a difference that is statistically significant, according to the Fisher Test ($p = 0.0483$).

The preference for the closest A-Topic can be attributed to an independent structural Condition, whose cross-linguistic validity has been attested for a number of phenomena, that is to say, the Minimal Link Condition (cf. Rizzi 1990, Manzini 1992 and subsequent works). Specifically, we propose that this condition can be operative in *pro*-drop

languages as a strategy to reduce ambiguity when more than one preverbal DP qualifies as a plausible A-Topic from a syntax-discourse perspective and no prosodic cues are available (as in written texts), in cross-linguistic variation.²² On the other hand, since intonation can single out the different Topic types, this strategy is expected to be immaterial in spoken data – a prediction to be checked in future research.

To conclude, the present experiment has provided evidence that ‘degrees of partiality’²³ arise depending on two specific variables, namely (i) overt vs. silent A-Topics and (ii) local vs. nonlocal links. This result is put forth as a proposal to be used in future research, since these variables can be taken as diagnostics to test (degrees of) partiality in NS languages, supporting Chomsky’s (1995) idea that syntax feeds interpretation.

Furthermore, since the syntactic conditions used in this experiment have been chosen to check the crucial role of A-Topics as antecedents, we can also conclude that the Topic Criterion (2) and the creation of topic chains are cross-linguistic requirements for the interpretation of *pro* in NS languages;

²² As a matter of fact, that this strategy is not adopted by Italian speakers, who are not apparently ‘disturbed’ by ambiguous readings and select the ‘both’ answer more often than in Romanian.

²³ On ‘gradience’ in grammar, see Fanselow et al. 2006; for a formal approach to gradient judgments, see Villata et al. 2016.

thus supporting the theory that the acceptability and interpretation of NSs crucially depends on an IS strategy.

In this respect, Romanian shows the properties of a consistent *pro*-drop language in all respects insofar as, like Italian and differently from partial *pro*-drop languages, it allows for silent A-Topics in all the syntactic conditions examined (cf. Sections 3.1, 3.2, 3.3, 3.4) and no connection has been attested between A-Topics and syntactic functions (cf. Section 3.5).

Moreover, both in Italian and in Romanian antecedent selection is neither subject-driven nor dependent on syntactic control (cf. Section 3.2): either the overt matrix A-Topic-‘subject’ or a silent A-Topic qualify as possible antecedents. Finally, like in Italian, NSs are fully accepted in adverbial clauses, independently of their position (Section 3.3.1).

However, a significant difference with respect to Italian emerged in *antecedent selection*, insofar as Romanian speakers tend to link NSs to the *closest plausible link* in ambiguous contexts (cf. Sections 3.1, 3.2), a preference that we have interpreted in the light of a Locality requirement, even though it can be also accredited to the lack of prosodic cues in the present experiment. Further research is needed to clarify this issue.

Finally, the results obtained provide substantial support to the theoretical framework adopted, since it has been shown that (a) Topic chains are invariably started by preverbal DPs located in root or quasi-root contexts; (b) Background G-Topics do not interfere in Topic chains; (c) silent Topics

are necessary to account for the interpretation of NSs in different syntactic conditions; (d) antecedence selection does not depend on syntactic control.

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