Finite and non-finite null subjects in Finnish

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Manuscript

Abstract

Null subjects and agreement are related to each other. It is controversial what the relation is. Here we show that in Finnish, a partial null subject language, finite agreement licenses finite null-subjects while non-finite agreement licenses non-finite null subjects. These observations provide a new perspective to the relation between agreement and null subjects. We show that null subjects are licensed formally by morphosyntax and agreement, both in finite and non-finite contexts. In addition, we show that third person null pronouns, too, are licenced by agreement, but, as has been shown in previous literature, they impose an additional requirement in Finnish: they require the presence of a c-commanding antecedent. An active debate surrounds this mechanism, its cause, and what conditions and constraints it follows. Data from the non-finite domains allow us to propose a solution. We suggest that third person null pronouns are ambiguous and interpreted by two overlapping mechanisms: one at LF which tries to generate antecedent/quantifier-variable readings based on c-command, and another which relies on the conceptua-intentional system and attempts to pick topics from the discourse. It is their interaction that produces the phenomenon as a whole.

1 Introduction

Languages differ with respect to their morphosyntactic richness. In some languages, such as Chinese, there is little trace of overt agreement in phi-features (e.g., number, person and gender features) and Case assignment. Italian falls somewhere in-between, with its rich finite verbal agreement but more limited case-marking. Finnish stands at the other end of the continuum. It has fifteen case forms, distributed to almost all nominal heads, and both finite and non-finite phi-agreement spread over a rather impressive catalogue of heads. Its morphosyntactic richness, then, provides a useful telescope to gauge the outer limits of what is possible morphosyntactically in a language.
One domain of grammar that has been argued to depend on agreement is null subjects (NSs). In fact, one of the first lines of investigation into this topic started off with an idea that verbal phi-agreement licenses null subjects (Taraldsen 1987, Chomsky 1982, Rizzi 1982). Whether this is the correct analysis, finite verbs exhibiting rich agreement are well-known for their ability to survive without an overt subject pronoun. Finnish fits into this pattern, because it has both rich verbal agreement and null subjects. What is less well-known is whether non-finite agreement, a prominent feature of Finnish morphosyntactic richness, is able to license non-finite null subjects. Specifically, if null subjects are associated by rich agreement, and if indeed Finnish has systematic and productive non-finite agreement, we expect there to occur non-finite null subjects. In fact, we expect to find perfect correlation between null subjects and agreement over both finite and non-finite domains. If null subjects are effected by something else, either in its entirety or in part, we expect no correlation or weak correlation.

Unless otherwise stated, this article will examine non-generic null subjects in Finnish. An additional contraint is that we’ll be looking at what is labelled as “pro” in the standard technical literature, thereby omitting ellipsis, null objects, obligatory control structures, traces of movement and diary drop. It is possible that all or some of these phenomena will be subsumed under a more broad, unifying theretical structure in the future, but it is also possible that they will not. We will not pursue such unification in this article.

2 Null subjects in the finite domain

2.1 Introduction

The behavior of Finnish null subjects follows well-known conditions. We will state what these conditions are. By having a behavioral profile of finite null subjects at hand will make it possible to catch similar specimen from non-finite domains, if indeed such specimen exist.

The conditions for Finnish null subject (in the finite domains) can be stated in the following theory-neutral way. A phonologically silenced subject pronoun in Finnish must: (a) agree with a local head; (b) satisfy the EPP condition for finite clauses; and (c) have an antecedent if it is in the 3rd person. Conditions (b-c) are

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1 This paper was originally “Agreement, binding, and the Finnish possessive suffix” (Brattico & Huhmarniemi, 2014, ms.), which was subsequently broken into two parts. The first part appeared as “The Finnish possessive suffix” in Finno-Ugric Languages and Linguistics (2016), and it deals with certain anomalous data concerning the Finnish possessive suffix. This is the second part of that much larger manuscript. This paper remains unpublished, and most likely will remain so in the future as well.
well-known from previous literature (Vainikka & Levy, 1999; Holmberg 2010), while (a) has received less attention. In addition, there is currently some controversy over how the antecedent condition (c) works, so we plan to return to it later but state it here in a less precise way. The first condition will be called the Agreement condition, the second EPP condition, and the third Antecedent condition. (Keep in mind that the antecedent condition says something special about 3rd person null subjects.)

2.2 Agreement condition

It is old news that, at least in some languages, null subjects require the presence of agreement or, at the very least, they correlate with agreement. To show how this condition plays out in Finnish, we want to contrast sentences in which the subject agrees with the finite verb with sentences where it does not agree with the verb. If null subjects require agreement to their support, we expect to find them in the former case but not in the latter case. The data agrees with these expectations (1a-d).

(1)

a. (Minä) laula-n
   I sing-1sg
   'I sing.'

b. *(Minua) laulatta-a
   I.par sing-3sg
   'I feel like singing.'

c. *(Minulla) on nälkä
   I.ade has.3sg hungry
   'I am hungy.'

d. *(Minun) täytyy levätä
   I.gen must.0 rest
   'I must rest.'

Example (1a) contains a nominative first person singular subject may as well be silenced phonologically.

Examples (1b-d) contain a variety of non-nominative subject pronouns which do not agree with the finite verb. None of these subjects can be silenced. That is, they cannot be silenced if we try to generate non-generic null subjects, as in (1a).

2 One caveat: There is a rule in Finnish which says that a finite
verb agrees with its subject if and only if the latter is in the nominative Case.\textsuperscript{3} We do not therefore know, on the basis of (1a-d) alone, whether the crucial factor is agreement or nominative Case assignment. However, as long as the two remain in perfect correlation, the distinction remains academic.

2.3 EPP condition

At the very heart of any theory of null elements is the following question: given the fact that null elements lack phonologically substance, what guarantee do we have that they have syntactic substance? We can delimit this question more rigorously as follows. Suppose we take a finite clause in Finnish that lacks the subject pronoun, but shows phi-agreement on the finite verb. Shall we analyse this sentence as a regular finite clause with a phonologically silenced pronoun, or as an impoverished verb phrase that lacks the subject altogether? If the latter, we could regard verbal agreement as a more radical ‘substitute’ for the subject pronoun, perhaps like a base-generated or lexically imported clitic/anaphor. The subject position would be absent in a deeper sense. A considerable amount of calories have been consumed to debate this matter.

Vainikka & Levy (1999) show that Finnish non-generic first and second person null subjects follow the former profile. These pronouns represent linguistic material that behave as if they were there but lack phonological substance. We capture this insight in the form of “EPP condition”, which says that such null subjects satisfy the EPP condition of Finnish finite clauses. They are, in other words, syntactically real elements that fill in the subject-specifier position of a finite clause, exactly as overt phrases do. The argument is based on the observation, going back at least to Vainikka (1989) and Vilkuna (1989), that the Finnish finite clause resists verb-initial constructions. Against this general regularity we then find (4).

(4) Laulan.
    sing-1sg

'I sing.'

Clearly, this sentence begins with a verb. How can this be? It turns out that verb-initial clauses are tolerated if the finite verb exhibits the null subject pattern. This suggests that the non-generic null subject in Finnish

\textsuperscript{3} The impersonal passive construction in its active voice (me ostittiin talo 'we.nom buy.impass house.nom') is a possible counterexample. Vainikka & Brattico (2014), who examine this specimen in some detail, argue that it is agreementless, while its subject is in the nominative. On the other hand, only the first person plural subject may occur in this construction. Since the construction plays no role in the forthcoming discussion, we will put it aside. Another possible counterexample is the imperative construction (tule sinä tänne! 'come.imp.sg you.nom here'), which has a nominative subject while the verb agrees only in number. On the other hand, number agreement is agreement, so the generalization holds true if we consider both complete and partial agreement.
satisfies the EPP condition (Vainikka & Levy 1999, Holmberg 2005, 2010). For a similar argument for other languages, such as for Italian, see Roberts (2010) and other work cited there. We can also conclude that the Finnish EPP condition is not ‘phonological’, because a phonologically null elements can satisfy it (this point was made in Holmberg 2010).‡ Finally, while Vainikka & Levy (1999) claim that third person null subjects do not satisfy the EPP condition in Finnish, subsequent research has countered this claim with good empirical reasons, in our view. We follow Holmberg and others and assume that all null pronouns satisfy the EPP condition in Finnish.

In sum, then, Finnish null subjects can satisfy the EPP condition of Finnish finite clause. Finnish null subjects are syntactically like their overt cousins, but phonologically impoverished.

2.4 Antecedent condition

Finnish counts as a partial null subject language due to the fact that while the 1st and 2nd person subject pronouns can be silenced phonologically in almost any context, 3rd person subject drop is more restricted. It obeys an “Antecedent condition”, which says that the 3rd person null subjects are ungrammatical (7c) unless they are provided an antecedent (8). This condition was first systematically examined by Vainikka & Levy (1999). No such requirement is imposed on 1st and 2nd person null subjects (7a-b).

(7)

<table>
<thead>
<tr>
<th></th>
<th>(Mä)</th>
<th>voitan kilpailun.</th>
<th>(Me)</th>
<th>voitamme kilpailun</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>I</td>
<td>win.1sg competition</td>
<td>we</td>
<td>win.1pl competition</td>
</tr>
<tr>
<td></td>
<td>'I will win the competition.'</td>
<td>'We will win the competition.'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(Sä)</td>
<td>voitat kilpailun.</td>
<td>(Te)</td>
<td>voitatte kilpailun</td>
</tr>
<tr>
<td></td>
<td>you</td>
<td>win.2sg competition</td>
<td>you</td>
<td>win.2pl competition</td>
</tr>
<tr>
<td></td>
<td>'You will win the competition.'</td>
<td>'You will win the competition.'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>*(Hän)</td>
<td>voittaa kilpailun</td>
<td>*(He)</td>
<td>voittavat kilpailun</td>
</tr>
<tr>
<td></td>
<td>he</td>
<td>win.3sg competition</td>
<td>they</td>
<td>win.3pl competition</td>
</tr>
<tr>
<td></td>
<td>'He will win the competition.'</td>
<td>'They will win the competition.'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(8)

‡ These data show that the null pronoun can satisfy the Finnish EPP condition. It does not yet establish whether it must satisfy it. To show the latter, one has to examine whether a non-generic null subject can occur in a structure where the EPP condition is satisfied by something else. This is a thorny problem we put aside here.
Holmberg & Sheenan (2010) argue that the antecedent-pronoun relation is established by means of syntactic agreement relation (Agree), although they document cases where the c-command condition between the antecedent and the pronoun is not in force, where the antecedent is not a local one, and finally, cases where it is obvious that the relation is not restricted by phases, the latter supposedly putting an upper limits to Agree (Chomsky 2000). In a surprising twist, they decide to maintain that the relation is established by Agree nevertheless and leave these problems for the future. Their future being our present, we return to the question later in this article.

The Agreement condition and the Antecedent condition are two different conditions, so their possible interactions remain to be accounted for. It has not been examined before to our knowledge. One question is whether a non-agreeing subject pronoun can be dropped from a non-agreement environment when an antecedent is nevertheless provided. The answer is “No”. The fact that the Antecedent condition cannot nullify the Agreement condition is shown by data in (2).

(2)

a. Pekka₁ uskoo että (hän₁) laula-a hyvin

Pekka believes that he.nom sing.3sg well

'Pekka believes that he sings well.'

b. Pekka₁ uskoo että *(häntä₁) laula-ttaa

Pekka believes that he.par sing-cau-3sg

'Pekka believes that he feels like singing.'

c. Pekka₁ uskoo että *(hänellä₁) on nälkä

Pekka believes that (he.ade) has hungry

'Pekka believes that he is hungry.'
'Pekka believes that he is hungry.'

d. Pekka₁ uskoo että *(hänen₁) täytyy levätä
Pekka believes that (he.gen) must.0 rest

'Pekka believes that he must rest.'

e. Pekka₁ uskoo että (hän₁) saa levätä
Pekka believes that he.nom can.3sg rest

'Pekka believes that he can rest.'

Notice the indices; these sentences are to be read so that the overt and covert pronoun in the embedded finite clauses refers to the same person as the matrix subject. If we give up this requirement, then the sentences (2b-d) will come out, not as ungrammatical, but as generic. For present purposes, though, it is important to keep in mind that we specifically target non-generic readings (2a,e).

The Agreement condition, EPP condition and Antecedent condition are conjunctive: each and every one of them has to be satisfied for a null subject to occur in Finnish. It is not possible to circumvent the Agreement condition by supplying an antedent. This fact deserves the following interpretation. Its most plausible interpretation is that the formal licensing conditions and content recovery or identification conditions for null subjects must be dissociated. Formal licensing condition tells under what circumstances a null subject may occur: under agreement. The content recovery condition tells how the semantic content of the null element is to be retrieved, once it is null: by antecedent for 3rd person pronouns, and by some mechanism for the 1st and 2nd person null subjects.

Further indication that licensing and content recovery should be dissociated comes from the fact that the Finnish third person agreement suffix is not ambiguous: it is marked by its own distinguished third person verb suffix, one suffix for singular and another for plural. This means that it is possible to recover the “third person” content, whether in singular or plural, from the verbal suffix alone, so that it cannot be the lack of agreement that justifies the antecedent search. Instead, null subjects are licensed by unambiguous verbal agreement in all persons and numbers, and for some reason the third person null pronouns recovers its semantic content from an antecedent (either in part or in its entirety).

The Antecedent condition might strike one as puzzling, but in fact it is less of a puzzle when we realize that
overt third person pronouns behave similarly. Take (9).

(9) Pekka, uskoo että (hän,2) voittaa kilpailun

'Pekka believes that he will win the competition.'

When (9) occurs with an overt pronoun, it has two readings. One reading is that the pronoun refers to a third party, which is not Pekka, the speaker or the addressee. Imagine, for example, that we are discussing a girl called Merja, who is participating in a song writing contest. Then I can utter (9) with the meaning that it is Merja (i.e., Merja = 2) who Pekka believes that will win the competition. The second reading is obtained when the pronoun takes Pekka as its antecedent. Then the clause means that Pekka believes that he, himself, will win the competition. We call the latter the “bound reading”. Because the pronoun borrows its semantic content from an antecedent, it can obtain, if somewhat marginally, even a null reference (10a). This strategy is not possible if the reference is picked up from the discourse, by using the first strategy (10b-c).

(10)

a. Kukaan ei usko että (juuri) hän voittaa kilpailun
nobody not believe that (just) he wins competition

'Nobody thinks that he will win the competition.'

nobody not come he was too laze

'Nobody came. *He was too lazy.'

everybody wake up early. *He left immediately to work

'Everybody wake up early. *He left immediately to work.'

Overt pronouns are, in short, ambiguous between the bound reading and the independent reference reading. When a subject pronoun is silenced phonologically, it is, arguably, disambiguated: only the bound reading survives. It is this bound reader that, if we borrow the ideas of Holmberg (2010) and Holmberg & Sheenan (2010), is established by means of Agree.

3 Null subjects in the non-finite domain
3.1 Non-finite agreement

We continue to focus on the Agreement condition, but with a new point of view. The first analyses of null subjects within the generative theory started off from the observation that there is a correlation between null subjects and rich agreement. Indeed there is. Languages that have rich finite agreement paradigms exhibit increased willingness to drop their subject pronouns, while languages with the opposing morphosyntactic profile show the opposing tendency. Italian is an example of former, English exhibits the latter profile.\(^5\)

The presence of null subjects correlates with agreement in the finite domain in Finnish. Even the third person pronoun drop is conditioned by agreement. But what is less well-known is that Finnish exhibits \textit{non-finite agreement} in addition to finite agreement. After reviewing the phenomenon, we propose to experiment with hypothetical “non-finite null subjects”.

Finnish non-finite agreement is realized by means of possessive suffix (glossed as Px). The possessive suffix can be suffixed to the VA-infinitival (11a), certain adpositions (11b), TUA and KSE adverbs (11c-d), participle adjectives (11e) and to noun heads (11f).

\begin{enumerate}[a.]
\item Minä uskoin voittava-ni kilpailun
\hspace{1cm} I believe win.VA-Px/1sg competition
\hspace{1cm} 'I believe that I will win the competition.'
\item minun läähellä-\textbf{ni}
\hspace{1cm} I.gen near-Px/1sg
\hspace{1cm} 'near me'
\item Minä nukahdin \{luettua-\textbf{ni} kirjan\}
\hspace{1cm} I.gen fell.asleep read.tua-Px/1sg book
\hspace{1cm} 'I fell asleep after reading the book.'
\item Minä harjoittelin \{voittaakse-\textbf{ni} kilpailun\}
\hspace{1cm} I.gen trained win.kse-Px/1sg competition
\hspace{1cm} 'I trained in order to win the competition.'
\end{enumerate}

\(^5\) The correlation is not perfect. There are “radical pro-drop” languages that have no morphosyntax but plenty of null arguments, including null subjects, and languages in which the correlation breaks down in other ways. This makes the issue interesting theoretically, and worth examining again.
The possessive suffix exhibits distinct forms in all persons and numbers, with the exception that the third
person number distinction is neutralized. Example (12) shows these forms (11f). The nature of the head (i.e.,
V, P, A, N, Adv) has no effect on the form of the possessive suffix; it is always the same.

(12)

a. minun kirjan-ni
   I.gen book-Px/1sg
   'my book'

b. meidän kirja-mme
   we.gen book-Px/1pl
   'our book(s)'

c. sinun kirja-si
   you.gen book-Px/2sg
   'your book'

d. teidän kirja-nne
   your book-Px/2pl
   'your book(s)'

e. hänen kirja-nsa
   he.gen book-Px/3sg
   'his/her book'

   heidän kirja-nsa
   they.gen book-Px/3sg
   'their book(s)'

Example (12) suggests that the possessive suffix is an agreement marker for the local argument. There is
some controversy over whether the possessive suffix is created by the same process as finite agreement, but
the suffix itself, at least in examples such as (12), encodes the number and person features of a local noun
phrase. This means that whatever formal mechanism is responsible for generating the suffix, its form does
agree with a local noun phrase.

In some cases, local argument seems to be missing. The infinitival (11a) and the adverb phrases (11c-d) do
not contain overt arguments, yet both the infinitival verb and the adverb have the possessive suffix on them.
What is the source of the possessive suffix in such cases? The agreeing argument is located in the matrix
clause, where it functions as a subject. Thus, by changing the number and person features of the matrix
subject we will change the possessive suffix correspondingly (13). A first person subject will trigger the first
person possessive suffix on the infinitival/adverbs, and a second person subject will trigger the second
person possessive suffix, and so on.

(13)

a. Minä uskon voittava-ni
   I believe .1sg win.va-Px/1sg
b. Sinä uskot voittava-si
   you believe .2sg win.va-Px/2sg
c. Hän uskoo voittava-nsa
   he believe.3sg win.va-Px/3sg

The infinitival/adverbial possessive suffix is thus generated by long-distance agreement, by a local null
subject of some type inside the infinitival and adverb phrase, or by means of agreement spread. In the case of
the adpositions, adjectives and the noun phrases, however, the possessive suffix agreement can be triggered
by a local noun phrase (12).

In sum, while there are theoretical and empirical issues with respect to the correct analysis of the Finnish
possessive suffix, it exhibits properties reminiscent of agreement. This provisional hypothesis is enough for
present purposes. Specifically, we will now investigate whether the non-finite “possessive suffix agreement”,
whatever that may ultimately be, is able to trigger non-finite null subjects. We will examine whether the local
agreeing argument can be null and, if so, whether it obeys the three conditions for null subjects: agreement
condition, EPP condition and the antecedent condition.

3.2 Agreement condition, EPP condition and the antecedent condition

The Agreement condition (section 2.2) says that the null subject (in the finite domain) can occur only if the
pronoun agrees with the finite verb. Since non-finite possessive suffix agreement is optional in some
contexts, it is possible to replicate the experiment in non-finite domains. Specifically, we will examine
whether non-finite null subjects are possible in principle and, if they are, whether they, too, are conditioned
by the presence of non-finite agreement. The experiment, which is reported in (14), suggests positive answer
to both questions.
Example (14) shows that the possessive argument can be null only if there is non-finite possessive agreement. If agreement is missing, as in (14d), the possessive reading ‘my book’ is not available. The agreement itself is optional (14c). Non-finite null subjects therefore do satisfy the Agreement condition for Finnish finite null subjects.

The EPP condition (section 2.3) states that the finite null subject is able to satisfy the EPP condition of finite clauses, which in Finnish requires that the topic phrase occupies a/the preverbal position. Let us assume that the position is Spec,TP. The more or less standard way to capture the EPP condition (or an equivalent condition) is to impose the requirement on T and say that T requires second-merge to its Spec. Since the same finite element (e.g. T) agrees with the null subject, the two computational events occur around the same functional head: T agrees with the subject pronoun at Spec,vP, then silences it optionally provided that agreement takes place; and then it looks for a phrase to satisfy its EPP requirement. The phrase satisfying the EPP requirement may or may not be the same as what agrees, since in Finnish, it is the topic, and not necessarily the subject, that is sought for (14).

(14) Spec      T      pronoun       VP
      <---EPP/topic--> <-----Agree----->
      <---second-merge something-------------------|

Now let us see if this condition applies to non-finite domains. The first point to notice is that in many non-finite domains, agreement/Case-marking and the structural position of the agreeing pronoun have an association: agreement/genitive Case-marking correlates with the prehead position of the agreeing noun phrase, while partitive arguments can be in either position (15).\(^6\)

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\(^6\) There is a reason to consider that the prehead partitive argument result from A-bar movement and not from A-movement. We will put this matter aside. The relevant point to notice here is the contrast in behavior between the
Brattico & Leinonen (2009) and Brattico (2013) consider that a syntactic EPP-mechanism is in operation here (see also Manninen 2013). The EPP-mechanism has the following properties, exhibited by (15): the grammatical head \( H (= N, P) \) has the EPP-feature if and only if it (a) assigns the genitive Case to its argument, (b) moves/merges it to Spec,HP, and (c) phi-agrees with it optionally (see 14 for the optionality of agreement). This is not the best description of the facts, but it is an analysis that is nonetheless in print, so we assume it here. The relevant point is that a genitive Case-marked argument that agrees with the head must be in the prehead position. Given this much, we can test whether the EPP condition is satisfied by non-finite null subjects by examining whether a grammatical head that phi-agrees with its null subject requires another phrase to fill in its Spec. It turns out that it does not (16). Presumably, then, the null subject is able to fill in the Spec-position. The non-finite null subject satisfies the EPP condition of the finite null subjects.

(16)

a. Pekka luki \{___ kirja-ni\}

Pekka read book-Px/1sg

partitive and genitive arguments.
'Pekka read my book.'

b. Pekka asui {__ lähellä-ni}
Pekka lived near-Px/1sg

'Pekka lived near me.'

Impressionistically speaking, what these facts suggest is that non-finite null subjects, like finite ones, are syntactically real constituents that have been silenced phonologically.

Let us consider the Antecedent condition. The Antecedent condition says that the 3rd person null subjects are ungrammatical unless provided an antecedent. This test can be applied to non-finite domains. If there are non-finite null subjects, then we should find that 1st and 2nd person null subjects are virtually always possible, while 3rd person null subjects are only possible provided that they have an antecedent. It has been known for long that this is the case (see Huhmarniemi & Brattico, 2015 for a review). Example (17) shows that the 3rd person pronouns cannot be dropped out of the blue, while 1st and 2nd person pronouns can. Example (18) shows that the third person pronoun can be null if there is a c-commanding antecedent.

(17)

a. Kirja-ni hävisi book-Px/1sg disappeared
   b. kirja-mme hävisi book-Px/1pl disappeared
      'My book disappeared.'
      'our book disappeared'

c. Kirja-si hävisi book-Px/2sg disappeared
   d. kirja-nne hävisi book-Px/2pl disappeared
      'You book disappeared.'
      'Your book disappeared.'

e. *Kirja-nsa hävisi book-Px/3sg disappeared
   f. *kirjan-sa hävisi book-Px/3pl disappeared
      'His book disappeared.'
      'Their book disappeared.'

(18)

a. Pekka₁ löysi __; kirja-nsa
   Pekka found book-Px/3sg
      'Pekka found his book.'

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7 The parallelism between finite and non-finite domains with respect to the antecedent requirement was noted in Vainikka (1989) and Vainikka & Levy (1999), footnote 10 on p. 631.
b. Pekka, halusi löytää ___ kirja-nsa
   'Pekka wanted to find his book.'

c. {Pekan, isä} halusi löytää ___ kirja-nsa
   'Pekka's father wanted to find his book.'

Therefore, the Antecedent condition is satisfied. In sum, then, the non-finite null subject satisfies the Agreement condition, EPP condition and the Antecedent condition of the finite null subjects.

There are two possible lines of analysis for these facts. One, it is possible to regard the parallelism as accidental and pursue a hypothesis which says that two distinct phenomena are at stake. This is problematic. We would be looking at two phenomena with the exact same properties while deciding to treat them as if they were two distinct things. The alternative, which we prefer and which was first explored in Vainikka (1989),\(^8\) is to take the parallelism at its face value and hypothetize that the Finnish finite null subject phenomenon is replicated in the non-finite domain(s).

3.3 Non-finite null subjects

Since both finite and non-finite null subjects satisfy the three conditions -- Agreement condition, EPP condition and Antecedent condition -- it makes sense to hypothetize, tentatively, that the null subject phenomenon is not restricted to the finite domain. The analysis we have in mind is illustrated in the example (19) and stated more succinctly in (20).

(19)
\[
a. \ (\text{minä}) \ laula-n = \text{pro} \ laula-n \\
\hspace{1cm} \text{I.nom sing-1sg} \\
\hspace{1cm} \text{I sing'} \\
b. \ (\text{minun}) \ laulu-ni = \text{pro} \ laulu-ni
\]

\(^8\) Vaikka (1989) shows that the 1/2. and 3. person split in the Antecedent Condition occurs both in the finite and non-finite contexts and therefore argues, rightly in our view, that they should be treated as one phenomenon. We follow this idea here, but not her analysis. Specifically, Vainikka (1989) assumes that the agreement suffix is its own grammatical head that has anaphoric properties, while we propose that it is an agreement marker for the null pronoun pro, which then occurs at a local Spec position. Part of this difference might stem from the fact that Vainikka ignores the Agreement Condition, which in turn motivates us to analyze the phenomenon from the point of view of pro-drop that is known to be associated with agreement.
Null subjects in Finnish

A null subject (=pro) is licenced by phi-agreement with its head H, it satisfies the EPP feature of H (if any) and looks for an antecedent if it is in the 3rd person. Selection of H is not restricted to the finite domain.

Before we can develop a theory of null subjects on these grounds, we clarify two auxiliary matters. The preceding discussion and (20) refers to “null subjects”, which is misleading since it is far from clear that the pronoun *minun* ‘my’ functions as a “subject” in (19b). The same can be said of a situation in which the null pronoun occurs in the vicinity of an adposition, which are not normally said to project “subjects”. We will continue to use this term, but it should be understood as referring to specifiers of grammatical heads that have certain subject-like properties, such that they bear subject Case-marking (nominative, genitive), trigger phi-agreement (finite and non-finite), participate in EPP, and occur in a local (Spec-Head) configuration with their head.

4 A theory of null subjects

4.1 An overview

These data lead us to believe that null subject licensing happens through local morphosyntactic process reminiscent of Agree, identification (for 3rd person null subjects) through something else. In other words, we associate licensing with agreement (Taraldsen 1978, Rizzi 1982, 1986, Chomsky 1982), and identification with an antecedent (Holmberg (2010), Holmberg & Sheenan (2010) and Frascarelli (in prep)). These analyses provide a natural starting place what comes to the identification (antecedent, binding) process. We do not agree with the belief that binding is implemented through Agree, though.

4.2 Formal licensing and agreement

The data shows that null subjects (specifiers) are associated with rich agreement, which is not surprising in the light of observations from other languages. The formal licensing condition must be explicitly formulated. Following Chomsky (2000, 2001), we say that an agreeing functional head possesses a formal mark which
triggers the operation. The operation will establish a grammatical dependency, called Agree, between the head, or the *probe*, and a local argument DP, the *goal*. As a consequence of Agree, phi-features from the goal are copied from the goal to the probe, resulting in phi-agreement, and a Case feature is copied from the probe to the goal (26a), resulting in Case-marking. It is assumed that the probe c-commands the goal, and the goal may and sometimes must move to Spec,HP (26b) to satisfy the EPP-feature of the probe after Agree. Since null subjects are licenced by agreement, we would like to propose that it is this operation (or equivalent) that must create them (26b,c).

\[(26)\]

a. lähellä-ni **minun** =>
   near-Px/1sg I.gen
   phi <-----Agree------> Case(genitive)

b. (minun) lähelläni-ni **__** =>
   I.gen near-Px/1sg
   <-----------------Move-----------------------|
   'near me'

c. **__** lähellä-ni
   near-Px/1sg

It would be attractive to speculate that the very operation of copying the phi-features from the goal to the probe by means of Agree (26a) all by itself leaves a phonologically empty goal behind. A well-known difficulty with such view is that pure agreeing pronouns do not have to be null. Example (26b) is grammatical. Agreement as such, the operation (26a), is not sufficient to generate null elements, although it is still necessary.

Could we say that phonological deletion follows Agree but does so optionally? This would explain why phonological deletion follows agreement, but does not have to take place. The difficulty with this view is that phonological deletion is not "optional". In the case of 3rd person pronouns, it does affect semantic interpretation. An overt third person pronoun has two readings: a definite, independent reference reading, in which the pronoun refers to a thing well-known in the discourse, and a bound reading, in which it borrows its reference from an antecedent. When a third person pronoun is silenced in Finnish, only the latter reading
remains. Thus, from the point of view communication, it is not up to free will, or just stylistic rules, whether deletion occurs or not.

A third possibility is to assume that the null subject itself bears some mark that designates it for phonological deletion. Holmberg (2010), for example, assumes that such pronouns are unspecified for their definiteness feature (they have an “unvalued definiteness” feature, of ‘uD’). Let’s assume this. We will call them simply deficient D-features. As suggested by Holmberg, this would appear to explain why they require antecedents. The antecedent would provide the required definiteness value. However, whatever marks a pronoun for the bound reading cannot mean automatic phonological deletion, since ordinary, overt third person pronouns too can engage in the same bound reading. The real difference between overt and covert pronouns, we think, is that a covert third person NS in Finnish cannot obtain an independent reference reading. Since overt pronouns can generate bound readings, we must say that the deficient definiteness feature constitutes yet another necessary feature of Finnish (third person) NSs, but neither agreement nor this feature alone, or the two combined, are sufficient for NS.

One strangeness with this line of thought is that there is no principled connection whatsoever between the two conditions, definiteness and agreement. If a pronoun that is marked for deficient definiteness is marked for phonological deletion, and is able to recover its antecedent from the context, why would agreement play any role? Agreement and (deficient) definiteness do not have any obvious connection with each other in Finnish.\footnote{In finite-domains, agreement is obligatory and is not influenced by definiteness. In the non-finite domains, agreement is optional and is not regulated by definiteness of the goal DP. This is not to say that there were no links between the two, but there are, for what we know, no grammatical laws in Finnish which would associate the two directly with each other.}

Another possibility is that missing Case-marking leaves the goal phonologically ‘unspeakable’. Indeed, Case-marking is necessary for spell out. This proposal has two immediate problems. One problem is that, as our examination of the Finnish EPP feature shows, Finnish NSs are in virtual free variation with noun phrases that are case-marked in those very same positions (see also Holmberg 2010). There is nothing in these constructions which renders Case-marking absent, even more so because phonological silencing is conditioned by agreement and hence Agree, the latter which is the hallmark of Case-marking. We can therefore only stipulate that there is no Case-marking; which is to say that some stipulative, formal feature exists to mark the designated pronoun for phonological deletion. This is not a useful perspective. The second
problem is that Case-marking, like agreement, has no connection to definiteness in Finnish. A noun phrase is Case-marked on the basis of its syntactic position in the structure, while its definiteness has no necessary relation to its structural Case. So the question remains: what indeed licenses, or forces, null subjects?

We propose the following analysis. Suppose that 1st/2nd person pronouns are definite by constitution: they refer to definite individuals within the discourse, speaker and addressee. Finnish third person pronouns, in contrast, have two interpretations: a definite interpretation and a bound reading. The definite interpretation picks up a salient thing from the discourse. A bound reading bleeds a quantifier, or another noun phrase, in the structure. Finally, suppose that the D-feature makes the definite interpretation available and is, therefore, optional. We propose (27). This rule will be subject to a small revision in the next section.

(27) Phonological deletion (Finnish, first version)

A goal can be deleted phonologically if and only if all of its features are copied by Agree to the probe. In Finnish, D-feature cannot be copied by Agree; in Italian, for example, the D-feature is copied by Agree.

We say that the goal “can” be deleted phonologically, since there is room for free choice (e.g., minun lähelläni ’my near.Px/1sg’, lähelläni ’near.Px/1sg’). Rule (27) associates null subjects with non-finite contexts if and only if these contexts show agreement. Since the D-feature cannot be copied, its presence in the pronoun prevents phonological silencing and hence there is a connection between interpretation and agreement: third person pronouns in Finnish cannot be both definite and null. The analysis is illustrated in (28).

(28)

a. Hän nukkuu. => *__ nukkuu (because D cannot be copied).
   he.D sleep.3sg
b. Hän nukkuu. => *__ nukkuu. (because it leaves ‘uD’ without antecedent)
   he.uD sleep.3sg
c. Pekka tiesi että hän₁,₂ nukkuu (both readings possible)
   Pekka knew that he.D/uD sleep.3sg
   'Pekka knew that he (himself or somebody else) sleeps.'
d. Pekka tiesi että __₁ nukkuu (‘uD’ and antecedent OK)
   Pekka knew that he.uD sleep.3sg
'Pekka knew that he (himself) sleeps.'

In (28a), a definite third person pronoun, referring to a contextually salient thing, cannot be deleted because the D-feature resist copying and requires an overt pronoun carrier. In (28b), the pronoun behaves like a variable, contains a deficient D-feature, but cannot be deleted here since there is no antecedent. Example (28c) is ambiguous: it has two interpretations, one which talks about a contextually salient third party, and another, where the pronoun is bound by Pekka. Example (28d) contains an null pronoun that cannot, therefore, be definite; the expression is grammatical because an antecedent is located. The independent reference interpretation is ruled out, however (compare 28c,d). There are further twists in this story, some of which become apparent in the next section, but this much is sufficient for present purposes.10

4.3 Antecedents

Next we try to tackle the question of which grammatical mechanism searches for an antecedents for the third person null pronoun? V&L state that the principle is “unclear”, but provide a “minimal requirement” according to which the antecedent must c-command the null subject and occur in the matrix clause (see 28d). Holmberg & Sheehan (2010) continue formalizing this line of thought by proposing that the antecedent is bound to the null subject by means of Agree of Chomsky (2000), which predicts that the relation should be subject to c-command requirement, strong locality requirement (Phase Impenetrability Condition, or PIC), intervention, and some type of feature match. The authors already note that the strong locality condition does not work: the antecedent can be several clauses up (29a). Intervention effects surface, however (29b).

(29)

a. Marja$_1$ sanoo että on varma että (hän)$_1$ saa ensi vuonna ylennyksen
Marja says that it is certain that she gets next year a promotion
'Marja says that it is certain that she will get next year a promotion.'

b. Jari$_1$ sanoo että lapsset uskovat että *(hän)$_1$ kävi tohtorilla
Jari says that children believe that he went to see a doctor

'Jari says that the children believe that he went to see a doctor.'

They also report that the c-command condition, although it cannot be omitted freely, can still be omitted in

10 See also “A comment about the hän/__ problem” at finnishsyntax.wordpress.com.
some contexts. They provide the examples in (30).

(30) (=H&S, ex. 30a,b, p. 138)

a. Jari's plan was, that (he) drive in one day from Helsinki to Oulu

"Jari's plan was that he would drive in one day from Helsinki to Oulu.'

b. It was a disappointment to Taja that not (he) could go along

"It was a disappointment to Taja that she couldn't go along.'

The picture that emerges is roughly that while the c-command condition and the locality condition operate in the standard cases, there are systematic and non-idiomatic exceptions. Frascarelli (in prep.) reports a native speaker questionnaire data which suggests that the c-command requirement is even more relaxed. (In reporting here data we will replicate the percentages of various native speaker judgments, as reported in her study.) Example (31) suggests that even in the presence of standard antecedent, some speakers can pick up ‘discourse antecedents’ (our term) that are not explicitly represented in the immediate grammatical context.

(31) Juhani kertoi että pro oli ostanut talon (from Frascarelli in prep, ex. 23)

Juhani told that had bought house

pro = Juhani (69%), pro = somebody else (14%), pro = both (17%)

While we think that the 14% of ‘somebody else’ judgments could be indicative of something else -- this interpretation is not available in our grammar -- we will later report similar facts from non-finite contexts and thus reinforce the conclusion that the observation is real. Frascarelli's data also shows that the intervention condition is not absolute; rather, while local antecedent could be the preferred one, it is not the only antecedent possible (from Frascarelli in prep, ex. 24; see also ex. 28b, 33-35 in her paper).

(32) Jari be.sorry, that Leo ajaatlee, that pro häviää kilpailun

Jari.par be.sorry that Leo thinks that loses race

pro = Jari (12%), pro = Leo (66%), pro = both (22%)

We agree with these judgments. Third, there are examples in her data where both a non-c-commanding antecedent and a discourse antecedent are accepted, as seen from (33)(Frascarelli's ex. 29b).
We feel that these judgments agree with our own intuitions. Notice, however, that in this case only 48% of the respondents judged the sentence as grammatical. Example (34) provides another illustration of a non-commanding antecedent.

(34) Jarin 1 puhe teki selväksi, ettei pro 1 ole syyllinen

Jari's speech made clear that-not be guilty

(48% grammatical, with most participants accepting discourse antecedents as well)

Taken together, we agree with Frascarelli (in prep) that the antecedent selection is not based on a direct Holmberg-type Agree-relation between the antecedent and the null subject: the c-command requirement, locality requirement and the intervention requirement do not work as expected, and the third person null subject can occur even without an explicit antecedent. In addition, we agree with Frascarelli that these data, and especially the inherent oscillation in the judgments, suggest that a discourse interpretation strategy might play a role. Crucially, though, we found in our earlier study (the first part of this paper) that the non-finite null subjects have similar properties (Huhmarniemi & Brattico 2016). While the c-command condition and the locality condition perhaps again cover the majority of cases, they are not requirements and there are intriguing breaks in the hegemony. The following examples of non-c-command binding of a null subjects in non-finite domains are from Huhmarniemi & Brattico (2016). Example (35d) shows that overt antecedents can be missing as well.

(35)

a. Tämä on {Jeren 1 ottama kuva} siskosta-an 1 Jadesta

'This is the picture that Jere took from his sister Jade'

b. Minä näin {kuvat autosta-an 1 jotka Pekka 1 oli ottanut}

'I saw pictures car-Px/3sg which Pekka had taken.'

c. {{Äiti-nsä 1 näköiset} pojat 1} ovat onnellisia
Boys looking like their mother are happy.

His/her mother will come along, and she is quite nice travel company.

See the paper cited above for full details. Frascarelli suggests that the null subject is bound by an overt or covert Aboutness (A-)topic phrase in the articulated C-domain. Accordingly, the discourse interpretation is mediated by constituents sitting at the C-domain. This analysis predicts that a local non-topical c-commanding antecedents should be rejected as binders if there were an overt A-topic phrase present, but Brattico (2015) reports that the prediction is not borne out. Both the topic and non-topic c-commanding antecedents are possible, and we feel that the c-commanding local non-topic antecedents are even more natural. Thus, in these examples the topic binder ‘police’ is possible only if it is strongly emphasized.11

(36)

a. Mitä tulee poliiseihin, roistot2 uskovat etteivät pro\textsuperscript{\textit{not}}\textsubscript{2} pysty pakenemaan heitä kiinni

'What comes to the police, the criminals believe that (they) can runaway from them.'

b. Mitä tulee poliiseihin, roistot2 uskovatetteivät pro\textsuperscript{\textit{not}}\textsubscript{2} saa heitä kiinni

'What comes to the police, the crimials believe that (they) will not catch them.'

Another problem, recognized by Frascarelli herself, is that Finnish finite clause and its C-domain has no dedicated position for the A-topic (Brattico, Huhmarniemi, Purma & Vainikka 2014). It is hard to believe that it could harbour an A-topic position that is always silent. Yet, despite these problems, we agree with Frascarelli that the discourse does play a role. The fact that the c-commanding non-topic constituent is preferred in a sentence such as (36), and inviolably preferred in non-finite contexts against non-c-commanding antecedents, led us to propose in an earlier work (Brattico & Huhmarniemi 2014, Huhmarniemi & Brattico, 2016) that the Vainikka-Levy-Holmberg mechanism is the default strategy, while the discourse mechanism (whatever it is) constitutes a last resort option. Thus, discourse search is activated only if the

search for a c-commanding antecedent fails. This would also explain why the non-c-commanding antecedents cover somewhat more marginal or exceptional territory and have, therefore, been neglected thus far.

Alas, the last resort hypothesis cannot be exactly right, since it predicts, wrongly, the topic antecedents should be impossible in (36). More exactly, it predicts that a local c-commanding antecedent should always outperform a non-c-commanding one, which is -- for all we know -- perhaps always so in non-finite contexts, but cannot be maintained for the finite ones.

There is another problem. Consider our claim that while overt third person pronouns are ambiguous between D and uD readings, covert null pronouns are not: they are always of the uD variety. What we have just witnessed shows that this is too simple. Specifically, also null pronouns can pick up topical or salient discourse antecedents. To illustrate, take (39).

(39) Äitinsä tuo hänet myöhemmin.
    mother-Px/3sg bring her later
    'her mother will bring her later.'

Think of this sentence as uttered in a context where a child is the topic. It is hard to see how (39) could be explained by assuming that the null subject lacks definiteness, or by assuming that the null subject must be bound by a syntactic topic in the C-domain; non-topic c-commanding antecedents are still possible, were there any. It therefore looks as if the null subject, like its overt counterparty, is ambiguous between D- and uD-readings; the distribution of the null subject is not equivalent to that of the overt pronouns, which are also characterized by this property.

We have already solved this problem, if only implicitly. In Huhmarniemi & Brattico (2016), we proposed that for null subjects the discourse strategy will be used as a last resort. C-commanding antecedents are looked first, and if the search fails, discourse repository is searched for an alternative. At least some of our data pointed towards such principle. Crucially, however, this is platantly not true of overt third person pronouns. For an overt third person pronoun, both the discourse strategy (D reading) and the bound reading (uD reading) are available, in parallel and independent of each other, as it were. For a covert third person null pronoun, the bound reading is preferred. So instead of claiming that third person null subjects are uD, we have to say that they, too, are ambiguous between D and uD readings, but that the uD-reading dominates, in
some sense. This would explain why the discourse strategy is more marginal or peripheral to the ‘core’ c-command strategy.

We have two problems with the above story. The first problem is that we have just assumed that the presence of D-feature will prevent phonological deletion in Finnish. Now we are saying just the opposite: a null subject has both the D-reading (discourse reading) and uD-reading (bound reading). The second problem is that we have just reported facts which suggest that the original last resort hypothesis cannot be right. It is not true that the D-strategy is used only if the bound reading fails. We find situations in which both are possible (ex. 36).

In “Finnish null subjects and their morphosyntax”, abbreviated as FNSM from now own, one of the authors (PB) took the view that null subjects are nothing but bundles of phi-features. We can now reformulate, or rewrite, the agreement condition as a condition which effectively says that only bare phi-bundles can (or must) be null.

(27’)/(40) Phonological deletion (Finnish, first second version)

A goal can be deleted phonologically if and only if all of its features are copied by Agree to the probe. In Finnish, uD/D-feature cannot be copied by Agree.

Agreement becomes a necessary criterion for null subjects according to (27’)/(40) because agreement copies phi-features and leaves nothing behind, namely, if the element is nothing but a bundle of phi-features to being with. Having this solution at hand, we can turn to the antecedent rule. In FNSM, the last resort hypothesis of Huhmarniemi & Brattico (2016) is replaced with (44).

(44) Antecedent rule

A third person NS (a bare phi-bundle) can be provided an interpretation either by means of (a) bound reading at LF, in which the antecedent must c-command the null subject, or by means of (b) independent reading, in which the antecedent must be a topic in the discourse. When both (a-b) resolve to the same interpretation, or when only one of them delivers a solution, no other interpretation is available. When the results are in conflict, the construction is ambiguous. If neither delivers a solution, the construction is ungrammatical.

12 Some of the empirical reasons can be found from a blog entry “A comment about the hän/__ problem” at finnishsyntax.wordpress.com.
To see how this works, consider (45).

(45) *Laulaa paljon.
    sing.3sg much

    Intended: 'He sings much.'

The bound reading (a) delivers nothing in this case, since there is no c-commanding binder at LF. The discourse strategy looks for a topic, which will also be missing, since the null pronoun itself is the topic. This makes the clause ungrammatical, according to (44). In (46), the bound reading (a) and the discourse topic search (b) converge to the same constituent, which must, consequently, be selected.

(46) Pekka uskoo että pro laulaa paljon
    Pekka believes that sing.3sg much

    'Pekka believes that he (himself) sings much.'

However, if the sentence is embedded into a linguistic or non-linguistic context that contains another salient topic, and Pekka is not such, then, according to (44), it is possible but optional to think that pro refers to that somebody else. The two interpretation mechanisms deliver different solutions. We believe this is why the participants in Frascarelli’s experiment sometimes but not always accepted such readings: they were creating a context out of the blue with something else standing as the discourse topic. An example is provided in (47a-c).

(47)

a. *Pekka₁ uskoo että pro₂ harjoittelee paljon
    Pekka₁ believes that practices.3sg also much

    'Pekka believes that somebody else practicse a lot.'

a. Tunnetko Tiinaa? Hän on niin lahjakas. ??Pekkakin uskoo että harjoittelee paljon.
    Do you know Tiina? She is so talented. Pekka believes that __ practices.3sg also much

b. Tunnetko Tiinaa? Hän on niin lahkas. (?)Kaikki uskovat että on aina harjoittelemassa.
    Do you know Tiina? She is so talented. Everybody thinks that __ is.3sg always practicing.

Thus, the more there is context that supplies a topic candidate, and the less there are c-commanding topics, the more an empty third person null pronoun that refers to the said topic becomes accetable. A thorough discussion of this rule can be found from FNSM (Brattico, 2015).
5 Conclusions

We argued in this paper that there are non-finite pro constructions. The argument is based on the observed parallelism between finite and non-finite domains with respect to their ability to license null subjects. In both domains, null subjects are licenced by agreement, they satisfy the EPP requirement, and third person null subjects require antecedents. The evidence therefore suggests that pro-drop is not limited to finite domains. Steps were taken to provide formalizations of the first and the third condition, such that also the non-finite domains were covered. We assumed, following FNSM, that null subjects are nothing but bundles of phi-features, and their null nature emerges form an operation (Agree) which copies these features to a head, leaving no features behind. The antecedent condition was captured in terms of interaction between two antecedent strategies. One strategy looks for c-commanding antecedents and results in bound reading. Another strategy looks for topics in the discourse. Their interaction is such that if both strategies result in the same constituent, or if only one strategy delivers a solution, only that solution will be acceptable. If these strategies deliver different solutions, the construction is ambiguous. Finally, if neither mechanism works, the construction is ungrammatical.

References

== = to be completed ==

FNSM = “Finnish null subjects and their morphosyntax”, ms, P. Brattico.


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