Why Children Omit Clitics in Some Languages but not in Others: New Evidence from Greek [1]

Vina Tsakali and Kenneth Wexler
UCL/MIT and MIT

1. Introduction

In this paper we investigate developmental properties of direct object clitics across languages, in particular the status of clitic omission in child Greek. Our focus is whether clitic omission is a universal stage that all children speaking a clitic language go through or this holds only for some languages. If the later is the case (as clearly stated in the title) then the question is how we can account for these differences among clitic languages. The theory we are developing here is a further attempt to unify universal properties of development across constructions, including object positions as well as subject positions (see Wexler, to appear). In particular, by unifying the Optional Infinitive (OI) stage with the Clitic Omission Stage (ClO), we are able to explain the apparent variation in the development of pronominal clitics across languages by showing that this variation can be accounted for, if we adopt the same assumptions that are needed in order to explain the facts of the Optional Infinitive stage; that is, the interaction of a universal developmental constraint (the Unique Checking Constraint) with the particular syntactic properties of types of languages.

There are several hypotheses in the literature concerning which aspects of grammar cause the omission of object clitics, including difficulties in forming A-chains (Guasti 1993/94, extending Borer and Wexler's 1987 work on maturation of A-chains), or children's inability to always form a full-fledged clausal structure, i.e. truncated clause structure (Hamann, Rizzi and Frauenfelder, 1996; Haegeman 1996), or problems in coping with Multiple Spell-Out operations (Avram 2000). We do not have space here to show why each of these proposals is inadequate, but simply note that none of them can explain the cross-linguistic variation in omission that we discuss. Our proposal, following Wexler (to appear) and Wexler, Gavarro and Torrens (2003), is that clitic omission and its cross-linguistic variation stem from some universal principle that prevents children from carrying out certain computational processes of syntax, namely the Unique Checking Constraint, that applies to the Grammar as a whole and allows children to accept and produce ungrammatical constructions. Therefore, under this view, clitic omission results from constraints that are principles in children's grammar and not imperfections. Basically, children's grammar is more highly constrained than adult grammar.

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In Section 2, we begin with a summary of the main properties of the normal development of clitics. In Section 3, we lay out the theoretical framework which our hypothesis is built on. Section 4 reviews data on omission of clitics in French and Italian while in Section 5 we present our Greek naturalistic and experimental data that contrast to the Italian and French data presented in Section 3 in informative ways. In Section 6 we conclude and raise some unanswered issues for further discussion.

2. Developmental properties of object clitics

In normal development in many languages, object-clitics have the following properties:

(1) *Properties of object clitics:*

a. Object clitics are never misplaced, that is they never appear in the wrong position with respect to the verb[2], as illustrated in example (2) below. This seems to be true in all languages studied, in particular French, Italian, Greek and Spanish.

(2) To ftiahno (Mary, 1;9) vs *ftiahno to
It-cl-acc make-1st sing-indicative V-indicative-cl
'I'm making it".

b. In early periods clitics are quite rare, as a percentage of grammatical objects overall. Even when the object is not omitted, young children use non-clitic objects at a rate much larger than older children or adults.

c. Clitics are often omitted from structures in which they are obligatory as in the examples (3) and (4) from Greek. This property seems to be parameterised, despite the fact that in all languages studied there is at least some low percentage of clitic omission as (3) and (4) suggest[3]; Wexler, Gavarro and Torrens (2003) have shown that children omit object clitics in Spanish much less often than in French or Italian, and we will show that children also omit object clitics in Greek much less often than in French or Italian.

(3) Sikose __(Mary 1;9) Sikose *to* (target utterance)
Lift-2nd-sing-imperative (it-cl-acc)
"Lift it".

[2] We take no position on questions concerning clitic clusters. It has been claimed (Clark 1985) that French children often violate the relative order of two clitics.

[3] In Modern Greek clitics follow Imperative (as in (5)) and Gerunds and precede Indicative (as in (6)) and Subjunctive. However, the position of the clitic does not relate to their omission or lack of it.

(4) __ thelo (Spiros, 1,9) *to* thelo (target utterance)
(It-cl-acc) want-1st sing-indicative
"I want it".

d. The age at which the clitics are omitted is roughly the same age at which children show Optional Infinitive effects (roughly until three-years of age).

The term clitic omission involves two issues; on the one hand omission of object clitics after they appear in children's speech and on the other hand, extremely low use of clitics at the age of 2-3 (same age as Optional Infinitive stage) in some languages (Italian/French), while frequently used in others (e.g. Greek).

The question arising from (1d) concerns the correlation between clitic omission and the Early Non-Finite verb form. Studies on the acquisition of clitics in Romance and Germanic languages have provided evidence for the generalization that the omission of clitics and the use of optional infinitives occur in the same age-range (Wexler 1998, 1999). For example, Guasti (1993/94) has provided evidence that Italian children omit object clitics during the age-range that corresponds to the optional infinitive stage.

Moreover, Dutch children omit clitic subjects and objects in sentences involving optional infinitives (Haegeman 1996), which shows directly that both phenomena occur at the same age.

It is crucial to note that whether or not children developing language L omit clitics is independent of whether or not children developing L goes through the OI stage. We know that many languages go through the OI stage and many don't. And we now know that many languages go through the Clitic Omission stage and many don't. The two properties are not correlated within a language. For example, Italian does not go through the OI stage but it does go through the Clitic Omission stage. Spanish does not go through the OI stage and it also does not go through the Clitic Omission stage. The UCC theory explains why this is so.

3. The theoretical background: The Optional Infinitive Stage and The Unique Checking Constraint

The theory of Optional Infinitives in normal children has been the subject of much investigation; the Unique Checking Constraint attempts to capture a wide variety of empirical phenomena in clausal development in terms of a simple theory of development and to account for cross-linguistic differences with respect to these phenomena. In this research we attempt to also capture the variety and the cross-linguistic differences with respect to object properties. Before we enter the discussion of how these two correlate, we need to explain some basic properties of the OI Stage and the UCC.

In a nutshell, the basic properties of the OI Stage (Wexler 1990 ff.) can be summarised as follows:

(5) *OI Stage Properties*
   a. Root non-finite sentences are produced
   b. Finite sentences are produced in the same time period
   c. Nevertheless children know the grammatical properties of finiteness and non-finiteness.
   d. In English, children produce non-NOM subjects (e.g. him go), as well as NOM subjects (he go, he goes) but don't produce non-NOM subjects when agreement is present (*him goes).

In order to account for the puzzling facts above, Schutze and Wexler (1996) developed the Agreement/Tense Omission Model (ATOM). We don't have space here to explain how this works, but the original papers and many others do.

(6) *ATOM*
   a. Children in the Optional Infinitive stage omit either AGRS or TNS or neither
   b. Children know the morphological features, e.g. that –s in English is [+3rd, +sing, +present tense]
   c. Children insert inflectional features according to the correct model of morphology (Distributed Morphology, Halle and Marantz, 1993)

Wexler (1996, 1998) attempts to explain the variation that seems to hold among languages with infinitives as far as OI stage is concerned and the null subject parameter. As stated in (7), the generalization that holds is:

(7) *The Null Subject/Optional Infinite Correlation (NS/OI)*
   A language goes through an OI stage if and only if the language is not an INFL-licensed null-subject language.

The problem that arises is to derive ATOM together with NS/OI. The theory that can capture the essence of both is the Unique Checking Constraint (Wexler 1998):

(8) *Unique Checking Constraint* (UCC)
   The D-feature of a DP can only check against one functional category[4].

(9) Minimize Violations (MV)
   Given an LF, choose a numeration whose derivation violates as few grammatical properties as possible. If two numerations are both minimal violators, either one may be chosen.

The UCC explains that AGR-S or TNS is omitted, because they both have an uninterpretable D-feature that must be checked. This violates that UCC, causing omission of AGR-S or TNS. MV together with UCC derive the optionality property

[4] The D-feature is essentially what checks the EPP feature. So an equivalent way of stating the UCC is: a DP can check the EPP feature of at most one functional category.

of the OI stage: since elimination of AGR-S or TNS is a violation, eliminating one of them, competes with a numeration which eliminates no functional categories, deriving an adult well-formed finite expression, but violating UCC. Thus ATOM is derived. NS/OI is derived on the natural assumption that AGR-S has a [+interpretable] D-feature in null-subject languages like Italian, so that the D-feature of AGR-S doesn't have to be checked. The UCC is thus not violated, and there is no reason to omit AGR-S or TNS, thus no need for non-finite root sentences.

3.1 The UCC Derives the properties of Clitic Development-The Hypothesis

Following Wexler (2000), we take the omission of clitic to follow from the Unique Checking Constraint. The fundamental idea is that there is double D-checking in the derivation of the object clitics in some languages (i.e. French, Italian) while there is single D-checking in others (i.e. Greek, Spanish). We assume that the essential double D-checking occurs when participial agreement is present in a language (see also Wexler, Gavarro and Torrens 2003 for a full discussion concerning Spanish versus Catalan). Before we explain the details of the theory of the correlation that we make between participial agreement and clitics, we need to present certain facts that seem to hold through the Clitic Omission Stage.

(10) *Properties of Clitic Omission Stage*

a. Object clitic arguments are often omitted
b. In the same period object clitic arguments are sometimes produced
c. The participial agreement is sometimes omitted in the same period
d. Children know that clitics have to agree with the participle agreement, while the full DP objects do not

The fundamental idea of Wexler's (2000) analysis is that there is double D-checking in the derivation of Romance object clitics; thus the UCC forces the omission of a functional clitic category (containing an uninterpretable D-feature) which is necessary for the realisation of the clitics. Omitting this functional category forces the clitic to be omitted.

Following Sportiche (1996), we assume that the clitic is base generated in the Clitic Phrase (ClP). We take the clitic to be the head of ClP. We furthermore assume that the DP-object *pro* has to check its D-feature with the Clitic Phrase. The clitic must get case or be checked for case (ACC, DAT) so we assume that *pro* first moves through AGR-O, where it checks case. Moreover in Italian and French, a participle agrees (shows surface agreement) with the object clitic. This agreement is presumably checked in AGR-O, by *pro* showing spec-head agreement with the head of AGR-O. When *pro* reaches ClP, it will also have to agree with the clitic there, so we see how the agreement properties of the clitic with the participle are transmitted to the clitic through *pro*.

The movement of pro to AGR-O and then to the clitic phrase is motivated in each case by an uninterpretable feature (the *D* or *EPP* feature) on a functional category, which is checked and eliminated, and spelled out as the appropriate agreement (including case).

UCC prevents children from double checking. In the spirit of the UCC's explanation of the OI stage, the functional category containing one of these D-features must be eliminated, either ClP or AGR-O, so that the UCC isn't violated. If clitic phrase is eliminated then the derivation does not crash, but the clitic cannot be spelled out, since it is generated in the clitic phrase; *pro* can still move to the AGR-O and check its case features. So elimination of ClP results in an omitted clitic, in a derivation which does not crash but violates one Interface property, the requirement of ClP in this construction. The surface effect is that there is an "omitted clitic" (10a). If AGR-O is eliminated then the case feature on *pro* can't be checked. In principle *pro* could move to ClP directly. One possibility is that *pro* (and thus the clitic) gets "default case", if this is a possibility for clitics in a language (paralleling the default case assumed by Schutze and Wexler for non-clitic DPs). The implication would be that when AGR-O is omitted there would not be an omitted clitic, but there would be "case errors." For example, if default case of clitics turned out to be ACC, we would expect some dative clitics to turn up as ACC. We have not investigated this possibility. But we note that if AGR-O is omitted, then participial agreement can't take place, deriving (10c). On the other hand, if there is no possibility of default case for clitics, then there would be no case on *pro* to agree with the clitic, and the whole derivation would crash. In either case, we have the possibility of omitted clitics when ClP is omitted.

By Minimize Violation, sometimes neither ClP nor AGR-O are omitted, and clitics appear normally (10b). Thus UCC predicts the properties of the clitic omission stage.

3.2 Cross-Linguistic Differences: Spanish/Greek versus Italian/French

Spanish and Greek, unlike Italian and French, do not show agreement of the participle with the clitic, although this is not a morphological fact about these languages (Iatridou 1995). Spanish participles can agree, e.g. in predicate adjective constructions. Kayne (1993) proposes that Spanish does not have AGR-O, in order to account for these facts. If that were true, then *pro* does not move through AGR-O and does not check anything in AGR-O, which does not exist. Thus there is only one checking, and UCC is not violated, and there is never a reason to omit ClP. Thus ClP is not omitted and we have derived why Spanish does not show clitic omission, as Wexler (2000) argues. However Wexler points out that it is hard to say that AGR-O is actually missing. How does case on the clitic get checked? We assume instead that in Spanish, AGR-O has a [+interpretable] D-feature. *pro* undergoes long distance agreement with AGR-O in order to check a case feature on AGR-O, but the D-feature of AGR-O does not attract *pro*, since that feature is [+interpretable] and does not have to be eliminated.

The necessary assumption is that agreement is only spelled out if a D-feature on the functional category is checked/eliminated. This is equivalent to or follows from recent work by Guasti and Rizzi which shows that morphological spell-out of features often takes place only under surface movement (not LF-movement in their sense or long distance agreement in current Minimalist discussion). It is the [-interpretable] feature (thus movement inducing) nature of the D-feature of AGR-O in Italian and French that causes the spell-out of agreement on the participle.

Therefore, since there is only one D-checking (by ClP, but not AGRO) in the derivation of Greek and Spanish clitics, there is no violation of UCC, and thus no omission of ClP, and thus no omission of clitics.

Again, we have derived variation across languages (clitic omission or not) as a consequence of the universal developmental constraint (UCC) interacting with the properties of the language, known to the child. Note that there is good evidence that Italian kids at a very young age know that participles agree with clitics. Greek or Spanish children never try to make that happen. So it is fair to claim that children know the parameter (just as we know that children know the null-subject parameter): the interpretable D-feature in AGR-O in Greek and Spanish, and the uninterpretable D-feature in AGR-O in French and Italian.

Assuming that the D-feature of AGR-O in Greek and Spanish is [+interpretable] we take its interpretation to be strictly analogous to the D-feature of AGR-S as the subject in null-subject languages (Wexler 1998). If the D-feature of AGR-O is [+interpretable], the interpretation is that of the object itself.

This interpretation of the D-feature of AGR-O as the object will be mediated by long-distance agreement of AGR-O with the object. If there is a visible object (clitic-doubling) the visible object will be in a long-distance AGR relation with AGR-O. If there is no other surface object then the object will be an empty one, say *pro* in object position. This is quite analogous to the interpretation of the AGR-S as the subject in null-subject languages, in a long-distance AGR relation with either a visible or empty (*pro*) subject.

The theorem derived from these assumptions can be formulated as follows:

(11) *A language is a clitic-doubling language only if it does not have agreement with the participle, assuming the appropriate morphology exists.*

(11) is quite likely right, to a first approximation. Clitic doubling languages seem to have no participial agreement with the clitic. For Greek, for example, Iatridou (1995) shows that what looks like it might be participial agreement is really another construction.

The parameter of of [+/-] interpretable feature for AGR-S is independent of the parameter of [+/-] interpretable feature for AGR-O. We can moreover predict word order differences among languages depending on these two parameters. In Italian the object moves to Spec, AGR-O, since the D-feature of AGR-O is [-interpretable]. Since AGR-S has a [+interpretable] D-feature, the subject does not raise to AGR-S. Thus, taking account of the fact that V raises to AGR-S, the expected word (neutral) is VOS, as is normally argued for in the syntax of Italian. (See Alexiadou and Anagnostopoulou 1998, for further discussion). In French the D-feature of AGR-O is also [-interpretable], but the D-feature of AGR-S is [-interpretable], unlike Italian, so the subject moves to AGR-S on the surface and we obtains the neutral word order of SVO.

In Spanish and Greek the D-feature of AGR-S is [+interpretable] and the D-feature of AGRO is [+interpretable]. The object does not move to AGR-O and the subject does not move to AGR-S. Since V raises to AGR-S, we obtain VSO as the neutral word order. So Greek a null-subject language, which means that it has a [+interpretable] D-feature for AGR-S and without participial agreement, which

means that has a [+interpretable] D-feature for AGR-O is predicted to have neutral word order of VSO, which is correct. The same VSO neutral word order prediction is made for Spanish.

4. Cross-linguistic variation with respect to clitic omission:

4.1 The case of early French clitics

Friedemann (1993/94) reports on Gregoire and Philippe from the CHILDES Corpus. From the ages of 1;11 through 2;3, Gregoire has 1 clitic out of 92 complements, for a clitic use of about 1%. Philippe, in the three files he has 42 clitics out of 625 complements, for a clitic use of 6.7%. The clitic use rate jumps in the next files. From 2;6 through 3;3 there are 99 clitics out of 150 complements, for a clitic use rate of 66%.

Turning to another case, Hamman, Rizzi and Frauenfelder (1994) study the development of the monolingual French of Augustine from ages 2;02 to 2;10. They write that "object clitics are nearly absent in the period 2-2;6 and show an increase only on the last two recordings (2;9). Aside from tracking the raw frequency of clitics, they calculate the number of object clitics out of the total number of utterances with a verb. For the ages 2;0 through 2;6;16 there are 3 object clitics out of 441 utterances with a verb (a rate less than 1%). At the age of 2;9 there are 9 object clitics out of 175 utterances with a verb (a rate of 14,2%). At the age of 2;9;30 there are already 22 object clitics in 155 utterances with a verb.

Jakubowicz, Müller, Kang, Riemer and Rigaut (1996) and Jakubowicz, Müller, Riemer and Rigaut (1997) study the productions of young French children in the age range 2;5 to 2;7. As discussed by Hamman (1997), the former authors divided children into two groups. The less mature group uses clitics only 9% of objects whereas the more mature group uses clitics in 30% of objects. This clearly suggests that there is omission of clitics and supports (1b).

4.2 The case of early Italian clitics

Turning to Italian, Schaeffer (1997) did an elicitation experiment on pronominal clitics in Italian. She set the children up in situations in which a clitic object should be expected. She tested children from 2 to 5;11 as well as adult controls. The discourse situations worked very well in eliciting clitics. Adults gave 100% object clitics and 0% full direct objects. The 2;1 to 2;6 (mean age 2;5) year old children produced 14% direct objects and only 22% clitics (the rest is raw omission). The 3;1 to 3;11 (mean 3;5) year old children produced 23% full direct object and 62% overt clitics. Clearly, the young OI-age children produce too many full direct objects.

5. The Greek Data

5.1 Naturalistic data

The data presented in this Section are naturalistic and come from two sources: the CHILDES database for Greek (Stefany Corpus, 1995) and the Doukas Corpus. The CHILDES data consist of four children, aged from 1;9 to 2;9.

In the table (1) (from Stefany Corpus) below, we have calculated the percentage of clitic omission (out of all transitive verbs) separately from the omission of full DPs/CPs (out of all transitive verbs) based on the context (as much as this was possible). However for methodological reasons we have to compare the total omission rate to the studies in other languages, since the way that it has been calculated in the literature typically does not distinguish omission of clitics from omission of full DP objects. Thus in the same table we present the number of clitics used at each stage which allows us to compare to other languages.

	Age	Trans Verbs	Clitics used	DP/CPs used	Rate of omitted DP/CPs	Rate of omitted clitics	Total omission rate
Kid 1	1;9	77	10	35	12,9%	19,5%	32,4%
Kid 2	1;11	46	10	23	6,5%	15,2%	21,7%
	2;5	86	50	41	2,3%	1,1%	3,4%
Kid 3	1;9	302	49	82	3,6%	5,6%	9,2%
	2;3	187	54	78	1,6%	4,8%	6,4%
Kid 4	2;3	68	25	29	7,3%	5,9%	13,2%
	2;9	145	81	44	0,6%	0,6%	1,3%

Table 1

	AGE	Transitive Verbs	Clitics used	DP/CPs used	Rate of omitted DPs/CPs	Rate of omitted clitics	Total omission rate
MARIA	2;0.24	24	6	15	8,3%	4,1%	12,5%
	2;2.8	77	39	35	1,2%	2,5%	3,8%
	2;3.18	54	46	27	0%	3,7%	3,7%
	2;5.4	99	46	50	4%	2%	6%
	2;5.24	71	36	37	4,2%	0%	4,2%
	2;7.1	61	37	24	0%	0%	0%
	2;8.27	85	35	57	0%	0%	0%

Table 2

We can claim that there is no real clitic/object omission in early Modern Greek already from the age of 2. Comparing the number of clitic used in French, as presented in Section 4.1 to the clitics used in early Greek, as in Table (1) and (2), we can see that there is a significant Clitic Omission stage extending past age 2 for French and Italian, but no such stage for Greek. This is a significant difference predicted by the UCC theory. On the other hand, differences in how the naturalistic data are studied make an elicitation experiment an even stronger and clearer test of the theory. Wexler, Gavarro and Torrens (2003) replicated Schaeffer's (1997) Italian experiment on Spanish and Catalan. They showed that there is almost no clitic omission in Spanish even in the 2-year age range, whereas there is very much omission in Catalan. Spanish does not have participial agreement and Catalan does.

Thus these results strikingly confirm the UCC analysis. In the next section we report an elicitation study of Greek clitics in the same spirit – to repeat the method of Schaeffer closely, where we have a prediction of very different results for Greek than for Italian.

5.2 Elicitation study

In order to test whether children would omit the clitic in an obligatory context (D-linked definite objects should appear in a clitic-shape), we performed an elicitation task with 25 monolingual Greek children (control group 100% performance), replicating Schaeffer's (1997) method closely. According to their age we divided them into two separate groups[5]. The first group consists of 15 children from age 2;4 to 3 and the second group consists of 10 children from age 3 to 3;6. All children speak the standard Greek dialect.

In the elicitation task five different pictures were used followed by questions for controlled answers, that is, the questions were devised to eliminate the possibility of using a DP instead of the clitic (as in Schaeffer 1997). To illustrate it with an example, a picture would be shown where a little boy is kissing a little girl:

Experimenter's Question: Ti kani edho to agoraki sto koritsaki?
"What is the boy doing here to the little girl? "

Expected Answer: To filai. "He is kissing her"

All the expected answers require a clitic (with a transitive verb) in Modern Greek. From all the 125 environments (5 pictures multiplied with 25 children) for clitics only one child (aged 2;6) omitted a clitic once (that was also the overall object omission). This means that the percentage of clitic omission of clitic omission in Greek is 0,8%. It is fair to say that there is no clitic omission in early Modern Greek. Note that the percentage of clitic omission in Greek is comparable to object pronoun omission in English, actually even less (Hyams and Wexler 1993).

Again the comparison with elicitation tasks in other languages (i.e. Schaeffer, Jakubowicz) show that there is a massive difference in clitic omission between Greek and French/Italian. Schaeffer's two year-old Italian children omitted object clitics 62% of the time; in the same experiment done on Greek 2 year-old children, we found that they omitted object clitics less than 1% of the time! Even Schaeffer's 3 year-olds omitted the object clitics 15% of the time (0% for our Greek 3 year-olds). Moreover, Schaeffer's Italian 2 year-olds gave a full DO answer 23% of the time and the 3 year-olds gave a full DP answer 23% of the time. The full DP is strongly infelicitous in the context, but the children give these because of the trouble with clitics (UCC). Our Greek children gave *no* full DP (without clitic) responses[6].

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[5] Initially we had these two age-groups for the reason that 3 is roughly the end of the Optional Infinitive stage, and we wanted to observe any differences during and after that; however it turns out that for Greek it does not make any difference whether we had one or two groups.

[6] In some cases, children would use the clitic doubled with a full DP in their answers. This is in general accepted in Modern Greek since Clitic Doubling is usually optional.

They simply have no trouble at all using clitics, even the 2 year-olds. Clearly, the predictions of the UCC (the generalization that a language omits clitics in development if and only if the language shows participial agreement (given that the morphology exists)), has been strongly confirmed by the clearest possible method. The same experiment, done cross-linguistically (Italian (Schaeffer), Spanish and Catalan (Wexler, Gavarro and Torrens) and Greek (us) gives stunningly different results in the different languages, as predicted by a precise theory. It is hard to imagine stronger confirmation of a theory, or of the method that says that linguistic theory provides an important route to insight into language acquisition.

6. Conclusions-further discussion

In this paper, we have shown that there is no significant clitic omission in Early Greek language. The percentage of clitic omission is comparable to omission of full pronouns in early English (Hyams and Wexler 1993). The cross-linguistic differences with respect to clitic omission are related to whether there is participial agreement in a language or not and the Unique Checking Constraint accounts for the differences expected among languages. This follows if Greek has [+interpretable] D-feature for Agr-O, while in French and Italian the D-feature in AGR-O is [-interpretable] and therefore it has to move to check its feature first with AGR-O.

From the group of languages under investigation both languages with clitic omission (French, Italian) are non clitic doubling languages while both languages with no clitic omission (Greek, Spanish) are clitic doubling languages. Catalan also fits the description, even though the analysis is complicated by the fact that participial agreement in Catalan is optional. Subject to further investigation, it would be interesting to see whether the generalisation is true for more languages and how exactly clitic doubling correlates indirectly to either participial agreement or directly to clitic omission.

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