

## On the Acquisition of Prepositions\*

Christina Alexaki, Maria Kambanaros, Arhonto Terzi

*Technological Educational Institute of Patras*  
*chralexak, kambanarou, aterzi@teipat.gr*

**Abstract:** This work studies the acquisition of Greek Prepositional Phrases. We focus on locative prepositions, because they may combine a lexical and a functional element, hence, can offer insights for both the acquisition and the syntactic status of prepositions from this perspective. We found that both, *se* and *apo*, appear after the lexical part of complex prepositions, and fully develop after age three. We compare *se* and *apo* when part of complex prepositions and when conveying location/direction alone and conclude that the former may be acquired after the latter. *Apo* is also encountered much earlier alone, but only preceding locative adverbials.

**Key words:** Acquisition of Ps, *se*, *apo*, complex Ps, locatives.

### 1. Introduction

The category P(reposition) has posed problems with respect to classifying it along the functional vs. lexical dimension (van Riemsdijk 1990, 1998, den Dikken 2003, Botwinik-Rotem 2004, Svenonius 2004). The most difficult group to accommodate are the locatives, since they are the most ‘lexical’, by contrast to other Ps which are closer to the functional end of the spectrum. If we consider the lexical vs. functional distinction to be central for acquisition (Radford 1990, Tsimpli 1992/1996, and Tsimpli 2005 for a recast), acquisition of the various Ps is also expected to differ accordingly.

In this spirit, Littlefield (2006) utilizes van Riemsdijk’s notion ‘semi-lexical’, which she decomposes to [+/-lexical, +/-functional], arguing that the combination of these two properties determines the order of acquisition of a number of prepositional elements in English. She considers as [+lexical] those that contribute semantic content, and as [+functional] those that are able to check the Case of their complements. These fundamental distinctions result in the four categories of prepositional elements in (1), the acquisition of which proceeds from the most to the least lexical, as she claims.

- |      |  |                         |
|------|--|-------------------------|
| (1a) | Adverbs: <i>put <u>down</u> the cup</i>                        | [+lexical, -functional] |
| (1b) | Particles: <i>he ate it <u>up</u></i>                          | [-lexical, -functional] |
| (1c) | Semi-lexical prepositions: <i>run <u>to</u> the store</i>      | [+lexical, +functional] |
| (1d) | Functional prepositions: <i>translation <u>of</u> the book</i> | [-lexical, +functional] |

With the above in mind, we set off to study the acquisition of Greek Ps. At this stage, we are focusing primarily on locative Ps, since they involve most combinations in (1), i.e., (1a), (1c) and (1d), therefore, they constitute a good starting point for studying the acquisition of all Greek prepositions. In other words, if we accept that Greek has no particles, i.e., that (1b) is missing, Greek locatives exhaust all the options of (1).

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## 2. Location in Greek

Location may be expressed in a number of ways in Greek.

a. *via a Complex P structure.*

Complex Ps consist of an element denoting location, followed by the ‘small’ Ps *se* or *apo* introducing their complement.

- (2a) Brosta apo/se to spiti.  
in-front apo/se the house  
‘In front of the house.’
- (2b) Epano apo/se to trapezi.  
on apo/se the table  
‘Above/on the table.’

Some locatives can be followed either by *se* or by *apo*, with no difference in meaning, (2a). By contrast, it makes a difference whether *se* or *apo* is used in (2b), indicating that in this particular instance (one or both) ‘small’ Ps contribute semantic input. Terzi (2007) in fact proposes that *apo* indeed carries semantic load in this context.

Theoretical work on Greek has held that the first part of complex Ps is a lexical element, also referred to as adverbial in the traditional grammar (Tzartanos 1945/1996), while ‘small’ Ps are functional elements (Theophanopoulou-Kontou 1992, 2000, Terzi 2005, 2006). Leaving exceptions as (2b) aside, Botwinik-Rotem & Terzi (2007) further argue that *se* and *apo* are responsible for checking the Case features of the DP complements of locatives, which, again, associates them with purely functional status.<sup>1</sup>

b. *via se or apo*

Location can also be expressed via the ‘small’ Ps *se* or *apo* alone:

- (3a) To vivlio ine sto trapezi/sirtari.  
the book is se-the table/drawer  
‘The book is on the table/in the drawer.’
- (3b) Erxome apo to grafio.  
come-1s apo the office  
‘I come from the office.’

In the above examples *se* expresses location, (3a), while *apo* direction/source, (3b). Thus, ‘small’ Ps contribute semantic input in this context, while, at the same time, they are responsible for the Case of their DP/NP complements. If on the right track, it is, therefore, expected that *se* and *apo* should appear earlier in child language when in frame (3) than when in frame (2). Note that, even according to the claims in Tsimpli (2005), elements with purely formal features appear later than those with semantic input.

c. *via an adverbial*

The first parts of complex Ps can also stand on their own, denoting location, and they are then considered adverbials. Their meaning is similar, but not always identical, to their meaning in complex Ps.

- (4a) O Petros stekotan brosta/piso.  
the Peter was-standing in-front/behind  
‘Peter was standing in front/behind.’

<sup>1</sup> All lexical locatives in (2) can alternatively be followed directly by their complements in the form of a clitic, e.g., *brosta tu* ‘in-front of him’. This syntactic frame is not relevant for the present work, but see Terzi 2006, 2007 and Botwinik-Rotem & Terzi 2007 for detailed discussion (of both frames).

- (4b) I Maria meni epano/kato.  
the Mary lives on/under  
'Mary lives upstairs/downstairs.'
- (4c) To evala kato.  
it put-1s under  
'I put it down.'

Finally, *apo* can also precede lexical locatives, either when used as adverbials, (5a-b), or when parts of complex Ps involving *apo*, (5c). It is not clear whether the interpretation of location below differs depending on the presence of a preceding *apo*. The facts in (5) are given because of their relevance for some of the acquisition facts that we will present.

- (5a) O Petros stekotan apo brosta/piso.  
the Peter was-standing apo in-front/behind  
'Peter was standing in front/behind.'
- (5b) I Maria meni apo epano/kato.  
the Mary lives apo on/under  
'Mary lives upstairs/downstairs.'
- (5c) Apo epano apo to trapezi.  
apo on apo the table  
'Above the table.'

With the above in mind, our purpose is to investigate whether:

- a. acquisition proceeds in a different manner for the lexical than for the functional part of complex Ps.
- b. acquisition proceeds in a different manner for *se* and *apo* in complex Ps than when they express location alone, i.e., in (2) vs. (5).

Answers to the above questions are also expected to contribute to the understanding of the theoretical status of the various Ps (see Terzi 2005 for such views).

### 3. Methodology

We looked into the above issues via two types of experimental work:

- a. structured experiments
- b. analysis of spontaneous speech

#### 3.1. Structured experiments

The experimental work we report here has been conducted by Xypolias and Christopoulos (2004). With three different experiments, they tested:

- a. comprehension of adverbials, b. comprehension of complex Ps, and,
- c. production of complex Ps

##### 3.1.1 Comprehension of adverbials

Comprehension of the following adverbs was tested:

*Epano* 'on/above/upstairs', *dipla* 'besides', *makria* 'far', *brosta* 'in front', *mesa* 'inside', *kato* 'under/down/downstairs', *konda* 'near', *piso* 'behind', *ekso* 'out/outside'.

Adverbs were tested by utilizing a picture which showed a building whose tenants were seen from the windows of the building. For testing comprehension of *epano* 'on/above/upstairs', for instance, the experimenters pointed to a particular person on the

picture and asked a question such as: *Afti ine i Maria. Dikse mu to koritsi pu meni epano.* ‘This is Maria. Show me the girl who lives above/upstairs.’

### 3.1.2 Comprehension of complex Ps

Comprehension of the following complex Ps was tested via a picture verification task: *konda se* ‘near’, *brosta apo* ‘in front’, *mesa se* ‘in/inside’, *epano apo* ‘above’, *piso apo* ‘behind’, *makria apo* ‘far’, *epano se* ‘on’, *ekso apo* ‘outside’, *kato apo* ‘under’, *anamesa se* ‘between’, *mesa apo* ‘from inside’, *dipla se* ‘beside’.

For each complex P children were presented with three pictures, the target picture and two others containing the opposite locative. Thus, for *konda se* ‘near’ three pictures of a child and a house were shown. In one of them the child was standing close to the house and in the other two further away from it, to its left and to its right side. The child had to choose the picture that corresponded to a sentence such as: *Dikse mu ti fotografia pu to pedhi ine konda sto spiti* ‘Show me the picture where the child is close to the house.’

### 3.1.3 Production of complex Ps

Production of complex Ps was tested after comprehension, by using the same pictures as in the comprehension task, but only one picture at a time. In the case of *konda se* ‘near’, for instance, the first of the previous three pictures was used and the experimenters tried to elicit its production. Since it was not easy to obtain the lexical part of the complex P, assistance was often provided in a number of ways that were not giving out the target answer. Thus, the experimenters would ask, for instance: *Pu ine to pedhi?* ‘Where is the child?’ If the desired answer was not obtained (which was most often the case), they would continue with something like: *Lipon, edo ine to pedhi ki edo ine to spiti. To pedhi ine konda i makria?* ‘So, here is the child and here is the house. Is the child near or far?’ If, again, no full answer was received, i.e., an answer including the ‘small’ P and its DP object, the experimenter would continue with: *Konda pu?* ‘Near where?’

69 children participated in the above tasks. Their ages ranged from 2 to 6 and were divided in the 8 age groups below:

1 <sup>st</sup> age group: 5;07 – 5;11 (n=9)	5 <sup>th</sup> age group: 3;07 – 3;11 (n=9)
2 <sup>nd</sup> age group: 5;00 – 5;06 (n=9)	6 <sup>th</sup> age group: 3;00 – 3;06 (n=9)
3 <sup>rd</sup> age group: 4;07 – 4;11 (n=9)	7 <sup>th</sup> age group: 2;07 – 2;11 (n=8)
4 <sup>th</sup> age group: 4;00 – 4;06 (n=9)	8 <sup>th</sup> age group: 2;00 – 2;06 (n=7)

## 3.2. Analysis of spontaneous speech

Our spontaneous speech data come from two sources: (a) the CHILDES data base, and (b) a longitudinal study of 3 children that we are currently conducting. The purpose of the spontaneous speech analysis is, first, to see whether, in spontaneous speech, children start to use the ‘small’ Ps in complex Ps at approximately the same age as in the structured experiments. Moreover, we wanted to see whether there is indeed an age difference between the above use of ‘small’ Ps and their use as what we consider ‘semi-lexical’, i.e., when they are used alone to express location, (3). Such a difference would support the order of acquisition which gives prominence to elements with semantic input, by contrast to those with purely formal features (see Tsimpli 2005), and at the same time offer support for the proposed distinction between two types of *se* and *apo*. Of course, additional contribution of the spontaneous speech data is taken into account as well.

## 4. Results and Discussion

### 4.1. Structured experiments: production study

Various detailed results came out of the production study of complex Ps, the most relevant of which are summarized in Table 1 below:

Table 1: Production of Complex Ps in a structured experiment

# (subjects)	1(n=9)	2(n=9)	3(n=9)	4(n=9)	5(n=9)	6(n=9)	7(n=8)	8(n=7)
Age	5;07- 5;11	5;00- 5;06	4;07- 4;11	4;00- 4;06	3;07- 3;11	3;00- 3;06	2;07- 2;11	2;00- 2;06
Adverbial	1	1	0	2	5	7	16	5
Complex Ps	122	121	124	117	114	109	26	0
Other	3	4	2	3	4	10	7	0
No answer	0	0	0	4	3	0	63	98

From the above Table we observe that: a) Children up to 2;06 practically gave no answers. b) Children between 2;07 and 3;00 used some complex Ps, but they also employed the corresponding adverbials alone (instead of complex Ps), to a large extent. c) Starting from age 3;00, children use complex Ps productively.

Thus, we see that children start with the adverbial part of complex Ps, and the ratio adverbial/complex P decreases with age. This occurs to a dramatic degree after age 3;00, when children use the target complex Ps in over 90% of their responses. We may, therefore, conclude that children employ the lexical part of complex Ps earlier than the functional part, and that they start to employ ‘small’ Ps slightly earlier than age three (but definitely not before 2;6), while they start to fully incorporate them in the structure of complex Ps after age three.<sup>2</sup>

Additional supporting evidence that children consider *se* and *apo* as functional elements when in complex Ps comes from the fact that they were not able to distinguish the difference between *epano se* ‘on’ and *epano apo* ‘above’ even at the oldest stages of Table 1 (see Xypolias and Christopoulos 2004 for details).

### 4.2. Spontaneous speech

#### 4.2.1 Spontaneous speech from CHILDES

We analyzed in detail all four children from CHILDES, but we present data from Janna only, since they were available for three different ages, i.e., at 1;11, 2;5 and 2;9 (Stephany 1997 for details). The tables present ‘small’ Ps when in complex Ps and when used alone, for the reasons explained in section 3.2.

Janna, age: 1;11, MLU: 1,4 (2 files)

Table 2a: Small Ps as part of complex Ps

P	Produced	Omitted	Oblig. Contexts
Se	0	4 (100%)	4 (100%)
Apo	0	0	0
Total	0	4 (100%)	4 (100%)

<sup>2</sup> Xypolias and Christopoulos (2004) also observed that in a number of instances children used the wrong ‘small’ P, errors decreasing with age. Children from groups 3, 5 and 6 used the wrong light P in 2, 7 and 10 instances respectively, hence: 6<sup>th</sup> group (3;00-3;06): *piso se* for *piso apo* (4 times), *makria se* for *makria apo* (2 times), *ekso se* for *ekso apo* (4 times). 5<sup>th</sup> group (3;06-3;12): *konda apo* for *konda se* and *piso se* for *piso apo* (3 times), *ekso se*, for *ekso apo* (2 times), and, 3<sup>rd</sup> group (4;06-4;12): *ekso se* for *ekso apo* and *piso se* for *piso apo*.

Table 2b: Small Ps in other contexts

P	Produced	Omitted	<i>Oblig. Contexts</i>
Se	0	12 (100%)	12 (60%)
Apo	8 (100%)	0	8 (40%)
<i>Total</i>	8 (40%)	12 (60%)	20 (100%)

Janna, age: 2;5, MLU: 2,4 (1 file)

Table 3a: Small Ps as part of complex Ps<sup>3</sup>

P	Produced	Omitted	<i>Oblig. Contexts</i>
Se	1 (33,33%) <b>2</b> (66,66)	2 (66,66%) <b>1</b> (33,33%)	3 (100%)
Apo	0	0	0
<i>Total</i>	1 (33,33%)	2 (66,66%)	3 (100%)

Table 3b: Small Ps in other contexts

P	Produced	Omitted	<i>Oblig. Contexts</i>
Se	4 (40%)	6 (60%)	10 (76,92%)
Apo	3 (100%)	0	3 (23,07%)
<i>Total</i>	7 (53,84%)	6 (46,15%)	13 (100%)

Janna, age: 2;9, MLU: 2,8 (1 file)

Table 4a: Small Ps as part of complex Ps

P	Produced	Omitted	<i>Oblig. Contexts</i>
Se	3 (100%)	0	3 (75%)
Apo	1 (100%)	0	1 (25%)
<i>Total</i>	4 (100%)	0	4 (100%)

Table 4b: Small Ps in other contexts

P	Produced	Omitted	<i>Oblig. Contexts</i>
Se	11 (100%)	0	11 (52,38%)
Apo	10 (100%)	0	10 (47,61%)
<i>Total</i>	21 (100%)	0	21 (100%)

From the above three pairs of tables we observe that during the first stage, i.e., Tables 2, practically no ‘small’ Ps were produced, with the exception of several instances of *apo*. The latter, however, were all instances of *apo*+(locative) adverbial, and, moreover of the very same adverbial, e.g., *eki* ‘there’: Inv: *pu tha pas?* ‘where will you go?’, Janna: *pu ti = apo eki* ‘there/from there’. That is, there were no instances of *apo* +DP/NP.

During the second stage, namely, in Tables 3, some ‘small’ Ps were produced, but the relevant contexts were not sufficient in number in order to give us a good idea as to whether semi-lexical ‘small’ Ps were employed earlier than functional ‘small’ Ps.

During the third stage, namely, in Tables 4, there were no omissions of ‘small’ Ps and this holds for both semi-lexical and functional Ps. Therefore, again, we do not have evidence for different behaviour on the two types of ‘small’ Ps. Notice also that all functional ‘small’ Ps were produced at this age (which is slightly younger than at the

<sup>3</sup> In bold numbers we have recalculated omission of *se*, namely, we consider *se* not to be omitted when the definite determiner is present, while *s*’ is not. This recalculation actually interprets omission of *se* as a purely phonological effect, which, however, has to be examined closely in light of footnote 4 (but does not make much difference for the facts so far). Nevertheless, recalculation has (and is) to be taken seriously when it comes to the interpretation of Tables 7, also in light of the facts in footnote 5.

age of three, that ‘small’ Ps emerged in the experimental data). Nevertheless, only four such contexts were available in the sample.

Finally, Table (3b) indicates that there may be a difference in order of acquisition/use between *se* and *apo*. Contrary to *se*, *apo* was never omitted and its use involved all types of complements even at this age: *ine apo to kuzina* ‘it’s from the kitchen’, *ke afti apo kato exi ghala* ‘and she has milk under’, *sa zume apo afta* ‘we’ll see from these’.<sup>4</sup>

#### 4.2.2 Spontaneous speech we collected

We had been collecting data from three children age 2;0 and onwards during the 6 months before the conference and we present below results from three sessions with one of them (the other two children had not been transcribed and coded at the time of the conference). We chose ages and MLUs that are comparable to those of Janna’s.

Dimitra, age: 2;2, MLU: 1,6 (2 files)

Table 5a: Small Ps as part of a complex Ps

P	Produced	Omitted	Oblig. Contexts
Se	0	1 (100%)	1 (33,33%)
Apo	1 (repetition) (50%)	1 (repetition) (50%)	2 (66,66%)
Total	1 (33,33%)	2 (66,66%)	3 (100%)

Table 5b: Small Ps in other contexts

P	Produced	Omitted	Oblig. Contexts
Se	0	34 (100%)	34 (82,92%)
Apo	4 (80%)	1 (20%)	5 (12,19%)
Total	4 (10%)	35 (90%)	39(100%)

From the above two Tables we observe that the only instance of *apo* in complex Ps was a repetition: *piso apo dhedho* = *piso apo to dendro* ‘behind the tree’. Not surprisingly for this age, D was omitted. Furthermore, just like in the case of Janna earlier, *apo* was almost never omitted when used in contexts other than complex Ps. However, its use did not involve a DP/NP complement, but it was followed by a locative adverbial, i.e.: *apo dho* ‘here/from here’, *apetso* = *ap ekso* ‘outside/from outside’, *apo pano ine* ‘it’s above/upstairs’.

Dimitra, age: 2;5, MLU: 2,3 (1 file) (2;4.27)

Table 6a: Small Ps as part of complex Ps

P	Produced	Omitted	Oblig. Contexts
Se	0 <b>2</b> (100%)	2 (100%) <b>0</b>	2 (100%)
Apo	0	0	0
Total	0	2 (100%)	2(100%)

Table 6b: Small Ps in other contexts

P	Produced	Omitted	Oblig. Contexts
Se	10 (13,33%) <b>70</b> (93,3%)	65 (86,66%) <b>5</b> (6,66%)	75 (79,78%)
Apo	13 (81,25%)	3 (18,75%)	16 (17,92%)

<sup>4</sup> Nevertheless, one should bear in mind that this difference between *se* and *apo* may not reflect a difference in terms of acquisition of these two Ps, but of the fact that *se* is always contracted on the definite determiner, which is not yet fully established at this age (Marinis 2005). Moreover, as found by Syrika et al. (2007), children may have not fully acquired the clusters /st/, /sk/, /sp/ at this age either.

Me	0	3 (100%)	3 (3,19%)
Total	23 (24,46%)	71 (75,53%)	94 (100%)

From the previous two Tables we do not have evidence as to whether during this stage ‘small’ Ps were produced more often as ‘semi-lexical’ than as functional since we had very few instances of complex Ps again (Table 6a). In Table (6b) we observe a large omission of *se* (by contrast to *apo*) but we cannot be sure as to whether this is a phonological or a morpho-syntactic effect. It is rather certain that there is a phonological delay at play. Nevertheless, the first example of *se* omission, which was an instance of repetition that did not involve a /st/ cluster, suggests that omission could not only be due to some phonological reason: Inv.: *se pia fotografia, se afti i se afti ?* ‘in which picture, in this or in this?’ Dimitra: *0 afti, 0 afti* ‘this, this’. Furthermore, *me* was also omitted at this stage: Inv.: *me pius tha peksi?* ‘with whom will she play?’ Dimitra: *0 ta pedhacia* ‘with the children’.

Finally, note that *apo* is now used with DP/NP complements, hence it is not part of an unanalyzed unit, e.g., *ap ko ghafio = ap to grafio* ‘from the office’. More precisely, production of *apo* consisted of: *apo pu* ‘from where’ (5), *apo + adverb* (4), *apo + DP* (2), *apo + NP* (2). If we had complex P contexts with *apo* at this stage, we would be able to draw safe conclusions with respect to at least this ‘small’ P in its semi-lexical and functional use. Note, however, that (what we consider as) productive use of semi-lexical *apo*, namely, *apo* used alone and followed by an DP/NP complement, occurs at the same age as Janna’s, i.e., just around age 2;5. We cannot safely conclude the same for semi-lexical *se*, however, for the reasons mentioned in footnote 4.

Dimitra, age: 2;8, MLU: 2,9

Table 7a: Small Ps as part of complex Ps

P	Produced	Omitted	Oblig. Contexts
Se	0 <b>4</b> (100%)	4 (100%) <b>0</b>	4 (100%)
Apo	0	0	0
Total	0	4 (100%)	4 (100%)

Table 7b: Small Ps in other contexts

P	Produced	Omitted	Oblig. Contexts
Se	7 (15,9%) <b>43</b> (97,72%)	37 (84,1%) <b>1</b> (2,27%)	44 (75,86%)
Apo	9 (90%)	1 (10%)	10 (17,24%)
Me	2 (66,66%)	1 (33,33%)	3 (5,17%)
Ja	1 (100%)	0	1(100%)
Total	19 (32,75%)	39 (67,25%)	58 (100%)

Based on these last Tables we conclude that the indication of a phonological delay in Dimitra’s omission of *se* does not allow us to draw conclusions with respect to her development of *se*.<sup>5</sup> Notice, however, that when comparing the first instance of *se* omission of the previous stage, i.e.,: Dimitra: *afti, afti* ‘this, this’ (see previous page), with the following instance of production at this stage: Inv: *se pia dulapa ta vazi?* ‘in which closet does she put them?’ Dimitra: *se ekini* ‘in that one’, we see a different behavior, leading us to conclude that *se* has now been acquired/is used.

<sup>5</sup> Apart from the production test below, we also looked at all /st/, /sk/, /sp/ clusters in this file of Dimitra’s, 44, 14 and 5 instances respectively, and found that /s/ was always omitted. This was way above the omission rates for this age, as these are reported in Syrika et al. (2007).

*Production test*

Given Dimitra's overall picture (primarily with respect to *se*), we administered to her the production test of the study, described in section 3.1.3. Although she did not omit any (functional) *apo*, she produced the determiner only in all instances of adult *se+D*.

To summarize, it emerges from this section that children have acquired and produce the functional 'small' Ps *se* and *apo* around age 3. This was first indicated by the experimental data in Table 1 and was confirmed by the spontaneous speech of both Janna and Dimitra. Table 1 also confirmed that lexical locatives (i.e., adverbials) were used earlier than the associated functional 'small' Ps. Janna's data could not confirm that semi-lexical 'small' Ps are acquired before the functional ones, because of the very few instances of complex Ps in the data. Nevertheless, the use of several instances of *apo* with a DP object during her second stage, i.e., around age 2;05, in addition to no omission of this type of *apo*, indicates that this may indeed be so, namely, that at least *apo* is used earlier as semi-lexical. Similar considerations hold for Dimitra's *apo*. Finally, as we have briefly pointed out, *apo* is encountered much earlier, namely, around age 2;0, but only when it precedes (locative) adverbials.

**5. Conclusions**

This work was a first attempt to study the acquisition and development of Ps, by focusing on locative Ps, both complex and *se* and *apo* alone. The data are not conclusive, since they were not extensive, and because production of *se* depends largely on the acquisition of the definite determiner, on which it is obligatorily contracted, as well as on the development of the cluster /st/ that results from this contraction. Nevertheless, we were able to detect an earlier development of lexical locatives (i.e., adverbials) as compared to the functional *se* and *apo*. As for *se* and *apo* when (semi)lexical, there are indications that they are acquired earlier, nevertheless pending further investigation. A safe result that emerged, and requires an explanation, is the very early use of *apo* before adverbials.

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