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The perfective non-past in Modern Greek: a corpus study

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This paper presents a corpus-based analysis of the perfective-non past (hereafter PNP) in Modern Greek (hereafter MG). This verbal form has been called 'dependent' (Holton et al. 1997), as, unlike the other finite verbal forms in MG, it cannot stand alone, but requires one of the verbal particles ("subjunctive" *na*, optative *as*, "future" *tha*[1],) or a particular connective (e.g. the temporal connective *prin* 'before').[2] Relevant examples appear in (1).

(1) a. *grapso
write-PERF.NONPAST.1SG

b. na/as/tha grapso
SUBJ/OPT/MOD write-PERF.NONPAST.1SG

In line with recent descriptive grammars of MG (Mackridge 1987, Holton et al. 1997, Holton et al. 2012 etc; see also Moser 2009), we take the Greek verbal system to be organized on the basis of tense and aspect distinctions, namely past/non-past and perfective/imperfective.

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[1] *Tha* is more accurately described as a modal particle; for one thing, it can combine with past tense verbal forms, yielding modal (epistemic or metaphysical) interpretations. For discussion on the interaction between *tha* and the verbal forms it combines with, see Tsangalidis (1999). For a recent analysis, see Giannakidou and Mari (2017).

[2] Although the PNP is historically related to the subjunctive mood, synchronically there are good reasons to reject analysing it as an exponent of verbal mood. For detailed discussion see Tsangalidis (1999, Chapter 4).

Each of the four synthetic finite verbal forms in MG instantiates a particular combination of values for these two features, as depicted in Table 1, based on Holton et al. (1997). Past locates the eventuality prior to the utterance time, and non-past locates the eventuality as simultaneous or posterior with respect to utterance time. Perfective aspect presents the eventuality as completed, whereas imperfective aspect encodes habitual/generic and progressive/continuous interpretations.

Aspect/Tense	**Non-past**	**Past**
Imperfective	grafo	egrafa
Perfective	grapso	egrapsa

Table 1: Tense/aspect specifications of Greek synthetic verbal forms

Following Tsangalidis (1999), Lekakou & Nilsen (2009), Giannakidou (2009), and literature cited therein, the combination that the PNP instantiates, non-past tense and perfective aspect, constitutes something of a semantic anomaly -- whence the dependent nature of the PNP verbal form. In virtue of being specified as non-past, the PNP can only denote an interval that is simultaneous or posterior with respect to the utterance time; in virtue of being specified as perfective, however, the eventuality cannot temporally overlap the utterance time: it is impossible for a completed ("perfective") event to be simultaneous with the utterance time, which is conceptualized as a punctual event. See Comrie (1976), Giorgi & Pianesi (1997) and Smith (1997) for different formulations of this constraint. What this entails, essentially, is that the PNP can only refer to the future; the eventuality the verbal form denotes has to be interpreted at a future-shifted time (Tsangalidis 1999, Lekakou & Nilsen 2009).[3] Against this background, we investigate the occurrence of the PNP in embedded *na*-clauses. Our goal is to show that the distribution of the PNP in such environments follows from the above temporal and aspectual characterization, in combination with the semantic properties of the

[3] Consistent with this is the observation that in Slavonic languages the combination of non-past tense and perfective aspect yields future tense, see Comrie (1976) (see also Tsangalidis (1999) for relating this observation to the MG state of affairs).

predicate which embeds the *na*-clause. In other words, on the assumption that the tense and aspect information on the PNP is fully interpretable, the expectation is that all and only verbs that optionally or obligatorily impose a future orientation ('orientation' in the sense of Condoravdi 2002) on their complement will legitimately embed a *na*-clause with a PNP form; any verb that imposes a simultaneous interpretation on its complement, or any context which forces a habitual interpretation of the embedded eventuality, will not allow the PNP to surface -- instead, an imperfective form will be realized.[4]

Our empirical investigation will be based on a corpus of written MG texts. We devote the first part of the paper (section 2) to describing the properties of the corpus, as well as the methodology we used. In the second part of the paper (section 3), we discuss the two classes of embedding predicates, those taking *na*-clauses that disallow the PNP (section 3.1), and those taking *na*-clauses that permit the PNP (section 3.2). We argue that the distribution of the PNP follows from the temporal-aspectual requirements of the selecting predicates, in combination with the semantics of the PNP itself. In section 4, we summarize and conclude.

2. The corpus study

In the existing literature, there is no recorded list of verbs that (dis)allow the PNP in embedded *na*-clauses (though see Moser 1997 for discussion of relevant cases). In our attempt to define such a list, we studied 19 verbs, belonging to different classes of predicates, on the basis of Roussou's (2009) classification, namely modals, aspectuals, volitionals,

[4] Although discussion of the temporal properties of *na*-complements can be found in the syntactic literature, the discussion is for the most part related to the nature of the subject of the *na*-clause (PRO or pro; see Terzi 1992, Iatridou 1988/1993, Varlokosta 1994, Spyropoulos 2008, among others); what is more, in such discussions, the dimension of aspect, which we consider crucial for the distribution of the PNP, is overlooked (though see Moser 1994, 1997, 2009). We will have nothing to say on the nature of the *na*-clause subject. Our aim is to contribute to a better understanding of *na*-complements in general, by paying particular heed to both temporal and aspectual properties of the cases at hand.

perception verbs, verbs of mental perception, psych verbs, epistemic predicates, verbs of saying, and verbs of knowing. The particular verbs we studied appear in (2):

(2) *prepi* 'must', *bori* 'can', *arxizo* 'start', *stamato* 'stop', *thelo* 'want', *epithimo* 'desire', *vlepo* 'see', *akuo* 'hear', *thimame* 'remember', *ksexno* 'forget', *xerome* 'be glad', *lipame* 'feel sorry', *pistevo* 'believe', *nomizo* 'think', *leo* 'say', *diatazo* 'order', *iposxome* 'promise', *ksero* 'know', *matheno* 'learn/teach'

We employed a corpus-based approach, in order to reach conclusions which have generalizability and validity, and which could be computationally implemented. Regardless of the extensiveness of the corpus data, however, a corpus can only serve as an empirical basis for a case study. Theoretical analysis is needed, in order to interpret the corpus evidence and to reach reliable conclusions (Hunston et.al. 2000, Scott and Tribble 2006). We have attempted to combine corpus methodology with theoretical analysis.

The data were drawn from the Hellenic National Corpus (HNC; hnc.ilsp.gr), a balanced online monolingual corpus of MG texts which currently contains approximately 50.000.000 words, developed by the Institute for Language and Speech Processing (ILSP). The HNC contains data from various written sources (books, internet, magazines, newspapers, etc), dating from 1990 onwards, which provide evidence for the current use of MG. The corpus is tagged for part of speech (POS-tagged) and it allows word-, lemma- and POS-searches. It also allows queries for up to three combinations of the above, in which users can specify the distance among the lexical items. For each query, up to 2000 sentences are returned (Hatzigeorgiou et al., 2000).

In our study we searched for the 19 verbs in (1) as lemmas, combined with the complementizer *na*, and we specified the distance between the complementizer and the verb to be up to 5 words. From the retrieved data, we annotated the first 700 sentences in order to have a clear picture of the structures supported by each verb. The HNC provided us with a total of 9.638 sentences for all the verbs in (1); as shown in Tables 2 and 3, not all *na*-embedding predicates returned 700 sentences each.

We examined these sentences to see which ones contained the PNP in the relevant structure (main clause + subordinate *na*-clause), and came up with 11 (out of the initial 19) verbs, which allow the PNP in the embedded clause. In total, the HNC returned 6138 sentences for these verbs but 3233 sentences of them contained the relevant structure. The complete empirical picture is given in Tables 2 and 3.

Table 2 contains the verbs that allow the PNP in the embedded clause, ranked by frequency. In terms of general tendencies, we see that the PNP is particularly frequent under volitional verbs, with *epithimo* (‘desire’) scoring the highest frequency, followed by *thelo* (‘want’); *bori* (‘can’), *ksexno* (‘forget’) and *iposxome* (‘promise’) also rank highly as verbs selecting PNP-featuring *na*-clauses.

Verb	Total number of clauses	Percentage of clauses with the relevant structure
epithimo (‘desire’)	700	92,80%
thelo (‘want’)	700	78,28%
bori (‘can’)	700	72,70%
ksexno (‘forget’)	342	70,76%
iposxome (‘promise’)	574	63,24%
prepi (‘must’)	700	58,57%
leo (‘say’)	700	50,71%
diatazo (‘order’)	700	27,14%
thumame (‘remember’)	137	23,35%
nomizo (‘think’)	185	7,02%
ksero (‘know’)	700	4,28%

Table 2: Verbs that allow the PNP in the embedded clause

Table 3 contains the verbs whose *na*-clause complement contained no instances of the PNP in our corpus. Among these verbs, three (*xerome*, *lipame*, *pistevo*) in fact returned no results at all, (even though under certain circumstances they do take *na*-clause complements). See section 3.1 for discussion.

Verb	Total number of clauses	Percentage of clauses with the relevant structures
arxizo (‘start’)	700	0%
stamato (‘stop’)	700	0%
vlepo (‘see’)	700	0%
akuo (‘hear’)	700	0%
xerome (‘be glad’)	0	0%
lipame (‘be sorry for’)	0	0%
pistevo (‘believe’)	0	0%
matheno (‘teach/learn’)	700	0%

Table 3: Verb that disallow the PNP in the embedded clause

Since this study aims to relate the distribution of the PNP to the temporal-aspectual restrictions imposed by the selecting predicate., we annotated the 3233 sentences deriving from the HNC focusing on the temporal features necessary. For the corpus annotation, we used the BRAT Rapid Annotation Tool (BRAT; /brat.nlplab.org/), a web-based annotation tool designed for settings of annotations for natural language processing. It supports two types of annotations: the text span and the relation annotations. The design and implementation of BRAT offers comprehensive visualization, intuitive editing, integration with external resources, integrated annotation comparison, high quality visualization of any scale, easy export in multiple formats, as well as a rich set of annotation primitives (Stenetorp et al. 2012).

The annotation schema we used is based on the ILSP PAROLE Tagset (http://nlp.ilsp.gr/nlp/tagset_examples/tagset_en/), which consists of 584 morphosyntactic tags for all parts of speech (Lambropoulou et al., 1996). This tagset is also used by the online service nlp_depparse_ud (http://nlp.ilsp.gr/ws/), which generates POS and lemma annotations for each token, as well as syntactic representations compatible with the Universal Dependency Grammar.

The annotation process we designed for our study involved two steps. In the first stage of annotation, we parsed the 3233 sentences in the online tool nlp_depparse_ud, in order to obtain a fully annotated corpus. This expressivity is important for the exploitation of the corpus in all fields of linguistic research. The annotated data were then converted into the brat format for further editing in the BRAT Rapid Annotation Tool. In the second stage, we evaluated the annotations in the BRAT Rapid Annotation Tool, focusing on the examined structure. Thus, the annotation schema for the verbs and the particle *na* has been checked and redefined. Verbs had been annotated for 10 features conveying information on POS type, finiteness, tense, aspect, voice, number, gender and case (for passive participles), following the ILSP PAROLE Tagset. *Na* was in the first instance POS-tagged as PART(icle) and annotated for the feature ParticleType with the value Sub(junctive).

Although the annotation schema provided us with morphologically rich information, we decided to extend it towards better, more expressive and precise annotations for the verb type PNP and the particle *na*, as presented below:

Following theoretical literature (e.g. Agouraki 1991, Tsoulas 1993, Roussou 2000, Lekakou & Quer 2016; see in particular Roussou 2000, Lekakou & Quer 2016 for summaries of the relevant literature), but also computational treatments of MG (e.g. Fiotaki & Markantonatou 2014), the particle *na* is annotated as compl(ementizer).

The verb type PNP (perfective_non past) is annotated with the value perfective for the feature Aspect, the value non-past for the feature Tense and the value YES for the new feature Dependent (Holton et al. 1997, and much subsequent literature).

This process of evaluation gave us a clear picture of the structures supported by each verb. Since this study also aims to enrich an LFG/ XLE Grammar for MG, the results and conclusions could be applied in the computational templates.[5,6] These templates will be defined in order to assign the allowed structures. A detailed and accurate presentation of the allowed structures is necessary, in order to obtain a better performance of the syntactic parser. In table 4 we provide, in the first column, the annotated verbs along with their English translation, and in the second column the attested temporal values of the selecting verb.

Selecting Verb	Temporal values of the selecting verb
prepi ('must')	a.past b.non-past c.future in the past d.future
bori ('can')	a.past b.non-past c.future d.future in the past
thelo ('want')	a.past b.non-past c.future d.future in the past e. PNP

[5] Templates are schemata that provide functional generalizations that are not correlated with inflectional morphology.

[6] The Lexical Functional Grammar (LFG) of MG is implemented in the XLE system (Xerox Linguistic Environment; http://www2.parc.com/istl/groups/nltt/xle/.). It provides a two-layer representation: constituent structure (c-structure, tree representation) and functional structure (f-structure, AVM representation). For the basic principles and concepts of LFG, see Kaplan et.al (1982), Kaplan et.al (1995), Falk (2001) and Dalrymple (2002).

epithimo (‘desire’)	a.past b.non-past c.future in the past d.PNP
thimame (‘remember’)	a.past b.non-past c.future d. PNP
ksexno (‘forget’)	a.past b.non-past c.future d. PNP
nomizo (‘think’)	non-past
leo (‘say’)	a.past b.non-past c.future in the past
diatazo (‘order’)	a.past b.non-past
iposxome (‘promise’)	a.past b.non-past c. PNP
ksero (‘know’)	a.past b.non-past

Table 4: Structures attested for each verb allowing the PNP in the selected *na*-clause

As indicated in Table 4, most of the examined verbs in the attested examples exhibit a considerable variety of tense forms. A closer examination of the corpus evidence collected for the verbs under examination is provided in the next section.

3. The distribution of the PNP

Clearly, some predicates allow the PNP in the *na*-clause they embed, whereas others do not. The question is, which factor is responsible for the distribution of the PNP? We argue that, broadly speaking, the two classes of predicates differ in whether they are compatible with future orientation of the complement clause. We examine each category in turn, starting from the predicates whose *na*-complement cannot feature the PNP.

3.1 Verbs that disallow the PNP in na-clauses

In the cases we have studied, the ban against the PNP seems to be due, in general, to a requirement imposed by the selecting predicate, namely that the eventuality in the complement clause occur simultaneously as the matrix-eventuality. Since the PNP is future-shifted, it is not a form suitable in this context, and hence is not expected to occur in such environments.

The most paradigmatic example of this situation are perception verbs. *Na*-complements of perception verbs, such as *vlepo* and *akuo*, are interpreted as occurring simultaneously as the matrix verb. The requirement for such a temporal overlap has been noted for direct perception structures in other languages; e.g. for English bare infinitive complements to perception verbs, see Felser (1999:39ff), and references cited therein; for Bulgarian, see Smirnova (2008). This requirement entails that a future-shifted complement cannot appear, whence the illicitness of the PNP.

A second verb class that disallows the PNP are aspectual verb such as *arxizo* and *stamato*. Similarly to perception verbs, these predicates embed a *na*-clause which is obligatorily imperfective non-past.[7] (In fact, for the aspectuals we considered as well as perception verbs, the complement *na*-clause can only feature the imperfective non-past verbal

[7] Interestingly, it seems that throughout the history of Greek, imperfective non-finite forms (infinitives or gerunds) were consistently selected by aspectual verbs. See Lavidas & Drachman (2012) for recent discussion and a treatment of Ancient Greek aspectuals in terms of Fukuda's (2008) functional head analysis.

type, regardless of the tense of the embedding predicate.) According to Moser (1997:172), the choice of imperfective aspect in these cases is consonant with the particular aspectual verbs' semantics, which focuses on stages of culmination of an event.

A third class of predicates patterning the same way is the class of verbs of knowing, such as *matheno* and *ksero* (on the latter, see also the following section); in our corpus, no instance of *matheno* ('learn'/'teach') embedded a PNP form. Interestingly, *na*-complements of all three such classes, aspectuals, perception verbs, and verbs of knowing, are considered by Spyropoulos (2008) as anaphoric subjunctives, namely subjunctives whose event time "is identical with the matrix one, which means that the temporal reference of AS is anaphoric to that of the matrix clause" (Spyropoulos 2008:162-163). Spyropoulos considers a consequence of this the fact that a temporal modifier that is future-oriented (such as *avrio* 'tomorrow') is disallowed in such *na*-complements. Given this, it is hardly surprising that the PNP, a form which we have been treating as future-shifted, is not allowed in the corresponding sentences.

Two further cases of embedding predicates that have not shown up in the corpus with a PNP-containing *na*-complement are *pistevo* 'believe' (a case of an epistemic verb) and the phych verbs *xerome* 'am happy' and *lipame* 'am sorry/regret'. These three verbs did not only fail to embed a PNP-containing *na*-clause in our corpus, they failed to combine with a *na*-clause complement at all (see Table 3). It would, however, be wrong to take this as an indication of grammatical impossibility.

For all three verbs under consideration, a *na*-clause complement is not the only complementation option, it is, however, a non-primary, low-frequency option. *Pistevo* canonically takes a declarative *oti*-clause complement, whereas *xerome* and *lipame* can also combine with *pu*, in which case they behave as factive verbs (Christidis 1982), whence the term factive emotives/emotive factives (see Giannakidou 2006 and references therein). Crucially, selection of a *na*-clause by factive emotives in MG incurs tense-aspect distinctions which are not as yet properly understood.[8] As our corpus did not provide relevant data, we cannot relate

[8] See Quer (2001) for similar observations on the basis of Catalan, and see also Moser (1994, 1997) for a proposal that capitalizes on the role of (a)telicity. To the extent that

the distribution of the PNP to this particular class of verbs. For *pistevo*, however, we have more to say, since we examined another epistemic verb, *nomizo* 'think', which did occur with embedded PNP in our corpus. Both *pistevo* and *nomizo* only take a *na*-clause complement under particular circumstances (the so-called 'polarity subjunctive'). The issue is taken up in section 3.2.

3.2 Verbs that allow the PNP in na-clauses

In this section we discuss the predicates that do allow the PNP in the complement clause. We claim that the occurrence of the PNP is expected, as long as future reference of the embedded eventuality, with no progressive or habitual interpretation, is the targeted interpretation, i.e. whenever the semantic components of the PNP are called for.

The first category of verbs to consider in this realm are modal verbs, such as *prepi* and *bori*. These verbs allow all four verbal forms in the *na*-clause they embed, but the choice of form in the complement has consequences for the overall interpretation.[9] As Lekakou & Nilsen (2009) show, the interpretation of the verbal forms is consistent with their tense and aspect specification. Crucially, the orientation of the PNP in the complement clause is future. See Lekakou & Nilsen (op.cit.) for relevant discussion.[10]

The second case of embedding predicates are volitional verbs. In Table 2, the volitional verbs *thelo* and *epithimo* are presented as the class with the highest frequency in the relevant structure (matrix verb and

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the PNP is licit in the *na*-clause complement of factive emotives, its occurrence is consistent with the claimed future orientation of the form.

[9] Another dimension that affects interpretation is the tense of the modal itself: non-root (e.g. epistemic) interpretations are not available, when the modals themselves are in past (or future) tenses (e.g. Iatridou 1990, Roussou 1999).

[10] Across languages, there is a tendency for root modals to have future orientation (i.e. for the temporal interpretation of their complement to be in the future); see Matthewson (2012) and references therein. We have not investigated which of the modals in our corpus receive a (non)root interpretation; this could possibly yield interesting results. Given the noted tendency of root modals and the high occurrence of the PNP especially with *bori*, we expect the latter to occur mostly with a root interpretation.

na-embedded PNP verb form). The corpus data show that in this verb class a variety of tense forms are allowed for the matrix verb (see Table 4 for the temporal values the embedding verb can take). The PNP occurs regardless of the choice of tense in the matrix clause. This strongly suggests that these verbs exhibit a significant preference for the PNP. This, we argue, follows, from the future-orientedness of the PNP.

When in English a volitional predicate, such as *want*, selects an infinitival complement, the event time of the complement is argued to be posterior to the matrix event time, see Wurmbrand (2014) and references therein, and also Banerjee (2018); the claim that *want* future-shifts its complement can also be found in semantic analyses, such as Heim (1992), von Fintel (1999), and Lassiter (2011).

We take the Greek verbs *thelo* and *epithimo* to behave similarly to English *want*. The difference is that Greek lacks infinitives, and so the equivalent of the structure "*want* + infinitival complement" is "*thelo* + embedded *na*-clause". An example is given in (3). Note that what is desired in (3) concerns the **outcome** of the game. This is, of course, what is expected, given the future orientation of the PNP.[11]

(3) Thelo na kerdisi ton agona.
want-1sg. C win-PNP.3sg the-ACC game
'I want (lit. desire) to win the game.'

The mental perception predicates, *thimame* and *ksexno*, seem to highly select PNP in clauses they embed, especially the verb *ksexno* (see Table 2); the verb *thimame* does not concentrate the highest frequency, but this could be explained by the fact that the corpus gave us only 137 occurrences of this verb in total, including wrong outputs.[12] According to Spyropoulos (2008), *thimame* and *ksexno* belong to the category of verbs

[11] *Thelo* and *epithimo* can also embed an imperfective non-past, in which case, however, the interpretation is either progressive or habitual, which is consistent with the semantic import of imperfective aspect in MG.

[12] Wrong outputs are those where, for instance, the PNP is selected by a verb that is itself embedded under the verb under consideration, as in e.g *ksexase oti prepi na diavasi gia avrio* 'she forgot that she must study for tomorrow.'

that embed an anaphoric subjunctive, i.e. a subjunctive whose temporal reference is identical to that of the matrix predicate. This explains the restricted options, regarding the verb in their complement clause, but in order to relate these options to the distribution of the PNP more in particular, we would like to suggest the following treatment of these verbs.

In the literature on English, mental perception verbs are classified as implicatives, when they take infinitival control complements (White 2014). Implicatives have been related to root modals (Hacquard 2009, Wurmbrand 2014, White 2014; see also Quer 2001 for relevant discussion). Recall that root modals show a strong cross-linguistic tendency for future orientation (see footnote 9). Applying this to MG, where control verbs takes *na*-clause complements, given the above reasoning, we expect the PNP in the relevant cases of implicative verbs, i.e. *thimame* and *ksexno*. Under specific syntactic conditions, the verbs *thimame* and *ksexno* behave as control verbs (see particularly Roussou 2009). The example in (4) illustrates this pattern, with *thimithike*, embedding a PNP structure, behaving as a control predicate.

(4) Thimithike na grapsi /*grapso tin ergasia tou.
remembered-3sg C write-PNP.3sg/*write-PNP.1sg the homework
'He remembered to write the homework.'

For the analysis of epistemic predicates (such as *pistevo*, *nomizo*) it should be mentioned that even though *pistevo* did not show any occurrences with the PNP in the corpus (see section 3.1), it can embed a PNP in general, as long as matrix negation is present and the verb is in the first person singular. In those cases, a *na*-clause is possible, in particular what has been termed a 'polarity subjunctive', i.e. a subjunctive licensed by operators also licensing polarity items, see Roussou (2009:1814-1815). An example of such a *na*-clause appears in (5) below. The contrast with (6) is revealing, as far as the claim concerning the future orientation of the PNP is concerned: whereas the verb in the embedded clause in (6), with imperfective non-past, has an on-going interpretation (the game is not yet over), the verb in the embedded clause in (5), with the PNP, can only refer to the final outcome of the game.

(5) Den nomizo/pistevo na kerdisi ton agona.
neg think/believe C win-PNP.3sg the game
'I doubt (lit. don't think/believe) s/he will win the game.'

(6) Den nomizo/pistevo na kerdizi ton agona.
neg think/believe C win-INP.3sg the game
'I doubt (lit. don't think/believe) s/he is winning the game.'

The next verb class are verbs of saying, namely the verbs *diatazo* ('order'), *iposxome* ('promise') and *leo* ('say'). Verbs of saying are those verbs that involve the intent to convey a message to another person (although the lexical semantics of each verb that is taken to belong to this class includes more than just an act of communication). For the verb *diatazo* ('order'), its lexical semantics imposes a future orientation in the embedded eventuality: it is impossible to issue an order for a past event. The same applies to the verb *iposxome* ('promise'): it is only possible to make a promise concerning the future.

(7) O arxigos dietakse na sinexisoume tin epivivasi.
the chief-NOM order-3sg C continue-PNP.2pl the embarkation.
'The chief ordered us to continue the embarkation.'

(8) Iposxethike na miosi tis times.
promised-3sg C reduce-PNP.3sg the prices.
'He promised to reduce the prices.'

The case of *leo* ('say') is similar, although the lexical semantics of the particular verb seems more varied. The verb *leo* can be used to convey an order (see e.g. (9)), or to express a thought/plan/suggestion (as in (10)). Regardless of these subtleties, the temporal reference of the embedded event is in the future: past tense on the embedded verb (as in (9)), or a temporal adverb such as *xtes* 'yesterday' (as in (10)) are disallowed (these diagnostics apply to *diatazo* and *iposxome* with the same results).

(9) Tis ipe na sikothi /*sikothike amesos.
her-ACC say-3sg C get.up-PNP.3sg/*get.up-PERF.PAST.3sg immediately.
'S/he told her to get up immediately.'

(10) Leo na kimitho ligaki (*xtes).
say-1sg C sleep-PNP1pl. for a little yesterday
'I am thinking (lit. saying) of taking a nap.'

Lastly, the verbs of knowing *matheno* ('learn'/'teach') and *ksero* ('know') do not behave identically as regards the examined structure. The verb *matheno* was discussed in session 3.1, since it did not show any occurrences with the PNP in the corpus. By contrast, the verb *ksero* did, although at a very low rate: only 4,28 % clauses featured a PNP (see Table 2). In general, verbs of knowing require the INP in the embedded *na*-clause (recall that for Spyropoulos (2008) such verbs embed temporally anaphoric subjunctives). Moreover, when they embed a *na*-clause, these verbs involve a root modal (ability) interpretation (cf. their epistemic guise, when they embed a declarative *oti* ('that')-clause). Concerning the limited occurrence of the PNP in the embedded clause, as in examples such as (13), we would like to suggest that these cases involve a silent complementizer *pos* ('how') before *na*. This complementizer can be overt, and its (c)overtness seems to make no difference regarding interpretation (note its obligatory presence in the equivalent English sentence).

(11) Opios kseri (pos) na zisi, kseri kai (pos) na pethani.
whoever know-3sg how C live-PNP.1sg, know-3sg and how C diePNP.1sg
'Whoever knows how to live, also knows how to die.'

4. Conclusion

The goal of this paper has been to provide a corpus-based study of the distribution of the PNP verbal form in MG. Our aim was to test the

claim, found in the theoretical literature, that, due to the tense-aspect information that the PNP encodes, its temporal reference is in the future, relative to the matrix event time. We tested this claim on the basis of data drawn from the HNC. The use of the HNC yielded good quality data and gave us a useful overview of the examined phenomenon in MG. On the basis of existing classifications of the verbs embedding *na*-clauses, we discussed 19 verbs, falling into two major categories: those that allow the PNP in the embedded clause, and those that do not. The former category includes several classes of verbs, whose semantics is compatible with a future-shifted complement. Verbs in the latter category disallow a PNP complement, because of their particular semantic (temporal-aspectual) requirements.

Our discussion of the distribution of the PNP was limited to a subset of *na*-subordinate clauses. Although we discussed such contexts in connection to the semantic properties of the embedding verbs, we do not make any commitment as to what future-shifts the PNP (*na*, or the selecting verb). We take this to be an important issue, which future research will settle. Also, since we studied the occurrence of the PNP in a subset of *na*-complement clauses, a thorough examination of this verb form should include remaining contexts, including other verbs selecting *na*-complements, as well as other instances of the PNP (e.g. following the other modal particles, or in adjunct clauses). We expect future corpus-based and experimental studies to shed further light on the distribution of the PNP.

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