“Optimal” Linking for Modern Greek Psych Verb Constructions

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1 Introduction

Modern Greek (henceforward MG) distinguishes three classes of Psych Verb Constructions (henceforward PVCs):

1. The Experiencer-Subject Psych Verb Constructions (henceforward ESPVCs). This class of PVCs includes verbs like *miso* (hate), *agapo* (love), or *latrevo* (adore), which feature a nominative *experiencer* in agreement with the verb, and an accusative *theme*:

   (1) O Gianis misi to sholio.
   the Gianis.N hate.3S the school.A
   "John hates school."

   (2) O Gianis agapa tin Maria.
   the Gianis.N love.3S the Maria.A
   "John loves Mary."

   (3) O Gianis latrevi tin musiki.
   the Gianis.N adore.3S the music.A
   "John adores music."

2. The Experiencer-Object Psych Verb Constructions (henceforward EOPVCs), which feature a nominative *theme* in agreement with the verb, and an accusative *experiencer*:

   (4) I Maria eksorgizi ton Giani.
   the Maria.N enrage.3S the Giani.A
   "Mary enrages John."

   (5) I kategides to fovisan to pedi.
   the thunderstorms.N,PL cl.A frighten.PAST.3PL the child.A
   "The thunderstorm frightened the child."

3. The last class of PVCs in MG includes the verbs *aresi* (likes) and *ftei* (bothers/matters), which feature a nominative *theme* in agreement with the verb, and an *experiencer*, either in morphological genitive or as the complement of a prepositional phrase:[1]

   (6) To sholio aresi ston Giani.
   the school.N like.3S to-the Giani.A
   "John likes school."

[1]This class of PVCs in MG is parallel to the so-called *piacere* class of Italian:

(1) A Gianni piace questo.
to Gianni pleases this
"This pleases John."

(2) Questo piace a Gianni.
this pleases to Gianni
"This pleases John."

for which Belletti and Rizzi (1988) have argued that the *experiencer* argument bears a *lexical* dative case marker.

(7) To sholio tu aresi tu Giani.
the school.N cl.G like.3S the Giani.G
"John likes school."

This paper focuses on the semantic properties and the syntactic behaviour of constructions like the following:

(8) I Maria fovate tis kategides.
the Maria.N fear.3S the storms.A
"Mary is afraid of the storms."

(9) I Maria fovate me tis kategides.
the Maria.N fear.3S with the storms
"Mary is afraid of the storms."

(10) I Maria.N fovate ton Giani.
the Maria.N fear.3S the John.A
"Mary is afraid of John."

(11) I Maria.N fovate me ton Giani.
the Maria.N fear.3S with the John.A
"Mary is afraid of John."

These constructions belong to MG ESPVCs (cf., also examples (1)-(3)). Interesting about them is the fact that the "experienced" (henceforward EXPD)[2] semantic role[3] is syntactically realized as the object of the sentence in constructions like (8) and (10), while in constructions like (9) and (11) it is syntactically realized as the object of a prepositional phrase.

We should underline here that examples (8) and (9) convey the same meaning. The same is true for examples (10) and (11). That is, the two variants in each pair do *not* differ semantically, although the first variant of each pair (examples (8) and (10)) is used more often in the language. In other words, in order to express the meaning *Mary is afraid of the storms* native speakers do prefer the construction in (8), rather than the one in (9).[4]

Our aim, thus, here is twofold:

1. First we will account for the semantic and syntactic properties of the predicates' arguments in (8)-(11).

2. Then we will show that the linking of the semantic roles in (8) and (10) to the respective syntactic arguments might be related to the constructions in (8) and (10) ranking higher than the constructions in (9) and (11) in the native speakers' preference.

To do this, we rely on Wechsler's (1995) argument structure theory, as well as the linking architecture proposed by Butt, Dalrymple, and Frank (1997).

[2]We adopt here Markantonatou's (1995) terminology.

[3]I.e., the theme.

[4]Our source is the Greek ECI corpus, which contains a broad mixture of different texts, such as a number of novels (translated mostly from English originals) including 5 cowboy stories by Louis L'amour and Sherlock Holme's Last Bow, a group of 8 files to do with astrology, a group of legal case reports from the Supreme Court of Cyprus, and a number of technical and/or philosophical books or extracts from books.

2 ESPVCs in Modern Greek

2.1 Overview

As shown in Section (1), MG ESPVCs include verbal predicates whose common characteristic is that they feature a nominative *experiencer* in agreement with the verb.

Both the literature on MG PVCs and the literature on PVCs in other languages have paid more attention to Experiencer-Object rather than to Experiencer-Subject predicates, which we are interested in here. This as such would have been unproblematic, if it had not had the consequence that Experiencer-Subject PVCs have either been left unaccounted for, or the accounts provided for them by the different Lexical Semantics and Linking theories are to a great extent stipulative.

In the generative tradition, for instance, Grimshaw's (1990) linking theory, which on the one hand relies heavily on thematic roles, but on the other hand suggests that argument selection is determined by a causal aspectual structure on a separate "tier" from thematic structure, fails to provide a consistent and parsimonious account of Experiencer-Subject PVCs, since it stipulates counter-intuitively that Experiencer-Subject predicates are no different than normal causative verbs of any natural language:

> ...The case of psychological state verbs like *fear* is considerably more delicate. The desired result will follow if their Experiencer qualifies as the aspectually most prominent argument...However, it must be admitted that in this case there is no independent evidence that the aspectual analysis will give this result, so for the present purposes we must simply stipulate it (Grimshaw (1990, pp. 17-18)).

With this Grimshaw acknowledges that the interaction between her thematic and aspectual hierarchies proves to be problematic in the case of ESPVCs. That is, prominence must be stipulated in the case of ESPVCs.

Grimshaw's (1990) account of ESPVCs also leads her to the conclusion that the *experiencer* argument in such constructions, supposedly being the most prominent one on both the thematic and the aspectual hierarchies, qualifies as an EXTERNAL ARGUMENT.[5] According to her, the fact that the Experiencer-Subject predicates have an EXTERNAL ARGUMENT in their a-structure has the consequence that they can be related to passive sentences, since EXTERNAL ARGUMENT status does predict the availability of PASSIVIZATION in her theory. And although this might be true for this kind of construction in English, which is Grimshaw's case study:

(12) John admired the car parked next to his.

(13) The car parked next to his was admired by John.

this claim does not hold for MG ESPVCs (witness the ungrammaticality of (15) and (17)):

(14) I gonis tu agapun ton Giani.
the parents.N,PL his love.3PL the Giani.A
"His parents love John."

(15) *O Gianis agapiete apo tus gonis tu.
the Gianis.N love.PASS.3S by the parents his
"John is loved by his parents."

[5] Grimshaw (1990) defines the notion of EXTERNAL ARGUMENT as the argument that is most prominent on both hierarchies, i.e., the thematic and the aspectual. If the two dimensions do not pick out the same argument as the most prominent, then, in Grimshaw's account, the predicate lacks an external argument. Thus, according to this, ESPVCs do have an external argument in their a-structure, since the *experiencer* is the most prominent argument on the thematic hierarchy, and it is stipulated to be the most prominent argument on the aspectual hierarchy, as well.

(16) I Maria zilepse to spiti ton gitonon.
the Maria.N envy.PAST.3S the house.A the neighbours.G,PL
"Mary envied the neighbours' house."

(17) *To spiti ton gitonon zileftike apo tin Maria.
the house.N the neighbours.G,PL envy.PASS.PAST.3S by the Maria
"The neighbours' house was envied by Mary."

As far as the literature on MG PVCs is concerned, Tsimpli (1989, p. 246) has argued that some of the Experiencer-Subject predicates can be considered to be the passive forms of the Experiencer-Object predicates that we have seen in (4) and (5) in Section (1):

> ...As to experiencer verbs[6] I argue that they contain a single theta-role in their argument structure, which can be assumed to be either external or internal. *Passives of experiencer verbs are passives of causativised forms of the experiencer verbs*. The forms that enter passivization in the syntax are forms that have already undergone a process of causativization in the lexicon which has introduced an additional external argument to the original argument structure of the experiencer verbs which consists of only the experiencer argument[7] (Tsimpli (1989, p. 289)).

Tsimpli's (1989) analysis of MG ESPVCs is based on two assumptions:

1. that the forms ending in *-ome*[8] are passives, and
2. that most of these forms admit an *apo*-PP as an optional dependent.

These assumptions, though, are not unproblematic:

1. Markantonatou (1995) has shown that

   > "...although it is true that for most of the MG ESPVCs ending in *-ome* one could find an active EOPVC counterpart, there are at least three ESPVCs – i.e., *vari-eme* (be bored), *onirev-ome* (dream of), and *her-ome* (enjoy/be happy) – which do not have any active EOPVC counterpart. One possible explanation for this that Tsimpli (1989) does not seem to have taken into consideration is that in MG verbs ending in *-ome* are not necessarily PASSIVE; they can be deponent

[6] That is, both ESPVCs, and EOPVCs (Experiencer-Object Psych Verb Constructions).

[7] To draw a connection to Grimshaw's (1990) account of ESPVCs that we have just outlined above, under Tsimpli's (1989) analysis those ESPVCs in MG which she takes to be passives of EOPVCs do not have an EXTERNAL ARGUMENT in their a-structure; thus, they cannot be predicted (on some accounts) to undergo passivization. This conclusion is compatible with what we have shown in examples (14)-(17).

The only case which might constitute a counter-example is the case of the "passive" form of the verb *agapo* (love) (*agapieme* (be loved)) (the examples are from Markantonatou (1995, p. 290)):

(1) To tragudi afto agapithike apo tus anthropus tis epohis tu.
the song.N this love.PASS.PAST.3S by the people the time its
"This song was popular among the people of its time."

(2) O Gianis agapithike *(apo tin adelfi tu).
the Gianis.N love.PASS.PAST.3S by the sister his
"John was loved by his sister."

But for this case we will agree with Markantonatou (1995, p. 290) that the meaning of the verb *agapieme* (be loved) in (1) is more something like "to be popular".

[8] Which is the typical ending of the passive verb constructions in MG.

verbs (e.g., *erhome* (to come)), or middle verbs (e.g., *diavazete (efkola)* (reads easily), cf., Condoravdi (1989)), or have a reflexive (e.g., *htenizome* (to comb myself)) or reciprocal meaning (e.g., *voithiomaste* (we help each other), cf., Theophanopoulou-Kontou (1985))" (Markantonatou (1995, p. 289)).

2. It is unclear to us what Tsimpli's (1989) analysis would be in the case of ESPVCs like *agapo* (love), *epithimo* (desire/want), *zilevo* (envy), *thavmazo* (admire), *thelo* (want), *latrevo* (adore), *miso* (hate), *nostalgo* (long for), *simpono* (sympathise with) which are neither passive-in-form, nor do they have an EOPVC counterpart.

3. Finally, according again to Markantonatou (1995),

   > "Tsimpli's assumption that most of the MG ESPVCs ending in *-ome* admit an *apo*-PP as an optional dependent is false, since the "suppressed" argument (such an argument should exist, if MG ESPVCs were indeed passive forms) can be expressed with a variety of PPs: *gia*-PP ("for"-PP), *me*-PP ("with"-PP), and *apo*-PP ("from"-PP).[9] In addition, different prepositions are associated with different interpretations. Furthermore, some of the MG ESPVCs ending in *-ome* do not accept at all an *apo*-PP dependent. Such predicates are: *endiaferome* (be interested), and *stenahorieme* (be upset)" (Markantonatou (1995, p. 289)).

The conclusion falling out from the discussion above is that pure a-structure accounts like Grimshaw's (1990), as well as analyses like the one proposed by Tsimpli (1989) which specifically predict that MG ESPVCs ending in *-ome* are the passive forms of the corresponding EOPVCs cannot account for the syntactic behaviour of MG ESPVCs.

2.2 Attempts at unified linking accounts of MG ESPVCs

A unified linking account of constructions like the ones in (1)-(3) and (8)-(11) has been the aim of Markantonatou's (1995) approach to MG ESPVCs.

Markantonatou (1995) focused for this purpose on the EXPD semantic argument of MG ESPVCs and proposed that this argument can be either semantically underspecified, or syntactically restricted. In the former case it bears the intrinsic classification (IC) feature [-o], while in the latter it bears the intrinsic classification (IC) feature [+r]:[10]

Intransitive ESPVCS			
predicate	<EXPR	EXPD>	
	-r	-o	Intrinsic Classification (IC)
	SUBJ	OBL	Mapping Principles

(18) O Gianis endiaferete gia sena.
the Gianis.N be-interested.3S for you
"John is interested in you."

[9]Passive forms in MG take only an *apo*-PP dependent; no other PP is licensed to encode the suppressed argument. Clearly, the situation is different with MG ESPVCs ending in *-ome*. This is one more argument against Tsimpli's (1989) claim that MG ESPVCs ending in *-ome* are the passive forms of the corresponding EOPVCs.

[10]The examples are from Markantonatou (1995, p. 296).

Transitive ESPVC*s.*

predicate	<EXPR	EXPD>	
	-r	+r	Intrinsic Classification (IC)
	SUBJ	OBJ_θ	Mapping Principles

(19) O Gianis agapa tin Maria.
the Gianis.N love.3S the Maria.A
"John loves Mary."

This specific Intrinsic Classification (IC) of the EXPD semantic argument of MG ESPVCs is stipulative and relies on the assumption that semantic arguments which are not related to any Dowty-like Proto-Agent or Proto-Patient entailments at all are intrinsically classified [-o], as well as on the assumption that the EXPD semantic argument of the "transitive"[11] MG ESPVCs is syntactically restricted. This latter assumption is based on the typological principle that

> "in languages in which SUBJ and (OBJ?) is encoded through case-marking and agreement (and not via word order) lexically case marked participants are always syntactically restricted" (i.e., intrinsically classified as [+r]) (Zaenen (1993, p. 152)).

To show that stipulative as it might be such an assumption holds for the EXPD semantic argument of MG ESPVCs, Markantonatou (1995) claims that

1. the surfacing accusative NP of the "transitive" MG ESPVCs is not related to passive adjectives, and
2. MG ESPVCs
   (a) do not passivize; and
   (b) lack an EXTERNAL = $\hat{\theta}$ [-o] a-structure argument.

As far as her first claim is concerned, Markantonatou (1995) relies on Ackerman (1992), who claims that passive adjectives are related only to predicates which have a [-r] argument and bear the feature [+telic]. However, Bresnan (1996) has shown that the ability of nominals to be related to passive adjectives has nothing to do with their intrinsic classification (IC) features. Rather, it has to do with the semantics of the base verb the surfacing accusative NP combines with, which has to denote a *result state* (cf., Bresnan (1996)).

As far as Markantonatou's second claim is concerned, it is true that MG ESPVCs do not passivize (see also examples (14)-(17)). But this does not fall from her account, at least as far as the variant of MG ESPVCS in example (18) is concerned. That is, according to her analysis, this variant of MG ESPVCS has a [-o] argument in its a-structure (see example (18)). Thus, it should have been able to passivize, which is obviously not the case.

Closing we want to underline that Markantonatou's (1995) analysis is the first attempt at a unified account of MG ESPVCs (cf., (8)-(11) in Section (1)), based on the semantic and syntactic properties of the EXPD argument of these constructions. The unified linking account we propose in the following for MG ESPVCs tries to overcome the problematic aspects of this analysis.

3 Towards a robust linking account of MG ESPVCs

To recapitulate, as far as the syntax of MG ESPVCs is concerned, we saw in Section (2) that these constructions:

1. do not passivize,

[11]To follow Markantonatou's (1995) terminology.

2. are not the passive forms of the corresponding EOPVCs, and
3. realize syntactically the EXPD semantic role either as the object of the sentence, or as the complement of a prepositional phrase.

Now, in order to account for the semantic and linking properties of the arguments of the constructions in (1)-(3) and (8)-(11), we focus on both the EXPR ("experiencer") and the EXPD semantic arguments of MG ESPVCs, and rely on Butt, Dalrymple, and Frank (1997), and Wechsler (1995).

3.1 The EXPR ("experiencer") semantic argument

Zaenen (1993) has shown that semantic arguments with equal number of Dowty-like Proto-Agent and Proto-Patient properties are assigned the Intrinsic Classification (IC) feature [-r]. The EXPR semantic role of MG Psych Verb Constructions is such an argument (cf., examples (1)-(5) in Section (1)), since the Dowty-like entailments related to it – *sentience and/or perception* and *undergoing a change of (mental) state* – classify it neither as a pure Proto-Agent semantic role, nor as a pure Proto-Patient one.

That the EXPR ("experiencer") semantic argument of MG ESPVCs must link to the IC feature [-r] is also supported by the fact that MG ESPVCs do not passivize, as has been shown in (14)-(17) in Section (2.1) above, repeated here for convenience:

(20)	I	gonis	tu	agapun	ton	Giani.	
	the	parents.N,PL	his	love.3PL	the	Giani.A	
	"His parents love John."						
(21)	*O	Gianis	agapiete	apo	tus	gonis	tu.
	the	Gianis.N	love.PASS.3S	by	the	parents	his
	"John is loved by his parents."						
(22)	I	Maria	zilepse	to	spiti	ton	gitonon.
	the	Maria.N	envy.PAST.3S	the	house.A	the	neighbours.G,PL
	"Mary envied the neighbours' house."						
(23)	*To	spiti	ton gitonon	zileftike	apo	tin	Maria.
	the	house.N	the neighbours.G,PL	envy.PASS.PAST.3S	by	the	Maria
	"The neighbours' house was envied by Mary."						

What (20)-(23) show is that there is no $\hat{\theta}$ [-o] argument in the a-structure of MG ESPVCs available to be suppressed by the morphosyntactic (*Suppression*) operation of passivization:

(24) *The Suppression Morphosyntactic Operation*

$$\begin{array}{c}\hat{\theta}\\ |\\ \emptyset\end{array}$$

In this case, the argument which is realized as the subject of constructions like MG ESPVCs must bear the IC feature [-r], according to the following default mapping principles proposed by Bresnan and Zaenen (1990):

(25)
- $\hat{\theta}$ [-o] is mapped onto SUBJ; otherwise,
- θ [-r] is mapped onto SUBJ
- Other roles are mapped onto the lowest compatible function on the markedness hierarchy.

and interpreted by Butt, Dalrymple, and Frank (1997) as follows:

> "...the intrinsic classifications [of Lexical Mapping Theory (LMT)] are augmented by a set of *default mapping principles* which induce full specification of the grammatical function of the thematic role. That is, the default principles are taken to resolve the disjunctive possibilities specified by the intrinsic features. The default principles...can be read: if available, the external argument...has to be mapped onto the subject; if there is no external argument, an internal argument is mapped onto the subject. All other roles are mapped onto the lowest compatible function on the markedness hierarchy..." (Butt, Dalrymple, and Frank (1997, p. 4)).

From the above we conclude that the EXPR ("experiencer") semantic argument of MG ESPVCs is a [-r] argument.

3.2 The EXPD ("experienced") semantic argument

In the account of MG ESPVCs that we propose here, the EXPD semantic argument of these constructions is classified either as [+o] or as [+r].

[+o] is the intrinsic linking possibility we propose for the EXPD ("experienced") semantic argument in the following MG ESPVCs:

(26) O Gianis agapa tin Maria.
the Gianis.N love.3S the Maria.A
"John loves Mary."

(27) I Maria.N fovate ton Giani.
the Maria.N fear.3S the John.A
"Mary is afraid of John."

(28) I Maria fovate tis kategides.
the Maria.N fear.3S the storms.A
"Mary is afraid of the storms."

This proposal is based on the fact that themes[12] link traditionally to the IC feature [+o] (see a.o. Bresnan and Zaenen (1990), Butt, Dalrymple, and Frank (1997)).[13]

[+r] is the intrinsic linking possibility we propose for the EXPD ("experienced") semantic argument in the following MG ESPVCs:

(29) I Maria fovate me tis kategides.
the Maria.N fear.3S with the storms
"Mary is afraid of the storms."

(30) I Maria.N fovate me ton Giani.
the Maria.N fear.3S with the John.A
"Mary is afraid of John."

[12]Which is what the EXPD ("experienced") semantic argument in (26)-(28) is. In classical LMT, *theme* is the role that is assumed to be semantically most neutral. Thus, our choice to adopt *theme* for the second argument of MG ESPVCs is in agreement with Markantonatou's (1995) assumption that the EXPD semantic argument of MG ESPVCs may be semantically underspecified (see Section (2.2)).

[13]To objections that the surfacing accusative NP of MG ESPVCs like the ones in (26)-(28) does not behave as a NORMAL OBJ because MG ESPVCs do not passivize (cf., Markantonatou (1995)), we repeat what we have shown in Section (3.1) above: MG ESPVCs do not passivize because they lack a $\hat{\theta}$ [-o] in their a-structure.

This proposal[14] is based on Wechsler's (1995) suggestion that "a feature [+r] [is]...for "restricted" or oblique roles, i.e., roles which may be linked to a semantically restricted complement such as a PP..." (cf., Wechsler (1995, p. 63)). That is the case in examples (29) and (30) above.

3.3 Linking MG ESPVCs

Thus, taking into consideration the proposals we have made in Sections (3.1) and (3.2) above for the intrinsic linking possibilities of the EXPR ("experiencer") and the EXPD ("experienced") semantic arguments, the linking of MG ESPVCs like the ones in (26)-(30) is as follows:

	agapo	<EXPR	EXPD>
(31)	Intrinsic Classification (IC)	-r	+o
	Mapping Principles (MP)	SUBJ	OBJ

O Gianis agapa tin Maria.
the Gianis.N love.3S the Maria.A

"John loves Mary."

	fovame	<EXPR	EXPD>
(32)	IC	-r	+o
	MP	SUBJ	OBJ

I Maria.N fovate ton Giani.
the Maria.N fear.3S the John.A

"Mary is afraid of John."

	fovame	<EXPR	EXPD>
(33)	IC	-r	+o
	MP	SUBJ	OBJ

I Maria fovate tis kategides.
the Maria.N fear.3S the storms.A

"Mary is afraid of the storms."

	fovame	<EXPR	EXPD>
(34)	IC	-r	+r
	MP	SUBJ	OBL_{θ}

I Maria fovate me tis kategides.
the Maria.N fear.3S with the storms

"Mary is afraid of the storms."

[14]Our proposal deviates from Butt, Dalrymple, and Frank's (1997) intrinsic classification rules for *theme*. They assume that *theme* links alternatively either to [-r] or [+o]. This, though, would have falsely predicted SUBJ-OBJ assignment for both (26)-(28) and (29)-(30). The mismatch between the two systems is due to the fact that Modern Greek needs to account for themes which may link to a restricted complement such as a PP.

	fovame	<EXPR	EXPD>
(35)	IC	-r	+r
	MP	SUBJ	OBL_θ

I Maria.N fovate me ton Giani.
the Maria.N fear.3S with the John.A

"Mary is afraid of John."

3.4 Summary

Up to here we have investigated the semantic properties of the participants of the states denoted by Experiencer-Subject Psych Verb Constructions (ESPVCs) in Modern Greek, and the effects that these properties have on the syntactic realization of the semantic roles involved in these constructions. The linking from the semantics to the syntax of MG ESPVCs is achieved by the intrinsic linking feature [-r] for the EXPR ("experiencer") semantic role and the intrinsic linking features [+o] or [+r] for the EXPD ("experienced") semantic role of these constructions (see examples (31)-(35) in Section (3.3) above).

In the following we will show that the specific linking of the semantic roles in (32) and (33) to their respective syntactic arguments is related to the constructions in (32) and (33) ranking higher than the constructions in (35) and (34) in the native speakers' preference.

To do this, we rely on the linking theory proposed by Butt, Dalrymple, and Frank (1997). The reason we adopt this approach is that the linking architecture proposed by Butt, Dalrymple, and Frank (1997) incorporates naturally a set of preference constraints which impose an ordering on the available linking possibilities of given predicators. This is actually what helps us support the observation that the constructions in (32) and (33) rank higher than the constructions in (35) and (34) in the native speakers' preference.

4 "Optimal Linking"

Following the principles of Lexical Mapping Theory (LMT) in their overall spirit, Butt, Dalrymple, and Frank (1997) reformulate the precise statement of linking in Lexical Mapping Theory in terms of a theory of underspecification, and preference rankings.

They propose that

> "argument structure is an additional level of representation, related directly to the c-structure, and the f-structure of Lexical Functional Grammar (LFG), and indirectly to other levels".

The grammatical architecture they propose differs from usual assumptions in that

> "argument structure is projected directly from c-structure. That is, the α projection function maps nodes of the c-structure tree to pieces of the argument structure. Argument structures are mapped to f-structures by the linking function λ, which in a sense represents the integration of linking theory into the projection architecture. Thus, the familiar ϕ projection relating the c-structure to the f-structure can be seen as a composition of the α and λ functions" (Butt, Dalrymple, and Frank (1997, pp. 1-2)).

In their grammatical architecture, the relationship between the a-structure and the c-structure is a many-to-one relationship, as has been the case in traditional LFG for the relationship between the c-structure and the f-structure.

Their approach, as they declare,

> “departs most radically from the Lexical Mapping Theory (LMT) literature in that they do not assume that a-structure roles are deterministically and uniquely linked to grammatical functions via a set of default principles. Instead, they propose a set of preference constraints which impose an ordering on the available linking possibilities; the most preferred possibility or possibilities are chosen” (Butt, Dalrymple, and Frank (1997, p. 5)).

In the theory they propose, the core of preference constraints is formed by two basic considerations: one is the preference ranking of the individual grammatical functions:

(36) SUBJ>OBJ>OBJ$_\theta$ / OBL$_\theta$

According to (36) above, subjects are most highly ranked in that they represent the function that is universally required in every clause, as the Subject Condition dictates. Next come objects, and then obliques, and semantically r(estricted) objects, on a par. They restate this preference ranking as in the following:

(37) [-r]>[+r]

(38) [-o]>[+o]

“in order to capture the intuition that unrestricted functions, like, for instance, the function [-r], are more preferred than restricted functions, and that within those unrestricted functions, it is the non-objective functions — that is, the subjects — which are more highly preferred” (Butt, Dalrymple, and Frank (1997, p. 6)).

The second consideration forming the core of preference constraints has to do with the relation between the a-structure and the f-structure. That is, Butt, Dalrymple, and Frank propose

> “another kind of preference constraint, which is sensitive to this very relation: the SUBJ is preferentially linked to the highest non-suppressed argument. This constraint crucially relies on the notion of the thematic hierarchy, and makes use of the relation of *outranking* presented in the following hierarchy:
>
> AGENT>BENEFICIARY>EXPERIENCER / GOAL>INSTRUMENT>PATIENT / THEME > LOCATIVE” (Butt, Dalrymple, and Frank (1997, p. 6))

Thus, what they propose is that

> “the linking that will be chosen is the one that best satisfies the preference constraints (36), (37), and (38). In addition, language particular preference constraints can be added to these basic constraints in order to reflect the case marking, or syntactic properties peculiar to each individual language” (Butt, Dalrymple, and Frank (1997, p. 6)).

Their view of linking differs from the fully deterministic linking principles of the traditional Lexical Mapping Theory (LMT) in that the preference constraints for linking that they propose presuppose an integration of argument structure into LFG’s projection architecture. In their view, this provides for more flexibility in the treatment of argument alternations, as well as for a more natural representation of the influence of extra-thematic information such as discource structure (topic, focus) on the realization of grammatical functions.

4.1 "Optimal Linking" and MG ESPVCs

In this section we apply the linking theory of Butt, Dalrymple, and Frank (1997), which was briefly outlined in Section (4) above, on MG ESPVCs like the ones in (27)-(30) that we have shown in Section (3.2).

We need to add here that in Butt, Dalrymple, and Frank (1997) the preference constraints mentioned in Section (4) above are by way of illustration expressed in terms of numeric weights like in (39). This means of encoding of preference ranking is maintained in the analysis of MG ESPVCs below.

(39)

SUBJ:	+3
OBJ:	+2
OBJ_θ:	+1
OBL_θ:	+1
SUBJ linked to thematically highest argument (Subject Preference (SP)):	+1

Applying, thus, Butt, Dalrymple, and Frank's (1997) linking theory on MG ESPVCs like the ones in (27)-(30) we get the following results:

(40)

fovame	<EXPR	EXPD>			
Intrinsic Classification (IC)	-r	+o			
Mapping Principles (MP)	SUBJ	OBJ			
			SP	Total	Optimal
Numeric Weights (NW)	+3	+2	+1	6	√

I Maria.N fovate ton Giani.
the Maria.N fear.3S the John.A

"Mary is afraid of John."

(41)

fovame	<EXPR	EXPD>			
IC	-r	+r			
MP	SUBJ	OBL_θ			
			SP	Total	Optimal
NW	+3	+1	+1	5	

I Maria.N fovate me ton Giani.
the Maria.N fear.3S with the John.A

"Mary is afraid of John."

(42)

fovame	<EXPR	EXPD>			
IC	-r	+o			
MP	SUBJ	OBJ			
			SP	Total	Optimal
NW	+3	+2	+1	6	√

I Maria fovate tis kategides.
the Maria.N fear.3S the storms.A

"Mary is afraid of the storms."

	fovame	<EXPR	EXPD>			
	IC	-r	+r			
(43)	MP	SUBJ	OBL_{θ}			
				SP	Total	Optimal
	NW	+3	+1	+1	5	

I Maria fovate me tis kategides.
the Maria.N fear.3S with the storms

"Mary is afraid of the storms."

The analysis of the constructions in (40)-(43) builds on the investigation of the semantic properties of the participants of the states denoted by Experiencer-Subject Psych Verb Constructions (ESPVCs) in Modern Greek, which has been presented in Sections (3.1) and (3.2). The results of that investigation have led to the assignment of the intrinsic classification feature [-r] to the EXPR ("experiencer") argument of MG ESPVCs, and to the assignment of the intrinsic classification features [+o] or [+r] to the EXPD ("experienced") argument of the same constructions.

In (40)-(43) the specific intrinsic linking features of the EXPR ("experiencer") and the EXPD ("experienced") arguments of MG ESPVCs do not stand alone responsible for the mapping from the semantics to the syntax of these constructions, but are part of the bigger linking architecture proposed by Butt, Dalrymple, and Frank (1997). This linking architecture incorporates in a natural way a set of preference constraints (see (36), (37), and (38) in Section (4)), which

1. constrain the mapping from the semantics to the syntax of given predicators directly, since they are integrated in the linking algorithm,[15] and

2. impose a natural ordering on the available linking possibilities of given predicators.

Applied to MG ESPVCs as shown in (40)-(43), the "optimal linking" architecture results in:

1. making the correct predictions as far as the linking of the EXPR ("experiencer") and the EXPD ("experienced") semantic arguments of MG ESPVCs to the syntax is concerned, and

2. predicting that the variant of MG ESPVCs which realizes syntactically the EXPD ("experienced") semantic argument as an accusative NP (examples (40) and (42)) ranks higher (is "more optimal" ($\surd$)) than the variant which realizes syntactically the EXPD ("experienced") semantic argument as the complement of a PP phrase (examples (41) and (43)).

The variant of MG ESPVCs which ranks lower does not correspond to an ungrammatical construction (examples (41) and (43)). In fact, within the "optimal linking" system this variant is treated as the more *marked* option of MG ESPVCs which is only chosen in case it is triggered by the presence of the preposition (*me* (with), for instance) in the "environment" of the verb *fovame* (fear).[16,17] Thus, the complete range of the linking possibilities for the EXPD ("experienced") argument of the verb *fovame* (fear) can be constrained through other requirements of the specific ESPVCs. In general, according to Butt, Dalrymple, and Frank (1997),

> "[this allows] for a more flexible correlation between argument arrays and possible linkings to grammatical functions" (Butt, Dalrymple, and Frank (1997, p. 7)).

[15] This is not the case in LMT, where the preference constraints are activated after the linking from the semantics to the syntax of given predicators has been achieved by the intrinsic classification features [+/-o] and [+/-r] solely.

[16] In the Greek ECI corpus there are 24 instances of the *marked* variant of the kind we have seen in the sentences (41) and (43) in a total of 431 MG ESPVCs headed by the verb *fovame* (fear). That is, the rate of the *marked* variant is 5.568%.

[17] For more on the linking of indirect arguments in English see Markantonatou and Sadler (1996). For more on the way that the prepositions *me* (with) and *gia* (for) are treated when appearing in the "environment" of the verb *fovame* (fear) see Kordoni (1999), Kordoni (2001).

5 Conclusion

This paper focused on the semantic properties and the syntactic behaviour of MG ESPVCs like the following:

(44) I Maria fovate tis kategides.
the Maria.N fear.3S the storms.A
"Mary is afraid of the storms."

(45) I Maria fovate me tis kategides.
the Maria.N fear.3S with the storms
"Mary is afraid of the storms."

(46) I Maria.N fovate ton Giani.
the Maria.N fear.3S the John.A
"Mary is afraid of John."

(47) I Maria.N fovate me ton Giani.
the Maria.N fear.3S with the John.A
"Mary is afraid of John."

We accounted for the semantic and syntactic properties of the constructions in (44)-(47) by relying on the linking architecture that Butt, Dalrymple, and Frank (1997) have proposed as an alternative to the fully deterministic principles of standard LMT (see Sections (4)). In Section (4.1) we showed that the "optimal linking" theory makes the correct predictions for the linking of the EXPR ("experiencer") and the EXPD ("experienced") semantic arguments of MG ESPVCs and predicts that the variant of MG ESPVCs which realizes syntactically the EXPD ("experienced") semantic argument as an accusative NP (examples (44) and (46)) ranks higher (is "more optimal") than the variant which realizes syntactically the EXPD ("experienced") semantic argument as the complement of a PP phrase (examples (45) and (47)). This ranking reflects in a way the fact that in order to express the meaning *Mary is afraid of the storms* native speakers prefer the construction in (44), rather than the one in (45), which is also mirrored in the rate of the *marked* variant of MG ESPVCs ((45) and (47)) in the Greek ECI corpus (5,568%).

Future work includes the formalization of the proposal we have presented in Section (4.1) in a OT setting with stochastic evaluation (Boersma (1998), Boersma and Hayes (2001), Bresnan, Dingare, and Manning (2001)), which brings along the useful for our purposes advantage that it can generate both categorical (cf., examples (44) and (46)) and variable outputs (cf., examples (45) and (47); Bresnan, Dingare, and Manning (2001)).

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