

RESEARCH

-Able adjectives and the syntax of psych verbs

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This paper deals with some restrictions on the formation of *-able* adjectives from object experiencer verbs in comparison to subject experiencer verbs, focusing on English and Greek. Building on Oltra-Massuet (2013), the paper assumes that there are two places of attachment for *-able*, a high one, which combines with a structure including passive Voice, and a low one, which combines with a smaller structure. While subject experiencer verbs combine with low *-able* in both languages, the behavior of object experiencer verbs is not uniform. The unavailability of high *-able* formation with object experiencer verbs is correlated with the unavailability of passivization. In English, only those object experiencer verbs that yield a well-formed passive can combine with high *-able*. In Greek, OE verbs do not form passives or *-able* adjectives. The differences between English and Greek are accounted for by appealing to differences in their Voice systems, with specific reference to passive formation.

Keywords: psych-verbs; dispositional adjectives; evaluative adjectives; agentivity; passive; *tough*-movement

1 Introduction

The class of psychological verbs has been controversially discussed in the literature, as they pose problems for theories of the argument structure-syntax interface. A first issue is the fact that they can project the experiencer theta-role both as an object or as a subject, thus creating a problem for thematic hierarchy and linking (see e.g. Belletti & Rizzi 1988; Grimshaw 1990; Pesetsky 1995; Arad 1998; Anagnostopoulou 1999; Pylkkänen 2000; Reinhart 2001; Verhoeven 2008; Landau 2010 and many others). A second problem is their aspectual behavior. In particular, they are ambiguous between eventive and stative readings, and there is no agreement as to the exact categorization of the eventive interpretation these may receive (activity, achievement or accomplishment; see e.g. Grimshaw 1990; van Voorst 1992; Tenny 1994; Martin 2006; Rozwadowska 2007; 2012; Landau 2010; Marín & McNally 2011; Alexiadou & Iordăchioaia 2014 among others).

While the paper does not directly address these issues, it shows that the formation of *-able* adjectives from psych-verbs depends on aspectual as well as structural properties of these verbs. Because of this, *-able* formation can be used as a further tool to explore the properties of psychological verbs. To illustrate this, consider (1). As (1) shows, in English certain psych verbs can build *-able* adjectives, while others not, see also Trips & Stein (2008). (1a) is a so-called subject experiencer verb, while (1b–c) are object experiencer verbs, see section 2 for details:

- (1) a. lovable b. annoying c. *depressable/*depressible

Greek has two counterparts of *-able*, *-sim-* and *-tos*, as I will discuss in detail in section 3. In Greek, subject experiencer verbs can form *-able* adjectives on the basis of the affix *-tos*, but

not on the basis of *-sim*. *-Sim-* affixation is disallowed with the class of object experiencer predicates, and only a sub-class thereof can combine with *-tos*, once additional prefixal material is added, as we will see in section 3.2:

- | | | | | | | |
|-----|----|--------------|----|----------------|----|----------------|
| (2) | a. | agapitos | b. | *enohlisimos | c. | *enohlitos |
| | | lovable.MASC | | annoyable.MASC | | annoyable.MASC |

This behavior leads us to formulate the following questions: i) what enables *-able* formation with certain psych verbs in English? ii) why is it impossible to form *-able* adjectives in Greek with the same verb class on the basis of *-sim-*? iii) what explains the differences between English and Greek object experiencer verbs (OE)?

I will show that *-sim-* affixation in Greek applies only to verbs that yield a well-formed passive. With respect to psych verbs, I will demonstrate that in Greek no psych verb of the OE class can passivize. In fact, not even the ones that have been claimed to be agentive and undergo the causative alternation can passivize. As a result, OE verbs cannot combine with *-sim-*. By contrast, precisely those English OE verbs that can passivize yield well-formed *-able* adjectives. Moreover, I will entertain the availability of a further input structure for *-able* formation out of OE verbs, associated with a reading of “semantic easiness”. This reading is correlated with the *tough*-movement construction.

As detailed in Landau (2010), across languages there are certain specific syntactic properties associated with experiencers, which contribute to making the class of psychological verbs special. Landau labels these properties *psych effects*. A first contribution this paper makes is to establish a further psych effect, namely the behavior of psych verbs in *-able* affixation. While it has been occasionally noted in the literature that across languages certain OE verbs do not form *-able* adjectives, this paper, focusing on Greek and English data, will show that the unavailability of a particular type of *-able* formation correlates with the unavailability of passivization of psych verbs, echoing the passive analysis of *-able*, see Chapin (1967); McGinnis (2010); see also Horn (1980); Williams (1981); Kayne (1984); Fabb (1984); Roeper & van Hout (1999) and others. In particular, verbs that do not form a verbal passive do not feed *-able* formation. This actually holds across the board in Greek, i.e. it is not restricted to psych verbs.

The second contribution the paper makes is to explain the differences with respect to *-able* formation between English and Greek by showing that they relate to differences in their Voice systems. The third contribution of the paper is to link the so-called semantic “easiness reading” of *-able* to a structure not discussed in Oltra-Massuet (2013), but which has been proposed for Greek by Samioti (2015). As pointed out in Oltra-Massuet (2013: 27), “*-able* adjectives can be related to other structures”, and I will argue that these other structures may be anticausative.

The paper is structured as follows:¹ In section 2, I will introduce the background for my discussion. This involves a brief summary of the literature on the main classes of psych verbs that have been recognized as well as the view on *-able* formation that I will adopt in this paper. In section 3, I will turn to the behavior of *-able* adjectives, argument alternations, *tough*-movement, and psych verbs in English and Greek. In section 4, I will offer my analysis, and I will conclude in section 5.

¹ An earlier and much shorter version of this paper was published in the Working Papers of the SFB 732 “Incremental Specification in Context”, vol. 13, Proceedings of Morphological, syntactic and semantic aspects of dispositions, ed. by F. Martin, M. Piteroff, and T. Pross.

2 Background

2.1 Classes of psych verbs

Belletti & Rizzi (1988) proposed that there are three classes of psych verbs, and this classification has been adopted in subsequent research. The first class is that of subject experiencer verbs, where the experiencer appears as the subject of the clause, (3):

(3) John loves Mary.

The second class is that of accusative object experiencer verbs, where the experiencer appears as the accusative object of the verb, (4):

(4) The message worries John.

The third class involves an object experiencer that surfaces with dative case, (5):

(5) The song appeals to John.

There is some consensus among scholars with respect to the status of class I and class III verbs: class I verbs are unambiguously stative, and behave like transitive predicates, and class III verbs are unaccusative across languages. However, Class II has been controversially discussed in the literature, and the reader is referred to Landau (2010) for a comprehensive overview.

With respect to class II verbs, the following issues are important for my discussion. Firstly, Class II OE verbs may have eventive, non-agentive interpretations. Arad (1998) shows that there are three different interpretations associated with class II OE verbs, see (6): an agentive reading which includes both an agent and a change of state in the experiencer; an eventive reading implying that something unintentionally caused a change of mental state in the experiencer; a stative reading where there is no agent nor any change of mental state.

- | | | | |
|-----|----|--|-------------------------------|
| (6) | a. | John frightened Bill deliberately. | <i>agentive</i> |
| | b. | Bill frightened Peter unintentionally. | <i>eventive, non-agentive</i> |
| | c. | The thunderstorm frightened Bill. | <i>eventive, non-agentive</i> |
| | d. | John's stubbornness frightens Bill. | <i>stative</i> |

Secondly, more recently, Alexiadou & Iordăchioaia (2014) argued that several OE verbs in English have subjects which are ambiguous between a causer reading and an object of emotion. Importantly, when their subject is interpreted as object of emotion (corresponding to the subject matter/target of emotion role in Pesetsky 1995), the sentence corresponds to a stative interpretation of the psych verb, while when the subject is interpreted as a causer the sentence has an eventive causative use. For these authors, the term causer excludes agents, and refers to non-agentive causers in change of state eventive sentences. The object of emotion role is taken to be introduced very low in the structure, potentially contained within the psych root suggesting that under this stative reading class II OE verbs are unaccusative, see Pesetsky (1995). Alexiadou & Iordăchioaia (2014) assumed that causers are introduced similar to agents in the structure, following Alexiadou & al. (2006), a claim that I will revisit and modify in this paper.

Thirdly, Landau (2010) devotes a lot of attention to the question of whether OE verbs can form a passive. As he points out, two main approaches to this issue can be recognized. According to e.g. Belletti & Rizzi (1988); Grimshaw (1990) and others, OE verbs are unaccusative and thus do not form passives. According to e.g. Pesetsky (1995); Iwata (1995); Pylkkänen (2000) and others, OE verbs are transitive verbs, and thus can form a passive similar to other transitive verbs. Landau's contribution is to demonstrate that

there are two types of languages when it comes to passivization of OE verbs. In languages like English only eventive (non-stative) members of class II can have a verbal passive. In languages like Italian, OE verbs have no verbal passive. For Landau, the formation of a verbal passive in English is contingent on eventivity not agentivity. Agentive OE verbs universally form passives, as they are actually change of state verbs (accomplishments), while non-agentive ones are states (*depress*) or achievements. He agrees thus with Tenny (1998: 595) that “verbal passives are more felicitous the more eventive the verb. A complex of factors influences the degree of eventiveness, including not only agentivity but also volitionality, punctuality, and the affectedness of change of state in the experiencer. A loose gradient can be defined from the purely stative ascription of property to the most eventive verb type [...] Individual speakers vary in how strict they are with this scale in making verbal passives.”

Landau’s typology is relevant for my discussion of *-able*, as it has been suggested by other authors for the non-psych domain that there is a correlation between the availability of passive formation and a particular type of *-able* affixation, to be detailed in 2.2. Importantly, evidence will be provided for (7):

- (7) Psych verbs which cannot form a passive are also not able to form an *-able* adjective implying an originator.

This directly relates to both Landau’s partition of psych verbs, and the view that *-able* formation is contingent on passivization.

2.2 Building *-able* adjectives

As is well known, languages employ several ways to express dispositional statements, and *-able* adjectives in English as well as their cognates across languages figure prominently among these. That *-able* adjectives bring about modality is generally acknowledged in the literature, see e.g. Lyons (1977); Bauer (1983); Chierchia & McConnell-Ginet (1990); Krifka & al. (1995); Lekakou (2005); Bauer, Lieber & Plag (2015) among many others. The very rich literature on this topic, recently extensively summarized in Oltra-Massuet (2013), has made several important observations: the first one is that depending on the source verb *-able* applies to, a difference in modal force emerges. For instance, as Pires de Oliveira & Ngoy (2007), and Moreira (2014) note for Brazilian Portuguese, when the counterpart of English *-able*, namely *-vel*, applies to a transitive predicate the derived adjective signals possibility. However, when it applies to a stative verb, it expresses obligation or necessity (e.g. *audível* ‘able to be heard’ vs. *admirável* ‘deserving respect and admiration’).

Moreover, similarly to modals there is a difference in entailments. As Giannakidou & Staraki (2013) point out, in (8) there is no entailment that Ariadne did solve the problem, see also Hacquard (2010).

- (8) Ariadne can solve the problem.

Moreira (2014) and Oltra-Massuet (2013) argue that this also holds for possibility *-able* adjectives. Something can be *breakable* without entailing the state that it has been broken. The obligation reading, however, that emerges in combination with stative verbs is different. As Moreira (2014) notes, if someone is *admirable*, there is an entailment that he/she inspires admiration, i.e. the state is manifested, see 3.1 for details.

What is more interesting for the purposes of this paper, however, is the discussion on the morpho-syntactic contexts in which these two readings emerge. Specifically, there appears to exist a correlation between the two readings and the derivational history of the

Table 1: Properties of high and low *-able*.

High <i>-able</i>	Low <i>-able</i>
always expresses possibility	non-potential interpretation
meaning is compositional	may have idiosyncratic meaning
does not trigger stem allomorphy	may trigger stem allomorphy
allows derived bases	only underived bases
stress does not shift	stress shifts
always spelled out as <i>-able</i>	maybe spelled out as <i>-ible</i>
does not generally allow degree	generally allows degree
modification by <i>very</i>	modification by <i>very</i>

adjective involved in these. Importantly, the possibility reading is available only out of verbs that are transitive and can be passivized. As Chapin (1967) notes, verbs that do not form a passive do not yield *-able* adjectives either, (9), see also Marchand (1969); Aronoff (1976) among others. McGinnis (2010) provides more recent evidence in support of this claim, see also Roeper & van Hout (1999). Oltra-Massuet (2013) shows that this holds in Catalan and Spanish as well and similar observations have been made by Riehemann (1993) for German.

- (9) a. *Her mother is resembled by Kate.
 b. *Her mother is resemblable by Kate.

Oltra-Massuet (2013) correlates the two readings with the two distinct derivations for *-able* adjectives, cf. Volpe (2005) for an alternative proposal. In particular, Oltra-Massuet (2013: 42, 148) argues that there are two heights for *-able* attachment and these give rise to distinct semantics. This high vs. low attachment of the affix is associated with a number of other properties summarized in **Table 1** (see Oltra-Massuet's work for a complete list, see Alexiadou 2001; Arad 2005; Embick 2010; Marantz 2013 for further discussion on high vs. low attachment of affixes).

From this perspective, the difference in interpretation associated with *-able* adjectives correlates with their morpho-syntactic make up. High *-able* adjectives create a generic property, according to which it is possible for some originator to achieve a resultant state. The event interpretation implies an external argument, as in e.g. *translatable*. This is the reading Oltra-Massuet calls *potential*. Low *-able* adjectives, by contrast, have idiosyncratic properties, and express a modality that differs from regular possibility, e.g. *admirable*, which Oltra-Massuet labels *evaluative*.

- (10) a. *translatable* = can be translated
 b. *admirable* = no direct reference to a verbal component

The differences in interpretation often correlate with differences in form, as discussed in Aronoff (1976: 128):

- (11) a. *tolerable* = moderately good
 b. *tolerable* = capable of being tolerated
 c. *appreciable* = substantial
 d. *appreciable* = capable of being appreciated

As Oltra-Massuet (2013: 111–112) points out, languages such as German have a different affix to express the evaluative judgment, namely *wert*:

(12) wünschenswert ‘desirable’ *wünschbar

High *-able* adjectives contain both a resultative component and an agentive component. Oltra-Massuet discusses several tests that can be used to diagnose the presence of an external argument in high *-able* adjectives. These include:

1. Control into purpose clauses
2. Licensing of *by*-phrases (non-specific)
3. Licensing of agent-oriented modifiers
4. Licensing of instrumental phrases
5. Licensing of aspectual/manner adverbs

Applying these tests to English and German, we see, as stated in Oltra-Massuet (2013: 81), that the form that is associated with high *-able* licenses *by*-phrases, but the low one does not:

- (13) a. *The view is defensible by anyone.
b. The view is defensible by anyone.
- (14) a. ein vom Benutzer/*von Maria leicht modifizierbares Programm
a by.the user/ by Mary easily modifiable program
lit. ‘a program easily modifiable by the user/*by Mary’
b. Der Angriff ist *von Maria/der Regierung beklagenswert.
the attack is by Maria/by.the government regrettable
lit. ‘The attack is regrettable *by Mary/by the government.’

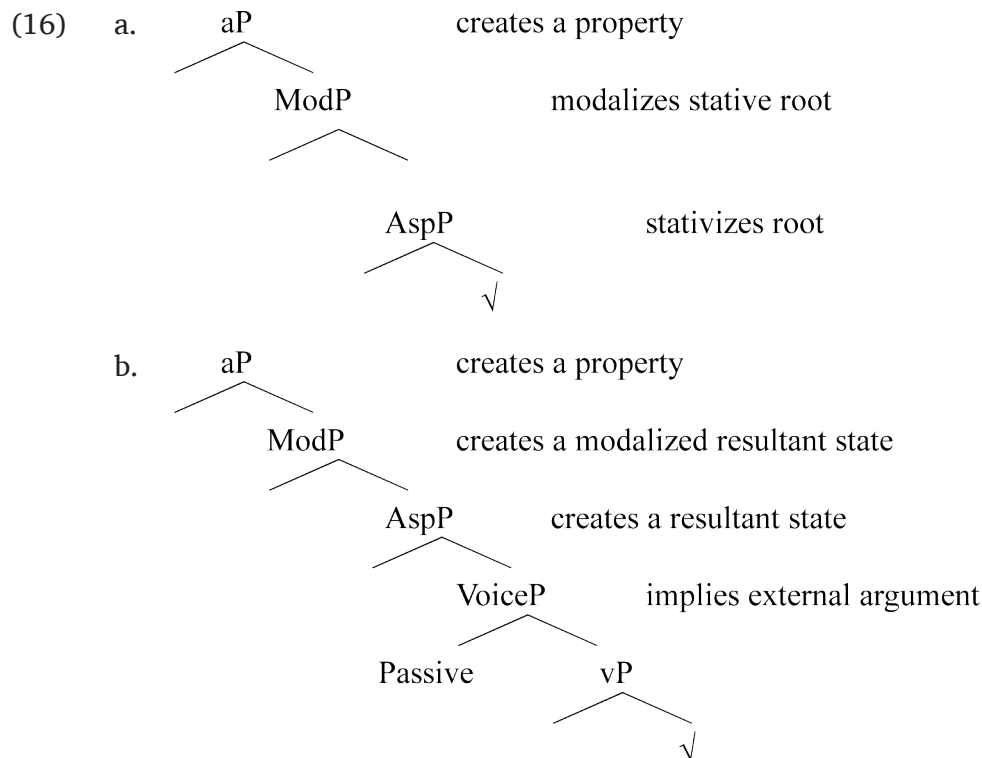
Oltra-Massuet and other literature she cites observed some restrictions on *by*-phrases with *-able* adjectives. To the extent that *by*-phrases occur, they must be non-specific and generic. These restrictions are interesting as they are similar to those found in adjectival passives and verbal passives in some languages, as well as dispositional middles in languages such as Greek, where *by*-phrases are allowed (see e.g. McIntyre 2013; Gehrke 2015 among others; Lekakou 2005; Alexiadou & al. 2015 for a summary of the literature and references). We can relate this to the proposal made in the literature that *by*-phrases when applied to states are subject to sortal restrictions, i.e. they are either responsible for continuing the state or crucial for the nature of the state.

Finally, Moreira (2014) and Oltra-Massuet (2013) note that there are aspectual restrictions that apply to high *-able*. According to Moreira, high *-able* combines with eventive predicates, and cannot combine with stative predicates. Oltra-Massuet claims that high *-able* combines with verbs that involve some originator who achieves a resultant state, but there is no implication that the event has taken place. This is expressed in (15):

- (15) high *-able* combines with eventive predicates that involve an originator that contributes to the achievement of a resultant state.

The corresponding structures for high and low *-able* are given in (16a) and (16b). While both formations are adjectival, a crucial difference between the two is that high *-able* includes the layer that introduces the external argument. Specifically, high and low *-able* differ in that high *-able* involves a modal that takes as an input structure the layer that introduces the implicit external argument, namely VoiceP (Kratzer 1996; Alexiadou &

al. 2015). Low *-able* involves a modal component that simply embeds a non-verbal structure. According to Oltra-Massuet (2013: 153), in the case of low *-able* in (16a), first the root merges with AspP, which is a stativizer. ModP modalizes the formation, and when it merges with a stative root, the readings that are obtained may be non-potential. By contrast, in the case of high *-able* in (16b), the pieces involved in the formation yield a reading according to which it is possible for some arbitrary individual to perform the action denoted by the eventive predicate:



Both *-able* formations contain a ModP component, relating to ideas concerning the treatment of modal auxiliaries in e.g. Kratzer (1991) and Hacquard (2010): there is one modal element, which can attach high and low. Note here that nothing excludes an intermediate structure excluding Voice but including vP, as has been proposed in the literature on nominalization (Alexiadou 2001), and adjectival passives (see Alexiadou et al. 2015 for discussion and references). This structure will be very similar to that of resultative participles referring to a resultant state but lacking an external argument. As will see in section in sections 3.1 and 4 this might be the correct analysis for the “semantic easiness” reading associated with *-able*.

In view of all this discussion, it becomes clear why *-able* formation is relevant for the psych domain. (15) and the structures in (16) illustrating the two heights of attachment for *-able* make certain predictions: assuming Landau (2010) is right that certain OE verbs do not form verbal passives, we expect high *-able* formation to be out with exactly these predicates. In addition, if high *-able* does not combine with stative predicates, we expect to find such a restriction in the psych domain as well. In other words, to the extent that *-able* adjectives can be formed out of psych verbs, we expect correlations between eventivity/stativity, transitivity, (un)availability of passivization and *-able* formation.

Let me consider these issues in detail in the next section by focusing on English and Greek. See Oltra-Massuet (2013) for some discussion of German, Bisetto (2013) for Italian, Wood & Sigurðsson (2014) for Icelandic, and Bloch-Trojnar (2017) for Polish.

3 -Able adjectives and psych verbs

In this section, I will discuss the formation of *-able* adjectives from psych verbs in English and Greek. My focus will be on class I and class II psych verbs. This comparison is necessary in order to control for the stativity and transitivity factor, since class I verbs are unambiguously stative and transitive. As we will see, in English, low *-able* formation is generally possible out of class I psych verbs. With respect to OE verbs, *-able* formation is contingent on two conditions: first, high *-able* is licit only if the verb can form a passive. Second, certain OE verbs can build *-able* adjectives receiving a reading labeled in the literature “semantic easiness” or more precisely contributing “adverbial information of easiness” (Hamada 2013: 172). This is possible only for those OE verbs that can have agentive interpretations. Low *-able* is possible only for transitive stative verbs of class I and not possible with stative OE verbs, which are unaccusative. I will argue that low *-able* affixation is prohibited in this case, because no state holder is present in the structure. Greek is similar to English with respect to the behavior of class I, but, unlike English, it disallows high *-able* attachment altogether with OE verbs. Greek restrictively allows for the semantic easiness reading, if this is overtly expressed via a prefix.

3.1 English

Formation of *-able* adjectives with Class I verbs is generally possible, see (17):²

- (17) admirable, hateable, enjoyable, likeable

Recall that this class is considered to contain stative verbs which have a transitive syntax. In Kratzer (1996), it is proposed that the subject of such verbs is the holder of the state and is also introduced in VoiceP. As briefly mentioned in the previous section, Moreira (2014) argues that the two interpretations of *-able*, potential vs. evaluative, correlate with stativity and eventivity. With stative verbs, the state is manifested, while with eventive ones the state is not manifested. The potential reading of *-able* is possible with eventive verbs, while the evaluative reading of *-able* is possible only with stative verbs. Consider the contrast in (18a–b), her examples (11–12). Moreira does not compare an eventive psych verb with a stative one, but her stative verbs all belong to class I psych verbs:

- (18) a. O vaso é quebrável, mas não está quebrado.
 ‘The vase is breakable, but it is not broken.’
 b. ?? Mimi é amável, mas não desperta amor/afeição.
 ‘Mimi is lovable, but does not inspire love/affection.’

As Moreira observes, in (18a), the adjective does not entail the state. (18b) is different in that a loving state is entailed. Importantly, however, the state holds for the state holder, which corresponds to the experiencer argument. The target of emotion, following Pesetsky (1995), is evaluated by the experiencer. As Moreira (2014: 192) states, “a possibility modal reading is available for adjectives derived from eventive verbs (such as *quebrável* ‘breakable’, *lavável* ‘washable’, *congelável* ‘freezable’). These adjectives involve objective properties and the final state may hold for the object of the verb (*quebrado* ‘broken’, *lavado* ‘washed’, *congelado* ‘frozen’). This state is not manifested. The possibility modal reading is unavailable for adjectives derived from stative verbs (*amável* ‘lovable’,

² Note that it is often claimed that *-able* prefers Latinate bases. Trips & Stein (2008), however, show that the affix was integrated into the English word formation system and could be applied to native bases from very early on.

adorável ‘adorable’, *notável* ‘notable’). These adjectives involve subjective properties and the state holds for the subject of the verb (an experiencer). This state is manifested.”

Formation of *-able* adjectives from OE verbs shows a non-uniform behavior. For instance, the verbs in (19) do not seem to be able to form *-able* adjectives:³

(19) *disgustable, *puzzleable, *charmable

Other predicates, however, such as *irritate* or *terrify* seem to be able to form *-able* adjectives, see (20). There is evidence to support the claim that in most cases low *-able* is involved. First, the form that occurs in the *-able* adjective must be truncated:

(20) irritate irritable *irritatable

Second, *-able* affixation sometimes leads to stress shifts:

(21) térrify terrifiáble

Thirdly, they do not seem to tolerate *by*-phrases, and they can be modified by *very*:

(22) b. * John is irritable by anyone.
b. John is very irritable.

Thus, on the basis of Oltra-Massuet’s criteria, at least for these OE verbs that can form *-able* adjectives, low *-able* seems to be involved.

We note a correlation between the aspectual and structural properties of OE verbs, and their ability to form *-able* adjectives. As Alexiadou & Iordăchioaia (2014) pointed out, building on e.g. Landau (2010); Grafmiller (2013) and references therein, there is a sub-group of these verbs that is stative only: e.g. *fascinate* and *depress*. This sub-group does not really give good *-able* formations. As we have just seen, low *-able* is available with class I stative verbs, but why can low *-able* not attach to stative OE verbs? The reason for this is that there is an important difference between the class I and class II stative verbs: class II stative verbs are not transitive, as shown extensively in Landau (2010), i.e. both the experiencer and the object of emotion are internal arguments. Thus, there is no state holder for which the state could hold.⁴

Nevertheless, forms such as *irritable* are possible, which, as we have seen, morpho-syntactically qualify as involving low *-able*. However, and unlike *-able* adjectives formed from class I verbs, *irritable* does not have the interpretation in (23b). Importantly, the state is not manifested and there seems to be no contradiction in (23c):

(23) John is irritable.
= a. John is easily made angry.⁵
≠ b. John deserves/inspires irritation.
c. John is irritable, but he is not irritated.

³ An anonymous reviewer points out that *uncharmable* is better. A search in *the Corpus of Contemporary English* (COCA) yielded no results for this particular form. See Hamada (2013) for some discussion on the relationship between *un-* and *-able*, which suggests that the negative prefixed adjective does not have the same meaning as its *un-*prefixed counterpart.

⁴ Landau notes that *frighten* is neutral in terms of aspectual classification. This verb does not form an *-able* adjective, as also pointed out by anonymous reviewer, suggesting that it patterns like stative OE verbs.

⁵ This is the definition offered in the Merriam Webster online Dictionary. An anonymous reviewer points out that *irritable* can mean in a bad mood or feeling lousy/miserable. This would be an idiosyncratic interpretation consistent with the properties of low *-able* affixation, discussed in section 2.

Hamada (2013) points out that in this reading *-able* contributes adverbial information and is paraphrasable with the PP *with ease*.⁶ If adverbs generally modify events, this would point to the presence of an eventive layer in this structure. As discussed in Oltra-Massuet (2013: 106), this reading is close to that of *X is easy to irritate*, i.e. a *tough-movement* construction (TMC),⁷ see also Val Álvaro (1981) for Spanish. This kind of interpretation led several researchers to propose that *-able* adjectives are derived from dispositional middles. The reason for this is the similarity between TMCs and dispositional middles. Specifically, Massam (1992: 124–126) observed that both TMCs and middles involve stative predicates, require a modal element referring to the easiness, possibility of the event referred to, and they both ascribe a property to the subject, i.e. a certain property of the subject makes it easy to wash in (24):

- (24) a. This blouse is like a dream to wash.
b. This blouse washes like a dream.

These properties are also recognized in Oltra-Massuet as characteristics of *-able*. However, Oltra-Massuet (2013: 142) notes that there are several *-able* adjectives derived from verbs that do not form dispositional middles, (25a). And in turn there are several verbs that form both *-able* adjectives and TMCs, but do not form dispositional middles, (25b):

- (25) a. eatable food
b. *The book understands easily.⁸

In what follows, I will compare these three structures in the domain of psychological verbs. In particular, I will examine to which extent a particular OE verb can form both a dispositional middle and a TMC, and whether there is a correlation between the aspectual class the OE verb belongs to and its behavior in middles, *-able* formations and TMCs, as not all aspectual verb classes yield well-formed dispositional middles. Importantly, statives do not yield well-formed dispositional middles. Note that only transitive verbs enter both TMC and dispositional middle formation, so the behavior of OE verbs in this domain can be taken as a further argument for their (in)transitivity.

There is a sharp contrast between *fascinate* and *irritate*, (26a) is bad while (26b) is fine. A similar contrast is observed for (26c) vs. (26d):

- (26) a. *John is easy to fascinate.
b. John is easy to irritate.
c. *John fascinates easily.
d. John irritates easily.

I noted above that *fascinate* is a stative verb. There is a further group of OE verbs in English, which could also be classified as states in the presence of an object of emotion argument, as discussed in Alexiadou & Iordăchioaia (2014). Evidence for this comes from the incompatibility of several of these verbs with in-adverbials, indicating that they lack a change of state reading. If we employ the *easy to V* paraphrase, we see that these verbs cannot be included in these paraphrases, (29):

⁶ Thanks to anonymous reviewer for also pointing out this similarity.

⁷ As already noted, the definition given in the Merriam Webster online dictionary for *irritable* is either easily made angry or becoming angry easily.

⁸ See Hundt (2007) for discussion of *-able* as one of the medio-passive constructions of English. Lemmens (1998) suggests that only verbs that are amenable to a middle formation can yield well-formed *-able* adjectives and vice versa.

- (27) a. Sue grieved over the court decision for/*in half an hour.
 b. Sue grieved at the court decision for/*in half an hour.
 c. The court decision grieved Sue for/*in half an hour.

- (28) a. We puzzled over Sue's remarks for/*in an hour.
 b. Sue's remarks puzzled us for/*in an hour.

(29) ??Sue is easy to puzzle/grieve.

These verbs do not yield good dispositional middles either, (30a), and *-able* affixation is out, (30b):

- (30) a. ??Sue puzzles easily/grieves easily.
 b. *grievable *puzzleable

If these verbs are stative, our remarks above concerning *fascinate* also hold.

Finally, in English there is a class of predicates that are ambiguous between a change of state and a stative reading. Alexiadou & Iordăchioaia (2014: 73–74) show that this is supported by *for*-adverbials, which may modify the result state (RS) of the change of state reading documented in (25), or the single eventuality (SEv) like with pure states.

- (31) The Chinese dinner satisfied Bill for ten minutes.
 i. RS: After having the Chinese dinner, Bill was satisfied for ten minutes.
 ii. SEv: Having the Chinese dinner kept Bill satisfied. Both the dinner and his satisfaction lasted for ten minutes simultaneously.

These verbs give well-formed middles, as well as TMCs, (32). Verbs that belong to this group should be able to combine with high *-able*, if they are change of state, and in principle their *-able* adjectives should be ambiguous between a passive reading and an *easy to V* reading:

- (32) a. John is easily satisfiable. John is easy to satisfy. John satisfies easily.
 b. John is so annoying. John is easy to annoy. John annoys easily.

In support of this, change of state OE verbs have the potential reading, i.e. the state is not manifested and as a result the statements in (33) do not involve a contradiction:

- (33) a. John is satisfiable, but he is not satisfied.
 b. John is annoying, but he is not annoyed.

We can summarize the results of the comparison as follows. *-able* formation from English OE verbs is possible, if these are not stative. Two readings are available: the easiness reading, which seems to involve morpho-syntactically low *-able*, but excluding the manifestation of the state, suggestive of an event component. This class of verbs is also the one that can participate in a TMC. This is suggestive of the transitivity of the OE verb. A passive reading is also possible for those verbs, which, according to Landau (2010), can form a verbal passive. This latter behavior obeys the generalization in (15).

As already mentioned, several researchers have pointed out the similarity between this reading of *-able* adjectives, dispositional middles, and TMCs. While states and achievements

typically do not undergo middle formation, this restriction does not hold for TMCs. Nanni (1980) observed that the complement of a *tough* predicate must be volitional or intentional with respect to its subject, e.g. note the contrast in (34):

(34) The man was hard for Mary to find attractive/*sick.

Nanni also shows that stativity is not the relevant factor, and while most ungrammatical examples involve stative predicates, there are several cases where a stative predicate is acceptable in the complement of *tough*:

(35) The book is hard to understand.

The so-called “semantic easiness” reading is available in all these three domains. But how does it arise? It has been observed by Berman (1973) that the implicit argument of the *tough* adjective is construed coreference with the implicit argument of the embedded verb. Keine & Poole (2016) propose that with *tough*-predicates this implicit argument corresponds to the judge of the proposition. In other words, a proposition is *tough* according to some judge, which is co-referential with the implicit argument of the embedded verb. This judge can be overtly expressed via an experiencer PP, which specifies the judge, (36a), or be left implicit, interpreted generically, (36b):

(36) a. The book is easy for John to read.
b. Hockey is fun to play.

Building on these observations, we could argue that the “semantic easiness” associated with *-able* plays a role similar to that of adverbs such as *easily* in middles and *tough* type adjectives in TMCs in Lekakou’s (2005) account. Lekakou (2005: 161) proposes that in English middles “event modifiers are required in order for the middle-Agent to be recoverable via identification with the experiencer argument contributed by the adverb.” ‘Semantic easiness’ performs the same job, it licenses the agent of the verb that undergoes *-able* formation. The modifier itself need not be overtly expressed, although it is often the preferred option. Most of the *-able* examples illustrated here contain such an adverb. The adverbial paraphrase of this reading when it is covert is claimed in Hamada (2013) to be *with ease*, which requires an agentive eventive verb (as noted in Klecha 2014). In the TMC, the implicit judge corresponds to the experiencer argument of the *tough*-adjective. As *irritate* can in principle have an agentive subject and a transitive construal, its implicit subject is coreferential with this judge. In the case of *fascinate* this is not possible, as no agent is available. Thus, the former can be embedded in a TMC, while the latter cannot. Similar considerations hold for *-able* formation: “semantic easiness” is available only for agentive and eventive OE verbs, and thus *irritable* is acceptable but **fascinateable* not.⁹

Does this mean that *irritable* is analyzable in terms of (16b)? The morpho-syntactic criteria suggest that this is not the case. In fact, Oltra-Massuet (2013) explicitly argues that all non-potential readings of *-able* signal low *-able*. Thus, *irritable* has the structure in (16a) and as a result can also have the idiomatic reading *in a bad mood*. Alternatively, and to the extent that its meaning is *becoming angry with ease*, there is an event causing irritation, which can be modified via a PP. This reading must involve a structure between (16a) and (16b), namely one lacking Voice but including a *v* layer introducing the event. Importantly, however, the agent is not projected in the syntax, but is conceptually available, licensed

⁹ Many thanks to two anonymous reviewers for discussion on this issue.

by the easiness interpretation, as has been argued to be the case with dispositional middles, see Schäfer (2008) for details.¹⁰

In conclusion, high *-able* does not combine with stative OE verbs. The combination of high *-able* with OE verbs is contingent on the availability of passivization. There seems to exist an intermediate *-able* available for agentive OE verbs that applies to those verbs that can also be embedded under a *tough* predicate. With this in place, let me now turn to Greek.

3.2 Greek

3.2.1 -Tos vs. -sim-

In Greek, there are two ways to form dispositional adjectives. The first one is discussed extensively in Samioti (2015) and it involves the affix *-tos*, which forms potential adjectival participles, sometimes in combination with certain prefixes, e.g. *axio* ‘worthy’. Samioti argues in detail that ability/possibility *-tos* participles involve high *-tos*, as they can license *by*-phrases and manner adverbials:

- (37) a. I istoria tu ine pistefti apo olus.
the story his is believable.FEM by all
‘His story is believable by all.’
- b. To mathima ine efkola katanoito.
the lesson is easily understandable.NEUT
‘The lesson is easily understandable.’

The second one involves the affix *-sim-*:

- (38) a. metafrasimo b. katikisimo c. fagosimo
translatable.NEUT inhabitable.NEUT eatable.NEUT

Note that (38c) does not necessarily denote that something can be eaten. In Greek, this form, especially in the plural, is used to refer to food in general. (38ac) has an interpretation similar to the one associated with high *-able*, as we will see immediately below.

Applying Oltra-Massuet’s criteria, we see that *-sim-* formations as in (38a) involve high *-able* affixation, i.e. structure (16b). First of all, *-sim-* adjectives license manner adverbs:

- (39) To vivlio ine efkola metafrasimo.
the book is easily translatable.NEUT
‘The book is easily translatable.’

They also license *by*-phrases as well as aspectual phrases:

- (40) To vivlio ine metafrasimo apo ebirus metafrastes.
the book is translatable.NEUT by experienced translators
‘The book is translatable by experienced translators.’
- (41) To vivlio ine metafrasimo mesa se deka meres.
the book is translatable.NEUT with in 10 days
‘The book is translatable in 10 days.’

¹⁰ This is related to ideas about co-analysis in TMCs, Nanni (1980). Note that this would explain why there is no state holder for which the state is manifested.

That *-tos* in examples of the type in (37) has a potential reading is argued for in Samioti (2015: 76). As she points out, similar to *-able*, the adjective does not imply that the event described has taken place.

- (42) To asteri ine orato apo ti gi, ala de to ehi di kanis akomi.
the star is visible.NEUT from the earth but NEG it has seen anyone yet
'The star is visible from the earth, but noone has seen it yet.'

We can make a similar observation for *-sim*:

- (43) To vivlio ine metafrasimo ala den to ehi metafrasi kanis akoma.
the book is translatable.NEUT but NEG it has translated anyone yet
'The book is translatable but nobody has translated it yet.'

We can thus conclude that *-sim-* patterns with high *-able*.

Zombolou (2004: 129) notes that in Greek formation of adjectives via *-sim-* is only possible with a particular verb class, which happens to be that one that forms passives as well. Specifically, Zombolou (2004: 130) observes that the following change of state verbs cannot form passives and they cannot form *-able* adjectives either:^{11,12}

- | | | | |
|------|----------------|------------|--------------|
| (44) | shizo 'tear' | *shisimo | 'tearable' |
| | keo 'burn' | *kapsisimo | 'burnable' |
| | lerono 'dirty' | *lerosimo | 'dirty-able' |

In view of this, it is necessary to offer a more systematic discussion of Greek *-able* adjectives and passivization, before turning to psych verbs.

3.2.2 The Greek Voice system

As has been discussed in detail in the literature, passive formation in Greek is restricted. The way to form a morphological passive is via non-active Voice morphology, which marks passive and reflexive verbs, as well as the anticausative member of verbs undergoing the causative alternation and dispositional middles, (45), (see Tsimpli 1989; Embick 1997; Zombolou 2004; Lekakou 2005; Alexiadou et al. 2015 among others).

- (45) a. o Janis ekapse ti supa. (causative)
the John.NOM burnt.ACT the soup.ACC
'John burnt the soup'
- b. i supa kegete (anticausative)
the soup.NOM burns.NACT
'The soup is burning.'

¹¹ Zombolou further notes that the same class of predicates does not form *-er* nominals in Greek:

(i) shizo 'tear' *shistis 'tearer'

Alexiadou & al. (2015) suggest that only verbs based on manner roots form *-er* nominals. This raises the question of whether the restriction is similar for *-sim-*.

¹² Note here that Zombolou (2004: 130) discusses a further affix used in Greek to derive adjectives of ability, namely *-ik-*: this affix derives adjectives that have the meaning X who V-es, i.e. *eksipiretikos* 'person who serves'. This affix can attach to certain Class II predicates, e.g. *endiposiakos* 'impressive', *tromahtikos* 'terrifying', *enohlitikos* 'annoying', but crucially no potential reading is involved in this case. As Zombolou points out, this affix can derive adjectives out of verbs that do not form a passive.

- c. o Janis dolofonithike apo ton Kosta. (passive)
 the John.NOM murdered.NACT by the Kostas
 ‘John was murdered by Kostas.’
- d. O Janis plithike. (reflexive)
 the John.NOM washed.NACT
 ‘John washed.’
- e. To vivlio diavezete efkola. (dispositional middle)
 the book.NOM reads.NACT easily
 ‘The book reads easily.’

Next to marked anticausative verbs as in (45b), Greek has a class of anticausatives that are unmarked, i.e. they do not combine with non-active morphology and surface with active Voice, e.g. *open*:

- (46) I porta anikse apo moni tis.
 the door opened.3SG by self her
 ‘The door opened by itself.’

Alexiadou et al. (2015) offer a systematic description of the restrictions on Greek non-active Voice morphology. As they point out, several of the verbs that form anticausatives with active morphology, do not combine with non-active morphology in order to form a passive. In other words, they lack a passive form altogether. This is arguably a lexical gap. I note here that exactly those verbs cannot combine with *-sim-* either:

- (47) a. spao *spastike
 break.1SG broke.NACT.3SG
- b. *spa-simo
 breakable

While other verbs, e.g. *open*, can combine with Non-Active morphology, *-sim-* affixation would yield a morpho-phonological clash, e.g. *anigo* ‘open’, **aniksimο* ‘openable’. In other cases, the form would be indistinguishable from that of a derived nominal, e.g. *klino* ‘close’, **klisimo* ‘closeable’ vs. *klisimo* ‘closing’.

Other change-of-state verbs strongly resist the combination with the non-active ending resulting in a passive in Greek, yielding forms that are either ungrammatical or strongly deviant, from Alexiadou & al. (2015: 121):

- (48) a. kriono ‘cool.1SG’ *krionome ‘cool.NACT.1SG’
 b. vatheno ‘deepen.1SG’ *vathenome ‘deepen.NACT.1SG’
 c. adinatizo ‘thin.1SG’ ?*adinatizome ‘thinnen.NACT.1SG’
 d. gernaο ‘age.1SG’ *gerazome ‘age NACT.1SG’

With some of these verbs, there again seems to be a morpho-phonological clash that results from the combination of a particular stem with the non-active affix, e.g. (48b). I note again that none of these verbs combine with *-sim-*. Most of these verbs are internally caused change of state verbs which lack external arguments and in general do not form *-able* adjectives in other languages either, see Oltra-Massuet (2013) for Catalan.

As Zombolou (2004) further points out, passivizability is also restricted outside the domain of change-of-state verbs. For instance, the following (mono-eventive) verbs cannot easily form a passive in Greek (or not at all, for some speakers), while they can in English: *haidevo* ‘stroke’, *derno* ‘beat’, *klotsao* ‘kick’, *frondizo* ‘take care of’. These verbs do not combine with *-sim-*. It could be argued that the problem with these verbs is the lack of a resultant state component, which is required by (15), nevertheless this restriction can be relaxed in English, see (49), reminiscent of the so-called *job-done* interpretation in the domain of adjectival participles:

(49) Wales had to be given a kickable penalty. (COCA, New York Times, 2013)

Finally, there are several verbs, which, while they can combine with non-active morphology, they cannot receive a passive interpretation e.g. *burn*, *cut* and *kill*, see Alexiadou et al. (2015) for details. As shown in (50), agentive *apo*-phrases are not tolerated with such verbs, i.e. they only form anticausatives.

(50) I supa kaike me ti dinati fotia/ *apo to Jani.
the soup.NOM burnt.NACT with the strong fire/ from the John
‘The soup burned from the strong fire.’

Crucially, none of these verbs combines with *-sim-*. The above data thus provide support for the observation that Greek *-sim-* formation is only allowed if a non-active form interpreted as passive is also available.

3.2.3 Greek psych verbs and *-able*

Turning now to psych verbs and dispositional adjectives derived from those, note that Class I predicates can combine with *-tos* but not with *-sim-*, (51–52), all forms bear masculine gender.¹³

(51) agapi-tos zilef-tos misi-tos thavmas-tos
lov-able jealous-able hate-able admire-able

(52) axiolatreftos axiozileftos axiosevastos
worthy-admired worthy-jealous worthy-respect
‘worthy of admiration’ ‘worthy of jealousy’ ‘worthy of respect’

As Samioti (2015) details, the forms in (51) have an interpretation comparable to their English counterparts, e.g. *zileftos* means ‘worthy of jealousy’, an evaluative reading. In (52), I hold that the prefix *axio* modifying the adjectives lexicalizes this *worthy* aspect of interpretation involved in the evaluative reading.¹⁴ Thus, Greek class I predicates do not behave differently from their English counterparts.

¹³ There is a third archaic affix, *-teos*, which is no longer used productively in Greek. This, as discussed in Samioti (2015), and Haspelmath (1994), is interpreted as passive. Psych verbs do not seem able to combine with this affix either.

¹⁴ This is similar to the Hungarian facts discussed in Oltra-Massuet (2013: 111). The presence of this prefix enables, according to Samioti (2015), the licensing of a state holder, introduced by the preposition *apo* ‘from’:

(i) I Maria ine agapiti se olus
the Mary.NOM is lovable.FEM to all
‘Maria is lovable to all.’

OE verbs, on the other hand, cannot combine with *-sim-*:

- (53) a. **enohlisimos* b. **thimosimos* c. **sinhisimos*
 annoyable.MASC angerable.MASC confuse-able.MASC

With very few exceptions, they do not combine with *-tos* either. The form *disarestos* means unpleasant or causing grief. Very often the *-tos* affix co-occurs with a prefix/adverb meaning ‘easily’ (as Despina Oikonomou pointed out to me). The examples in (54b–d) suggest that Greek transparently marks the semantic easiness reading, which, as we have seen is available in English in e.g. *irritable*. As Samioti (2015) shows, these forms do not entail that the event has taken place, and they cannot refer to a specific event.

- (54) a. *disarestos* b. *everethistos* c. *ev-prosvlitos* d. *efkolo-siginitos*
 unpleasant easily-irritable easily-assailable easily-moveable

Samioti further notes that the adjectives in (54) to involve an anticausative structure and not a passive one: *by*-phrases are disallowed, but the *by itself* phrase is allowed; this test diagnoses the absence of an external argument, as discussed at length in Alexiadou et al. (2015):

- (55) O Janis ine everethistos apo monos tu/ *apo olus.
 the John.NOM is easily-irritable.MASC by himself/ *by all

While Greek certainly has stative OE verbs, e.g. *interest*, which do not combine with *-sim-*, most Greek class II verbs are eventive causative and have a resultant state, see (56–56’) from Alexiadou & Iordăchioaia (2014: 67). As these authors argued in detail, in Greek several psych verbs undergo the causative alternation, i.e. they are change of state verbs. Evidence for this is provided by the availability of a restitutive reading for the Greek counterpart of again, *ksana*, which detects the presence of a resultant state in the structure:

- (56) Ta nea enohlisan to Jani ksana.
 the news.NOM annoyed.3PL the John.ACC again
 ‘The news annoyed John again.’

- (56’) a. Repetitive scenario
 O Janis ine poli iremos anthropos, ala ta nea panda kapos katafernun ke ton enohlun. Htes, os sinithos itan iremos, ala ...
 ‘John is a very calm peron, but the news somehow always manage to annoy him. Yesterday, as usual, he was calm, but ...

-
- (ii) I Maria ine axiagapiti se/apo olus
 the Mary.NOM is worthy-lovable.FEM to/by all
 ‘Maria is lovable by all.’

Such adjectives often receive idiomatic interpretations, e.g. lovely, charming. With respect to the other tests discussed in Oltra-Massuet (2013), e.g. licensing of aspectual phrases and instrumental phrases, these adjectives behave like evaluative, i.e. low *-able* forms. Note also that such forms allow degree modification by *very*, which is not allowed by high *-able* (Oltra-Massuet 2013: 148):

- (iii) a. poli axiagapiti b. *poli orati
 very worthy-lovable.FEM very visible.FEM
 ‘very lovable’

b. Restitutive scenario

O Janis ine panda thimomenos. Htes, itan, kat'ekseresi iremos, ja ligo, ala kapia stigmi ...

'John is always angry/annoyed. Yesterday, he was exceptionally calm for a while, but at some point ...

However, even these verbs cannot combine with *-sim-*. In the previous sub-sections, I have established that *-sim-* combines only with verbs that can have a passive variant. I note here that most Greek OE verbs cannot combine with non-active morphology, see Landau (2010) for similar observations for Hebrew:

(57) a. o Janis thimose ti Maria.
the John.NOM angered.3SG the Mary.ACC
'John angered Mary.'

b. *i Maria thimothike (apo to Jani).
the Mary.NOM angered.NACT by John

(58) *ponethike 'feel pain.NACT.3SG'
*tromahtike 'terrify.NACT.3SG'
*aidiastike 'disgust.NACT.3SG'

Other OE verbs can have subject experiencer variants with Non-Active morphology, but either prefer Causer PPs suggesting that a passive (agentive) interpretation is not available (59a) or are purely stative (59b).¹⁵ See also Oikonomou (2011), who points out that even agentive OE predicates do not passivize in Greek:

(59) a. disarestithike me to Tsipra.
was.displeased.NACT.3SG with Tsipras.ACC
'He was displeased with Tsipras.'

b. endiaferthike ja ta fita.
was.interested.NACT.3SG in plants
'He was interested in plants.'

Importantly, while verbs as in (59a) are change of state predicates, they do not include an agent/originator in their syntax, just a causer argument. Such arguments are modifiers of the event and are not introduced in a manner similar to external arguments. Specifically, Alexiadou & al. (2015) follow Solstad (2009) and view causers as introducing an event that can be identified with an event already introduced by the verb. From that perspective, causers are unlike agentive external arguments, which the authors take to be introduced in VoiceP. Assuming that the presence of Voice signals transitivity and thus the availability of passivization, it follows that verbs involving a causer argument do not project this argument in VoiceP, and thus cannot undergo passive formation. This was

¹⁵ See also the discussion in Landau (2010) on the third type of Hebrew passives associated with psych verbs. Like their Greek counterparts, they do not tolerate agentive *by* phrases. Landau assumes that the preposition *me* introduces an internal argument. In principle, it could be a causer argument, see Alexiadou & Doron (2012), and in Doron (2017) for psych verbs in particular:

(i) Gil hitrageš me-/ *al-yedey ha-seret.
Gil was-moved of/ *by the-movie
'Gil was moved by the movie'

argued for in Alexiadou (2014) for transitive internally caused change of state verbs, e.g. *age*, which only admit causer subjects, see section 4 for details.

There is evidence supporting the claim that causative OE verbs in Greek are not really transitive and thus cannot undergo passivization. Anagnostopoulou (1999) shows that relativization involving experiencers is identical to indirect object relativization regardless of whether the experiencer has dative or accusative case. The experiencer cannot undergo relativization unless a clitic is present inside the relative clause. While Anagnostopoulou did not take into consideration the stative vs. eventive ambiguity of these predicates, it is important to note that the clitic is required, regardless of whether the psych-construction is of the “*piacere-class*” (Class III), the stative “*preoccupare-class*” (stative Class II) or the eventive “*preoccupare-class*” (eventive Class II) (Alexiadou & Anagnostopoulou 2017):

(60) *Class III*

1. O anthropos pu *(tu) aresi i Maria ine ilithios.
 the man that (cl.DAT) like.3SG the-Mary.NOM is stupid
 ‘The man that Mary appeals to is stupid.’

Stative Class II

2. O anthropos pu *(ton) endhiaferi I Maria ine ilithios.
 the man that (cl.ACC) interest.3SG the-Mary.NOM is stupid
 ‘The man that Mary interests is stupid.’

Eventive Class II

3. O anthropos pu *(ton) provlimatisan ta nea bike mesa.
 the man that (cl.ACC) puzzled.3PL the-news.NOM came in
 ‘The man that the news puzzled came in.’

The fact that a resumptive pronoun is obligatory is evidence for an approach to accusative experiencers, according to which their licensing differs from that of structural accusative objects. Specifically, Landau (2010) discusses the Greek facts and comparable facts from Hebrew as well as many other languages. In his system, such data support an analysis of experiencers as locatives, introduced by a zero preposition, regardless of whether they surface with dative or accusative morphology. Importantly, the data discussed by Anagnostopoulou suggest that change of state psych verbs of class II in Greek are not really transitive predicates. Because of that, they cannot passivize and do not combine with high *-able*.¹⁶

Further evidence for the absence of an agentive external argument with psych verbs is provided by the interaction with modals. Giannakidou & Staraki (2013) show that there is a lexical split in Greek between the impersonal *bori* – an epistemic possibility modal form, something like *might* in English – and personal *boro* which is never epistemic, but abilitative or deontic.

- (61) a. Ta pedia bori na ine sto spiti.
 the children might.3SG SUBJ be.3PL to-the home
 Epistemic: ‘As far as I know, it is possible that children are at home.’
 b. Ta pedia borun na pane sto spiti mona tus.
 the children can.3PL SUBJ go.3PL to-the home alone them
 Ability: ‘Children are able to go home on their own.’
 Deontic: ‘The children are allowed to go home by themselves.’

¹⁶ Landau (2010) notes that most Hebrew psych verbs cannot form a passive while preserving the psych reading.

OE verbs that can have a Non-Active form related to an anticausative reading and lack a *-sim-* adjective cannot appear in the latter context, i.e. they can only combine with epistemic modality, (62a). This is in sharp contrast with the predicates that can form *-sim-* adjectives and passives, in (62b):

- (62) a. Ta pedia bori/*borun na enohlithun.
the children might/can.3PL SUBJ annoyed.3SPL
'The children might get annoyed.'
- b. Ta vivlia borun na metafrastun.
the books can.3PL SUBJ translated.3PL
'The books can be translated.'

The possibility of embedding a particular verb under an epistemic or ability modal correlates with the availability of an external argument. As Hackl (1998) notes, verbal passives, which arguably include an implicit external argument, are fine under an ability modal, while stative or adjectival passives, which lack such an argument are not. Thus, one gets only the epistemic reading for *can* with an adjectival passive, and semi-modals are ungrammatical with an adjectival passive. This is particularly clear in German that distinguishes between the two passives morphologically, see (63–64), Hackl's (52–53):¹⁷

- (63) a. John can be arrested.
b. ?John is able to be arrested.
- (64) a. Der Hans kann eingesperrt werden.
'Hans is able to be arrested.'
- b. Der Hans kann eingesperrt sein. *epistemic only*
'Hans can be arrested.'

In Greek, the difference between epistemic and ability modality is signaled by the different morphology on the modal, agreement vs. lack of agreement. The Greek data in (62) are thus consistent with the proposal that causative and eventive OE predicates lack an (implicit) external argument in VoiceP.

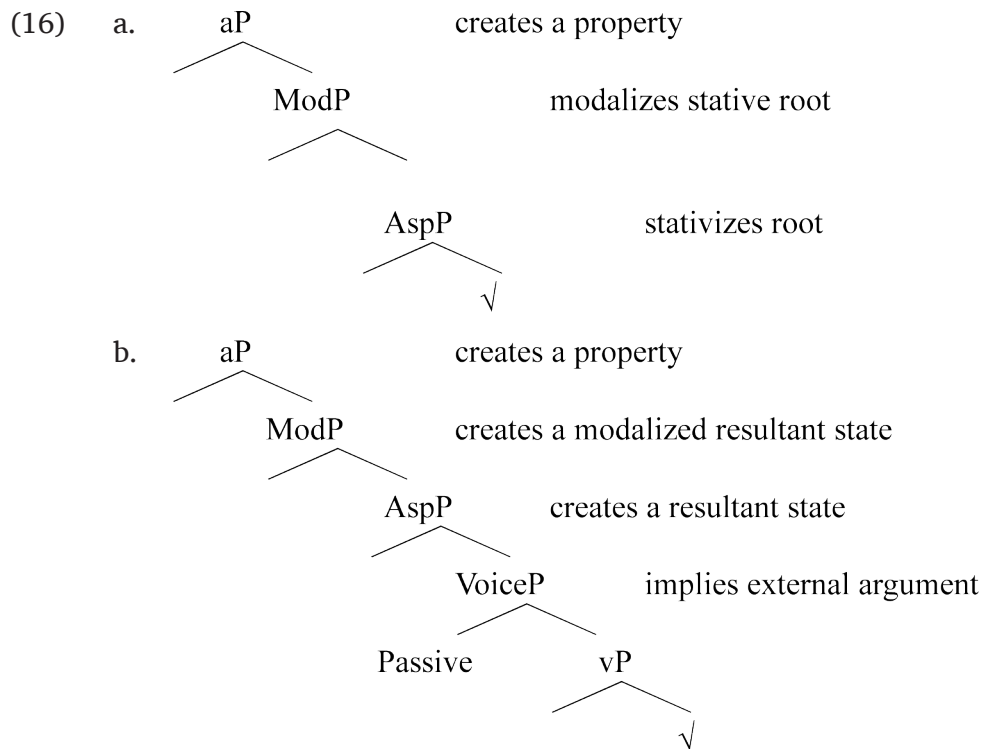
Turning now to the *-able* "semantic easiness" reading, I note that this is not possible in Greek with *-sim-*. The counterpart of English *irritable* under this reading is the form we saw in (54b), *everethistos*, which does not contain a passive structure. Greek lacks this particular reading with *-sim-*, as *-sim-* requires a passive input structure, i.e. it patterns with high *-able*. Note also that examples such as 'John is easy to please' are simply ungrammatical in Greek. In this language, a clitic is required in the embedded clause, see Tsimpli (1999) for discussion.¹⁸ If the "semantic easiness" reading in English is available for those predicates that arguably have an agentive argument, which is not projected in the syntax, we have just seen several pieces of evidence that Greek OE verbs lack such an argument altogether.

4 Towards an analysis

In section 2.2, we have seen the structures proposed for high and low *-able* in some greater detail, taken from Oltra-Massuet (2013). These are repeated below:

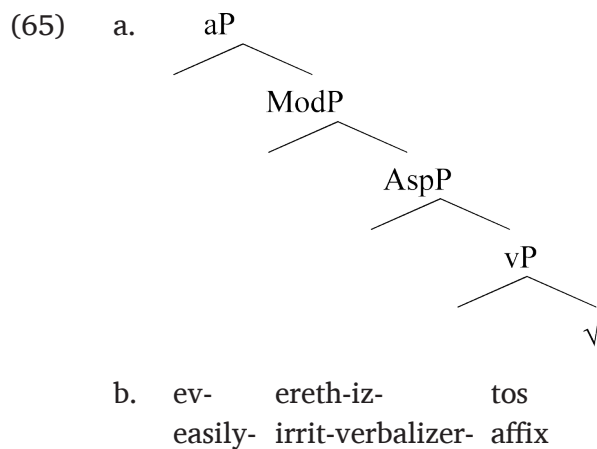
¹⁷ Thanks to G. Iordăchioaia and D. Oikonomou for discussion on this point.

¹⁸ Thanks to an anonymous reviewer for discussion on this issue.

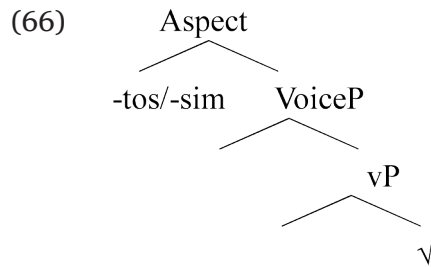


As discussed in section 3, nothing in this system excludes a structure containing a vP but excluding VoiceP, as has been argued for the domain of participle formation and nominalization.

In both English and Greek, subject experiencer verbs may combine with low *-able*, i.e. structure (16a). The psych root is embedded under modality. Thus, for those only the evaluative reading of *-able* is possible. In Greek, as argued for in Samiotti, certain OE verbs make use of an intermediate anticausative structure, lacking Voice and containing vP, (65a). Only low *-able* appears, i.e. Greek *-tos*, see the examples (54b–d). The morphology of these adjectives in Greek supports the presence of a v layer, (65b). Specifically, forms such as *everethistos* ‘easily irritable’ contain *-iz-*, which is a verbalizer affix, realizing v, as argued for in Alexiadou (2009). In English, the semantic easiness reading can also be associated with this anticausative structure.



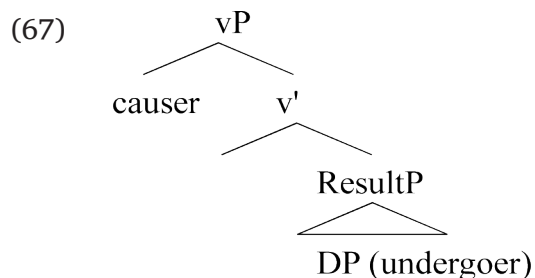
In English, high *-able* adjectives derived from OE verbs involve the structure in (16b). A version of (16b) has been proposed by Samiotti (2015) for potential *-tos*, see (66), and we can adopt it here for *-sim-*, with a number of refinements to be specified momentarily relating to VoiceP.



Samiotis's analysis builds on Lekakou (2005), who argued in detail that in Greek the dispositional Middle is actually built on the basis of a passive structure. More recent work on the Greek Voice system, following Alexiadou & Doron (2012), Spathas et al. (2015), and Alexiadou et al. (2015), assumes that dispositional middles, and passives in Greek all involve a particular Voice head, namely Middle Voice. This head is realized with non-active morphology, which signals the absence of a specifier of Voice (Embick 1997). In other words, Greek Non-Active Voice is underspecified (see also Tsimpili 1989; 2006). On this view, the Greek Voice system lacks a designated passive head, and all constructions lacking a (syntactically projected) external argument (passives, dispositional middles, a subset of anticausatives, and reflexives) are syncretic, surfacing with non-active morphology. English differs from Greek in that it has a designated passive head that takes VoiceP as its complement. English type passives thus are unambiguous. This particular view explains the restrictions observed for the Greek passive: the availability of the passive depends on properties of the roots or roots + v combinations. This is expected if the head implicated in Greek passives is close enough to the Root + v combination so that it can access it.

Recall that we established in the previous section that in Greek there is a correlation between the formation of a verbal passive and that of a *-sim* adjective. The verbs that do not combine with non-active Voice also do not combine with *-sim*. Basically, if the input to this affix is a well-formed Middle Voice structure that can be interpreted as a passive, then we expect to find the same restrictions. It has been suggested that the affix *-sim-* is related to non-active morphology, as speculated in Oltra-Massuet (2013), since it contains the infix *-m-* that authors identify as a signal of non-active morphology (Alexiadou 2001).

An important conclusion of the previous section was also that class II OE verbs are not transitive in Greek (i.e. do not include VoiceP), though they might be causative. If they are not transitive, they involve a structure as in (67) below, which is the structure proposed in Alexiadou (2014) for transitive internally caused change of state verbs, e.g. *skuriazō* 'rot' which also take causer arguments only and do not form passives:



On the basis of (67), we expect that these psych verbs cannot form agentive passives, as also observed by Oikonomou (2011), in the light of Landau's (2010) and Anagnostopoulou's (1999) discussion. Thus, they are unable to enter any formation that would involve the presence of a Middle Voice head of the type described above, i.e. a head that is

involved in the formation of agentive passives. Intransitive variants of these verbs are thus only anticausative and never passive. As a result, *-able* formation proceeds on the basis of an input structure as in (65a).

5 Conclusion

In this paper, building on Oltra-Massuet, I argued that the restrictions on *-able* formation in the domain of psych verbs relate to three factors, namely: i) different domains for affix attachment, ii) properties of event structure, and iii) transitivity and the availability of passivization for psych verbs. High *-able* formation is only possible out of transitive change of state verbs that give a well-formed passive.

I used *-able* formation as a further tool to explore the structure of psych verbs. I provided evidence for the view that OE psych verbs cannot form *-able* adjectives for the same reason that they cannot form a passive. This supports the classification of these verbs as unaccusative in their eventive causative reading as well as the observation that Greek belongs to the group of languages where psych-verbs of Class II do not passivize.

I have also discussed a second reading available with *-able* adjectives, that of semantic easiness. This particular reading suggests a correlation between *-able* formation and TMCs and seems to make use of an anticausative input structure. This particular issue awaits further investigation.

With respect to the issue of transitivity, it is clear that we need to distinguish between external arguments introduced in VoiceP and causers introduced in vP. Only the former structure feeds passivization.

Abbreviations

ACC = accusative, ACT = active, DAT = dative, MSC = masculine, NEG = negation, NEUT = neuter, NOM = nominative, NACT = non-active, PL = plural, SG = singular, SUBJ = subjunctive, TMC = tough-movement construction

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Competing Interests

The author has no competing interests to declare.

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