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# *English psych verbs in light of the Exo-Skeletal Research Program*

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Abstract

Psych verbs challenge the mapping rules (UTAH). There are two major lines of accommodating psych verbs in modern syntactic theory: syntactically motivated approaches and semantically motivated accounts of various sorts. These approaches view psych verbs as a separate semantic class with peculiar syntactic properties. This paper aims to show that psych verbs (i.e., verbs that describe mental states and emotions) do not represent idiosyncratic grammatical patterns and thus do not differ from other verbs. Rather, like other verbs they fall into two functional structures: receptive and causative. Subject Experiencer verbs such as *love, hate* fall into the receptive structure, whereas Object Experiencer verbs such as *frighten* and *please* fall into the causative one. The distinction between receptive and causative structures is not determined by lexical properties or nominal arguments but by derivational markers, including *-en, -fy, -ate* and *-ize*. To provide evidence for this claim, a synchronic study of the morphology of English psych verbs is conducted here, supported by the theoretical assumptions of Borer's Exo-Skeletal Research Program (2003, 2005ab, 2013). Moreover, previous research on the classification of Old English psych verbs in regard to their grammatical relations and categories is also taken into account (Allen, 1995; Brody, 1989; Elmer, 1981; Fisher & van der Leek, 1983; Guidi 2011).

*Keywords:* psych verbs; syntax-semantics interface; neo-constructionism

## 1. Introduction

In this paper I intend to demonstrate that psych verbs may not constitute a problem in linguistic theory when implementing some assumptions of the Exo-Skeletal Research Program (see Borer, 2003, 2005a, 2005b, 2013). Since this research rejects all hierarchies of thematic roles, including the UTAH, it does not attribute any importance to semantic classes of verbs, nor does it ascribe any syntactic properties to them. As such, if not semantics, what then determines the distinct realisation of Experiencer argument? My answer is that it is the English morphology that categorises all verbs and assigns the right positions to arguments. Further, arguments are distributed into two functional structures: receptive and causative through C-functors (*-en, -fy, -ate, -ize*) or S-functors (prepositions, particles). The existence of three functional structures is motivated by diachronic research on impersonal constructions (Allen, 1995; Brody, 1989; Elmer, 1981; Fisher & van der Leek, 1983; Guidi, 2011). Some studies also showed that C- and S-functors were responsible for the categorisation of verbs and their subsequent assignment into right structures (Gelderen, 2012; Rivero & Diaconescu, 2007; Ryan, 2012). As a result, the neutral functional structure disappeared from the language. In my view, this may have been due to the loss of non-structural cases and then the rigidification of the SVO order. The shortcomings to my hypothesis are suffix-less psych verbs like *please*. I therefore turn to the hypothesis of atomic concepts (Borer, 2003) and my own research on the etymology of some psych verbs. In doing so, I conclude that syntax has to interface with semantics in the case of Ø-categorizing morphology.

Recently a great deal of work has been done in regard to the study of the event structure of psych verbs. It has been shown that argument structure may depend on different kinds of event types (see Borer, 2005b; Fábregas & Marín, 2015; Grimshaw, 1990; Rozwadowska, 2005). This paper departs from this trend and revisits earlier analyses and conclusions. The two suggested functional structures for modern psych verbs mirror those postulated in other diachronic studies that are based on grammatical categories and relations such as case and subject-object, respectively. Thereby, the focus is on verbal morphology and its role in determining argument structure.

This paper is divided into five major sections. In section 2., I explain what challenges Modern English psych verbs provide to linguistic theory and present possible solutions found in literature. In section 3., I outline the most essential assumptions of the Exo-Skeletal Research Program that may contribute to the UTAH problem. In Section 4., I review the literature on Old English functional structures with a focus on psychological predicates and also briefly discuss possible reasons for the demise of a neutral functional structure, pointing to the morphological changes in

Old English. I also provide my own analysis concerning the influence of borrowings on argument structure. Section 5. deals with the theory-internal analysis of the causative and receptive grammatical formatives. Finally, in Section 6., I move on to S-functors as well as the instances that may provide a challenge to my account based on the Exo-Skeletal Model such as suffix-less psych verbs.

## 2. Modern English psych verbs

English psych verbs, which describe miscellaneous feelings, moods and emotional states, are recognized in the literature as considerably different from other verbs in their grammatical properties. Crucially, these verbs manifest distinct realizations of the Experiencer argument: Subject and Object Experiencer, where the latter is the most troublesome. Firstly, OE verbs (e.g., *strike* and *impress*) cannot co-occur with reflexives, as illustrated by Jackendoff (1972) in (1-2):

(1) a. I regard myself as pompous.
b. ?I strike myself as pompous.

(2) a. I like myself.
b. ?I please myself.

Secondly, OE verbs cannot form synthetic compounds, as shown in (3):

(3) a. a storm-fearing boy
b. * a storm-frightening boy

In accordance with the endocentric UTAH-driven approaches (Baker, 1988; Perlmutter & Postal, 1984), the thematic roles in an event relate systematically to the designated positions in a syntactic structure. To illustrate, agents are usually mapped to subjects, yet patients to objects. This shows a kind of uniformity in theta roles and grammatical categories. However, as shown in (4-5) in the case of psych verbs, this uniform mapping does not hold. The Experiencer role can be mapped not only to the subject but also to the object position, as illustrated in (4a, 5a) and (4b, 5b), respectively.

(4) a. John fears ghosts.
b. Ghosts frighten John.

(5) a. Mary likes films.
b. Films please Mary.

Thus, UTAH is challenged because there is no one-to-one correspondence between thematic roles and syntactic positions with psych verbs. Moreover, the

hierarchy among thematic roles is violated. Similar properties and problems are distinguished in other languages such as Polish (Rozwadowska, 1989, 2005), Italian (Belletti & Rizzi, 1988), Spanish (Marín & McNally, 2011), French (Ruwet, 1972, 1993), Norwegian (Ãfarli & Lutnaes, 2002), Dutch (Bennis, 2000), Greek (Anagnostopoulou, 1990, 2008), and Icelandic (Barðdal, 1999, 2001).

Various solutions accounting for this linking problem have been developed in the literature. They have either syntactic or semantic motivation. Postal's psych movement account (1971), Belletti and Rizzi's unaccusative analysis of Object Experiencer verbs (1988), Greenall's minimalist approach[1] (2004), and Landau's localist account (2009) belong to syntactically motivated explanations, whereas Jackendoff's thematic hierarchy (1972); Rozwadowska's (1989) and Reinhart's (2002) thematic feature approaches, Grimshaw's argument structure analysis (1990), and Dowty's thematic roles (1991) represent semantically motivated accounts. They can also be divided into those which do not ascribe any specific or exceptional features to psychological predicates (Greenall, 2004; Pesetsky, 1995) and those which present them as exceptions to the syntax-semantics interplay (the rest of the above mentioned approaches). I will seek to put forth here the presentation of another explanation as to the mismatch of the semantics and syntax of psych verbs, adopting the most computational/syntactic approach.

## 3. The Exo-Skeletal Research Program

Different realisations of the Experiencer argument primarily concern one of the most important and controversial issues in linguistic theories – the division of labour between syntax and lexicon – what functions they fulfil and what kind of information they project. This gives rise to the fundamental questions: Is the human mind capable of storing an infinite number of words, saturated with idiosyncratic information on their single category, argument structure and word formation? Or, alternatively, does our computational system give such information to each word by formal manipulations?

As established in the Chomskyan framework, the structure of grammar is composed of three components, i.e. syntactic, phonological and semantic.[2] The central role is attributed to the syntactic component, possessing a *base* and a

[1] Read more in Greenall's *A minimalist analysis of English and Norwegian psych-verbs.* He contrasts older approaches with modern ones proposed by Bouchard (1995) and Chomsky and Lasnik (1993). Additionally, he works on Norwegian psych verbs, which have not been researched extensively so far.

[2] In earlier incarnations of generative grammar the semantic component was ignored, later added to the theory (Standard Theory), which caused the emergence of theories postulating the substantive lexicon.

*transformational subcomponent.* The base, a set of rules that creates rudimentary units of sentences (kernel sentences), consists of a *categorical subcomponent* and a *lexicon* (Chomsky, 1965). Later, often in a constructive way, various scholars within the generative tradition have defined the role of the lexicon in different ways. Some see it as a fully-fledged module, rich in lexical information, independent from syntactic structure – the so-called *dynamic lexicon* (Levin & Rappaport-Hovav, 1995), whereas others downplay its role to the minimum, stripping it of any internal computations – the so called *Static Lexicon* (Baker, 1988; Ramchand, 2008).[3] Among these approaches, the Exo-Skeletal Model, developed by Borer (2005a, 2005b, 2013), appears to take the strongest computational stance.

The exoskeletal model can be characterized by the following tenets: (1) linguistic ability is fundamentally computational; atomic concepts constitute extra-linguistic knowledge and are only arbitrary sound-meaning pairs, and (2) there are two types of the lexicon – the *substantive lexicon* and the *functional lexicon*. The substantive lexicon consists of atomic concepts, also named lexical items (LI), which are constantly growing as new concepts and are very malleable. LI are frequently both nouns and verbs, do not have a syntactic category and any information regarding argument structure, syntactic projection environment and morphological information. The functional lexicon consists of dependent grammatical formatives (henceforth named S-functors (Borer, 2013) such as [+pl], [+pst]) and independent grammatical formatives or categorizers (henceforth named C-functors (Borer, 2013) like nouners (e.g., *the, this, every, -ation, -er*), verbers (e.g., *will, may, -ize, -ify, -ed*) and adjectivizers (e.g., *very, too, so, -al, -ive*), as well as functional structures, which are innate and universal.

Narrowing all this down to verbs, it follows that they themselves are deprived of any semantic meaning and hence cannot fall into groups with any syntactic properties. In other words, there are no exceptional verbs such as psych verbs or motion verbs. All verbs become verbal predicates only when morphological rules are appended to them and then verbs are located in a suitable functional structure. Taking into account such an approach helps us to explain some peculiar realizations of psychological predicates.

(6ab) shows that *fear* can recategorize into a noun. This is in accordance with the assumptions made by Borer (2003) that words without any functional morphemes attached to them (corresponding to syntactic functions) can appear in N→V or V→N alternations. The same holds for the following lexical items:

[3] There is some inconsistency in naming these approaches. In some sources one can find the label *generative constructivist*. Borer herself uses the label *neo-constructionist* views. Note that a generative constructional approach should not be mixed up with Construction Grammar as understood by Goldberg (1995).

*a/to form*, *a/to rerun*, *a/to kiss. Frighten* definitely cannot recategorize because it is morpho-syntactically derived, possessing *–en* suffix. As a result, *frighten* can only function as a verb. This suggests that psych verbs are dependent on the same morphological rules as other verbs.

(6) a. have a fear
b. *have a frighten

The exoskeletal model may also solve the UTAH problem. UTAH operates on intricate thematic roles such as agent, theme, goal, source, experiencer etc., which are mapped to the structural positions at the level of the deep structure via the semantics of predicates or the prepositions they take. The semantics of the lexical head is responsible for the projection of predicate-argument structure. For example, *fear* by denoting *x feels fear for y* and *frighten* by denoting *y is a source of fear for x* project two structures, shown in (7):

(7) a. fear [Exp=Subj_Th=Obj]
b. frighten [Th=Subj_Exp=Obj]

The conundrum here is that the Experiencer role is projected in two different positions. Within the exo-skeletal views, the assumptions of UTAH are wrong since semantically synonymous expressions do not have to correspond to the same syntactic representations. In essence, theta-roles are not assigned by verbs themselves because verbs do not take part in encoding argument structure. It is syntactic constraints, understood as derivation and inflection, and the position of nominal phrases that determine functional structure and its interpretation. Hence, such problems concerning the incompatibility of thematic and structural relationships do not emerge.

Nonetheless, the questions remain as to why the person who experiences a state occupies the subject position in some verbs but the object position in the others. Furthermore, what determines such an arrangement of arguments? The hypothetical answers to these questions are as follows: (1) there are two functional structures that all English verbs fall into, namely causative and receptive; and (2) derivational suffixes are held responsible for adjusting verbs to an appropriate functional structure. Then, which suffixes encode causation and which encode receptiveness? This and an explanation of the existence of the suggested functional structures are the matters to which I turn in the remainder of this paper.

## 4. Old English psych verbs in functional structures

To date, the development of English psych verbs has been investigated alongside impersonal constructions. Impersonal constructions are an umbrella term for constructions containing many subclasses of verbs, including weather verbs and quasi-impersonal verbs. Impersonal verbs are deprived of the Agent-Patient configurations; therefore their subjects seem neither grammatical nor logical, alias real. They fell into abeyance around 13th century. However, they are preserved in some fixed phrases such as *methinks* ("it seems to me") or in idiomatic expressions such as *if you please* ("if you like"). The question addressed here is whether the demise of impersonal constructions affected functional structure in Old English and whether the changes in the verbal system were induced by internal or external factors, such as morphology and borrowings, respectively.

The disappearance of such syntactic qualities is equated with the impersonal-to-personal shift as in *like*. (8) shows the previous syntactic environment of that verb (Brody, 1989). The cognate of *like* used to require the similar structure as the modern *please*. This change dates back to 1200.

(8) þam cynge licodon peran.
The king (DAT) pleased (PL) pears (NOM PL)
The king liked pears.

In their approach to this shift, Fischer and van der Leek (1983) suggest that it is functional items that establish causation and receptiveness. Within psych verbs they recognize three interpretations: (1) neutral, in which the Experiencer is rendered by the dative case and Cause by the genitive, as presented in (9a); there is no grammatical subject because the nominative case is missing; (2) causative, in which the CAUSE is rendered by the nominative, as in (9b), and (3) receptive, in which the Experiencer is rendered by the nominative case, as in (9c):

(9) a. Him ofhreow ðæs mannes
He-dat pitied the man-gen.sg
He pitied the man.

b. Se mæssepreost ðæs monnes ofhreow the priest-nom. Sg. the man-gen. sg. pitied-3rd sg.
The priest pitied the man.

c. Ða ofhreow ðam munece ðæs hleofian mægenleast then pitied-3rd sg. the monk-dat. sg. the leper's feebleness-nom. sg.
then the monk pitied the leper's feebleness

In comparison to other Germanic languages, the number of impersonal verbs was significantly smaller. However, their frequency of use in everyday life

underscored their importance (Elmer, 1981). Both Cause in a causative interpretation, as in (9b) and Experiencer in a receptive one, as in (9c) were shifted to the subject position. These constructions in (9) are incomplete. Brody (1989) gives an example where *lician* is said to have appeared in absolutive construction with a nominative Experiencer and no accusative object: *Ic licige.* The absolutive construction [ExpNOM___] is de facto an instance of intransitivity. For instance, modern *ail* can function as an unergative verb: *She had been ailing for years before she died.* As a consequence, the absolutive option was added to the neutral structure (10b).

| | | | |
|---|---|---|---|
| (10) | a. neutral | – | [ExpDAT ____ CauseGEN] or [ExpNOM__] |
| | b. receptive | – | [ExpNOM _____ CauseGEN] |
| | c. causative | – | [ExpDAT _____ CauseNOM] |

Nonetheless, there are other syntactic classifications of psych verbs that need to be compared with the one presented above. Both Elmer (1981) and Allen (1995) divided Experiencer predicates into three classes with regard to the cases each argument takes. They distinguish three types: Type I, Type II and Type N. Type I requires Cause in the nominative and Experiencer in the genitive case, which perfectly fits the causative functional structure (10c). Type II needs Cause in the genitive and Experiencer in the nominative case, the same as the receptive structure. The last Type N is expressed by Cause in the genitive and Experiencer in either accusative or dative. In all likelihood, many examples taken from the corpus they studied were ambiguous as to these two cases, since the accusative often coalesced with the dative. However, such an observation can complement the neutral functional structure, as in (10).

There is another more exhaustive classification proposed by Guidi (2011). It differs from Allen's and Elmer's with the addition of other possible realizations of NPs. Nominative Experiencer needed Cause, which is not only expressed by the genitive, but also expressed by the dative and accusative. Cause could also be realised by a preposition phrase or clause. Since Experiencer is in the nominative case, it must be assigned to Type II, but their Causes must be extended in Allen's and Elmer's classifications. The same holds for Type N in which Dative Experiencer needed not only Genitive Cause, but also the nominative and a clause. However, in Type I both classifications are not complete, because they miss another possible realisation of Cause. In Allen's and Elmer's division, Dative Experiencer is realized merely by the Genitive Cause, whereas in Guidi's division, Dative Experiencer needs Accusative Cause. This means that two classifications ought to be extended. The cases in bold in (11) constitute an extension to the functional structures, suggested by Fischer and van der Leek (1983).

(11) a. neutral – [ExpDAT_____CauseACC] or [ExpNOM_____]
b. receptive – [ExpNOM_____CauseGEN/ACC/DAT/Clause/PP]
c. causative – [ExpDAT/ACC_____CauseNOM/GEN/Clause]

Fisher and van der Leek's (1983) distinction and its refinements and elaboration presented above have constituted an inspiration for the distinction of modern English verbs postulated in this article. The neutral construction was lost. Modern English does not express Experiencer with the dative case. As such, what may have made this structure disappear from the language?

One of the possible answers is Gelderen's hypothesis (2012) that attributes this reduction of functional structures to the loss of genitive objects (around 1200), the loss of *ge-*[4] (around 1200) and the loss of causative *-j-* as in *faeran* < **faerjan frighten.* This may have induced the emergence of a large number of transitive and labile verbs[5] . In Ryan's (2012) view, the different position of Experiencer and Theme are presumably caused by the acquisition of Theme which emerges first (e.g., *drop, fall*). This may have led to confusing transitive and intransitive readings because verbs ceased to be overtly modified by prefixes. A lack of these aspectual prefixes is now substituted by particles attached to main verbs which show their perfectivity such as *drink/eat up, work on, drive off, issue out, receive in.* The formation of verbs with aspectual prefixes in Middle English is shown in (12).

(12) a. ærnan 'to run' > geærnan 'to reach'
b. feran 'to go' > geferan 'to reach'
c. adruwian 'to dry up'
d. aswapan 'sweep off'

Given that the modification of reflexive pronouns could have influenced the change in Spanish and Romanian psych verbs (Rivero & Diaconescu, 2007), it may have been the case in English psych verbs too. Reflexive pronouns were found in both Subject Experiencer (13a) and Object Experiencer verbs (13b) (Guidi, 2011).

(13) a. he ða gebealh hine
he.nom then angered himself.acc
'he was then angry'
(cocathom1,+ACHomI,26:395.189.5122)

[4] *ge-* stands for aspectual prefix.

[5] Labile verbs are transitive verbs which may also be used in intransitive contexts like *break, burn, boil, open, start, change or assimilate*. Labile stands for changeable.

b. hie for þæm hie gebulgon
they.nom at it themselves.acc angered
'they were angry at it'
(coorosiu,Or 2:8.51.32.990)

The observation that SE verbs used to have causative alternants that were occasionally marked with reflexives, both in Greek and Romanian, made Alexiadou and Iordachioaia (2014) conclude that the causative alternation in the psych domain ceased to be available due to the reorganization of the English reflexive system. Nonetheless, this assumption requires further study. Attention should be given to cases where reflexive pronouns were added obligatorily to the given verb, and at the same time, we should exclude examples where reflexive pronouns were added emphatically or co-referentially. Modern English lost purely reflexive verbs and there are only few instances where the addition of reflexives alters meaning; for example: *help yourself*, *busy yourself.* In Old English, there were no such occurrences of modern English pronouns such as *myself* or yourself'. Instead, *ic, me, hine, hie,* which were the forms of the personal pronouns, appeared in a reflexive sense without the prefix *self-*. Alternatively, *sylfum* or *self* was used. As a way of illustration, *Belgan* might be used with a reflexive pronoun; however, it often alternated between reflexive and non-reflexive contexts. On account of the fact that no true reflexive verbs have been found, it seems that reflexives were not responsible for the demise of the neutral structure.

In my view, the neutral functional structure was no longer licensed in the system once English became an analytical language. In Standard Case Theory there are two non-structural cases, namely lexical and inherent case. The former is lexically selected by individual verbs; for instance *helfen* in German requires an object, bearing the dative case. The latter, in turn, is inherently associated with the thematic position of the verb, as in ditransitive goals. Looking at modern English cases, we can only specify three of them, that is the nominative (subjective), the accusative (objective) and genitive case (possessive). I postulate that there are two functional structures left (receptive/stative and causative) and each of them underwent a simplification of its possible arguments. This means the receptive/stative structure is expressed merely by ExpNOM and CauseACC and the causative structure by ExpACC and CauseNOM. Dative and genitive argument fell into abeyance since they can only appear in non-structural cases. The postulated order of the shift of the object-to-subject Experiencer verbs is as follows: the loss of inherent cases, the loss of inflectional and then the fixing of SVO word order.

A question arises if the influx of borrowings that flooded the English language could contribute to the disappearance of the neutral function. This seems

less probable due to the fact that a lot of languages from which English took words have expressed Experiencer with the dative case up till now. However, it is possible that certain grammatical structures are taken from other language sources. If so, this would point out that each verb is borrowed together with its functional structure. In order to verify this, the origins of psych verbs were probed on the basis of entries found in the *Online etymology dictionary.* Each modern psych verb was scrutinized for the year of pouring into the English language and its provenance. This analysis shows that the 14th and 16th century welcomed a vast influx of new psych verbs. 48% of all listed psych verbs came from Old or Middle French. The verbs from Old or Middle English remained at 27%.

The investigation also brought some other results. Namely, verbs that describe the most basic psychological meanings liking (*like, love*) and hatred (*hate, loathe*) are purely native words. As a rule, words illustrating primary notions such as the sun, the moon or mother, father are very likely to survive through miscellaneous borrowings and changes. Like other old verbs, some psych verbs had a strong conjugation but throughout history they regularized and moved to the weak class. To illustrate, the old form of *to mourn* was *murnan* and its past tense and past participle was *mearn* and *muran* respectively. This verb belonged to class III of strong verbs. Another instance of a similar case was the Old English verb *seoþan,* having past tense *seaþ,* past participle *soden.* These days such verbs have regular forms (*mourned, seethed*).

What should be noticed is the drastic shift in meaning among some psych verbs. Consider the word *bask* taken from Old Norse, which used to have only negative meaning. By dint of Shakespeare's oeuvre, it started to be used in a positive sense. Another example refers to *to worry,* which used to denote *annoy*, *bother*, *vex*. The first use of this word meaning *to cause mental distress or trust* was recorded in 1860. A conclusion may be drawn that the change in meaning is very sensitive to the frequency of appearance in certain grammatical environments. Some psych verbs, such as *to devastate* or *to enthuse* are derived from *devastation* and *enthusiasm* respectively by means of back formation.[6] Other methods for deriving psych verbs are affixation and coinage; for instance: *to overawe* was invented by Spenser. In the case of some verbs like *to puzzle*, scholars failed to determine their provenance. Even in Modern English, it is extremely difficult to draw up an uncontroversial list of all psych verbs, because their meaning is dependent on the structure in which they are found. The semantics of a single verb is not handy at all.

Psych verbs borrowed from other languages poured into the grammatical environment of the English language. They could change their functional structure

[6]*To confuse* and *to jollify* also come from back formation.

after adjusting to the morphological system of English grammatical formatives. In principle, causative and receptive constructions are cross-linguistic phenomena and only grammatical formatives can alter and differ across languages. At this juncture, it is time to move on to the analysis of the morphology of Modern English psych verbs, which is responsible for the assignment of functional structures. At first, attention will be given to causative verbal suffixes.

## 5. S-functors in Modern English

### 5.1. Causative formatives

#### 5.1.1. *-en*

The *-en* suffix constitutes a functional morpheme which imposes a causative interpretation to an event. (14a) shows a template, where CAUSE feature carried by the independent grammatical formative *-en* is embedded in *fright. Fright* is a lexical domain (L-D), treated here only as a pairing of sound and meaning, taken from the substantive vocabulary. The small *v* stands for verbalization. It follows that all the arguments are fully interpretable.

(14) a. [$_{v}$[$_{L\text{-}D}$ fright] –en(CAUSE)]] (frighten) → Ghosts frighten John.
b. [$_{v}$[$_{L\text{-}D}$ white] –en (CAUSE)]] (whiten) → This toothpaste whitens the teeth.
c. [$_{v}$[$_{L\text{-}D}$ dark] –en (CAUSE))]] (darken) → This curtain darkens the room.

As matters stand, this suffix seems to signal not only causation but also an inchoative interpretation. The same goes for the verbs (14bc) which do not belong to psych verbs such as *whiten, darken, blacken.* This case may show *-en* is reserved not only to psych verbs but also to other verbs. Further, psychological interpretation might blend with causative-inchoative. Note that the two last examples, *whiten* and *darken* are derived from adjectives. *Frighten,* on the other hand, is derived from a noun – *fright*. However, the causative effect is the same. Psych verbs such as *to embolden, to enlighten, to enliven, to threaten, to gladden, to madden, to sadden, to sicken,* or *to dishearten* participate in the same computation. The structure of these verbs is more complex because there are two affixes. The structure in which they are embedded looks as follows: [v em-CAUSE[[L-D bold] v -en CAUSE]]. *En-* comes both from French and Greek, denoting 'in/into'. It is typically assimilated before *-p-, -b-, -m-, -l-* and *-r-.* It also carries a CAUSE meaning. The verb *listen* can function as a noun in a structure *have a listen*. It is a root, the independent suffix *-en* is not added and it is not part of

word formation. The etymological data do not specify whether *listen* derives from a *list*. *-t-* was added later under the influence of Old English *hlystan*.

### 5.1.2. *-fy*

Another functional item that guides the realisation of arguments in psychological predicates is *-fy*. This verbaliser, which is present in the following psych verbs: *to dis/satisfy, to electrify, to gratify, to jollify, to mollify, to mortify, to pacify, to stupefy,* also has an inchoative-causative interpretation. The sentence *This film satisfies me* can be paraphrased like: *This film makes me satisfied* or *This film gives me satisfaction.* v is interpreted on the basis of *-fy.* As for the projection of these verbs, we encounter a problem, that is, which word is taken from the lexical domain? Inserting *satis*[7] in the lexical domain is impossible, since it does not exist in the English lexicon. Psych verbs ending in *-en* are attached to a root or a free morph, whereas the verbs ending with *-fy* are attached to a bound morph.

Given that *satisfaction* is an event nominal derived from the verb *to satisfy,* the verb becomes the base for the deverbal nominal. Nevertheless, following Borer (2003), *to satisfy* and *satisfaction* do not come from the same derivation. They constitute a stem allomorph set in a nominal and verbal context respectively. *-fy* is a verbalizer for *to satisfy* and *-action* is a nominalizer for *satisfaction*. The template for psych verbs with *-fy* grammatical formative is presented in (15):

(15) a. $[_{v}[_{L\text{-}D}$ satis[-fy(CAUSE)]]] (satisfy) → This film satisfies me.
b. $[_{v}[_{L\text{-}D}$ elecri[-fy(CAUSE]]] (electrify) → This film electrifies me.
c. $[_{v}[_{L\text{-}D}$ molli[-fy(CAUSE]]] (mollify) → This film mollifies me.

### 5.1.3. *-ate*

Some Experiencer verbs take *-ate* verbaliser. This ending has the same properties as *-fy*: it signals an inchoative-causative projection and is added to a bound morph; Experiencer functions as an object, as presented in (16):

(16) a. $[_{v}$[frustr[-ate(CAUSE)]]] → This film frustrates me.
b. $[_{v}$[irrit[-ate(CAUSE)]]] → This film irritates me.
c. $[_{v}$[sati[-ate(CAUSE)]]] → This film satiates me.

There are more psych verbs with this suffix, viz., *agitate, captivate, enervate, elate, fascinate, exhilarate, invigorate, satiate, stimulate*. *Hate* is excluded because it is a

[7] Nevertheless, *satis* appears in Latin and means *enough*. This is an instance of bound roots, which were free in the source language (Brinton, 2000)

native word and the *-ate* cluster has a different origin, devoid of any grammatical force. According to the *Online etymological dictionary*, English made verbs from Latin past participle stems, as in *satiate*. This is an example of how one of the English contemporary grammatical formatives was adopted and transformed from one language to another.

Nonetheless, *-ate* does not always express causation. For instance, the verb *to appreciate* shows performative use. The etymology also fails to give us any hint to its different properties despite its grammatical formative *to appreciate* comes from the Latin word *appretiatus,* so does *to irritate.* Thereby, the origin is the same. The realisation of *appreciate* as a SE verb might result in an idiomatic usage of performative verbs, strongly fixed and connected with our conceptual system.

To recapitulate, derivational suffixes: *-en, -fy, -ate* are responsible for assigning a causative-inchoative meaning to verbs. They carry a CAUSE feature that categorizes these listemes as verbs and gives rise to a causative template. In other words, the suffixes in question verbalize listemes such as *fright*. In this way, these listemes appear in only one possible context. They stop being loosely unstructured items the moment formal diacritics are appended to such listemes. Not only do these suffixes affect psych verbs but also other verb classes. Next we turn our attention to the morphology of psych verbs with a receptive functional structure.

## 5.2. Receptive formatives

### 5.2.1. *-ize*

*-ize* differs from the above-mentioned verbalisers. The difference lies in carrying not a causative interpretation, but a receptive one. This may explain why Experiencer becomes the subject of a sentence: the insertion of *-ize* verbaliser with its AGENCY feature into the lexical item *idol* creates a receptive interpretation. This suffix is present in the following psych verbs: *agonize, antagonize, galvanize, idolize, tantalize.* Note that in (17 abc) we deal with two processes of the embedding of the right syntactic structure into psych verbs. In (17 a–b) *agony* and *idol* are taken from the conceptual array and then morpho-phonological devices are added from the syntax to build a structure. In (17c), *antagonize* is taken from the conceptual array, because *antagon* is not a loose concept. However, putting it in a structure of a sentence results in the reinterpretation of this word with *-ize. -ize* is responsible for a receptive interpretation, in which the recipient of an emotion or feeling is the object:

(17) a. [[$_{L\text{-}D}$ agony] –ize(AGENCY)] → I agonise this film
b. [[$_{L\text{-}D}$ idol] –ize(AGENCY)] → I idolise this film
c. [v[antagon[-ise(AGENCY]]] → I antagonise this film.

Three psych verbs have the following form: *annoy, enjoy* and *cloy*. The morpheme *-oy* has to be excluded from the independent grammatical formatives for several reasons. Firstly, verbs with this ending derive different nominal structures: for *annoy – annoyance*; for *destroy – destruction*; for *employ – employment.* Secondly, the *-oy* ending is not productive in English; only a limited set of words possess this ending. Thirdly, this combination of sounds fails to present only verbal meaning. In the lexicon one finds *boy, decoy*, which function as nouns in most interpretations.

It is worthwhile to notice that *re-* which is a verbal prefix can undergo recategorization, for example: *a rerun*. It may be the case that only derivational suffixes are fully word class changing. Note that **a reorganize* is not possible because of the insertion of the suffix *-ize*.

## 6. S-functors in Modern English

### 6.1. Prepositional Experiencer

Besides SE and OE verbs, there is another group of psych verbs, that is, Prepositional Experiencer (PE) verbs. This group is very limited. This may be caused by the fact that Modern English favours structural case rather than inherent one. One of the syntactic features of PE verbs is that they cannot be used in the passive voice. Within the English lexicon we find five examples of such verbs. They are presented in (18):

(18) a. Her voice really jars on me.
b. Money matters to me a lot.
c. Your negative attitude really grates on me.
d. The irritation niggles at Melinda.
e. This film appeals to me.

As seen above, this class is very similar to Object Experiencer verbs. The Experiencer takes the object position, preceded by the preposition, and is very often expressed by the dative case. The prepositions used in these verbs like *to, on, at* are in charge of assigning causative structure and putting Experiencer in the object position. However, one might say, following Landau (2009), that Prepositional Experiencer verbs can only be stative, as evidenced in (19):

(19) a. *The solution is occurring to Mary right now.
b. Bob deliberately mattered to his boss.

Such verbs used to belong to the neutral functional structure, where Experiencer bore the dative case and Theme bore the genitive case. Due to the loss of

inflection, neutral functional structure may have merged with the causative one regardless of its semantics.

As indicated above, prepositions are also functional morphemes that affect the distribution of verb's arguments apart from derivational suffixes. Section 6.2 shows that prepositions can also take part in alternations.

## 6.2. Prepositional alternation

Object Experiencer verbs can alternate. Through the use of prepositions *in* or *over*, Experiencer is moved from the object position to the subject, as in (20) and (21). The interpretation also shifts from causative to receptive.

(20) a. Interesting conversation delights Kate.
b. Kate delights in interesting conversation.

(21) a. His death saddened me.
b. I saddened over his death
c. He agonises over the problem.

Due to this, we can enrich our causative and receptive structures with the accurate prepositions, as has been done in (22):

(22) a. receptive functional structure:
[ SE___ (in/over/-ize) Recipient]

b. causative functional structure:
[Causer___ (to/on/at-en, -ate, -fy) OE]

Always when one of these prepositions with its functional meaning, either causative or receptive, is embedded in the lexical domain, it both categorises the lexical item and assigns a suitable argument and event structure to it. Free functional items (e.g., determiners, degree words, auxiliaries, modals) can cancel the interpretive force of bound functional items (e.g., suffixes and inflectional endings) or block their addition to the base. Take, for example, the causative suffix *-en* and the preposition *over* that redistribute verbs' arguments, simultaneously changing the meaning to the causative one. The same holds for noun phrases, where quantifiers also impose the meaning that blocks other interpretations; for instance: the addition of *a little* into the lexical item *carpet* prevents inserting *-s*.

It has been shown above that predicates do not c-select the syntactic categories of their arguments. Rather, they are dependent on S- and C-functors. Nonetheless, there is a small group of psych verbs deprived of any derivational markers.

## 6.3. Suffix-less psych verbs

The derivational rules discussed above cannot be applied to all psych verbs because a large number of them exhibit zero affixation. Take, for instance, *like* and *please,* which represent two different constructions, i.e. agentive and causative respectively, without any overt suffixes. Nevertheless, some properties match when it comes to Object Experiencer verbs. Regardless of its Ø-categorizing morphology, *please* fails to take a nominal meaning in the same way as the verbs with verbalizers studied above. Other verbs of this type include: *impress, disturb, faze* and *irk.*

Such verbs challenge the line of reasoning here. If the derivational markings are present, then what determines the functional structure of verbs? One of the possible solutions might be the derivational history of verbs, some of which nowadays are without morphological markings. They may adopt a functional structure in keeping with their etymological data. Consider the following reasoning: the meaning "to delight" has evolved in *please* from the adjectival form *to be pleased.* If the causative meaning is associated with verbs derived from adjectives, then verbs lack the ability to assign appropriate arguments and it is the adjectival stems that is held responsible for that. *Please* has many derivational variants like *pleasure* that can block *please* to appear in nominal contexts. In addition, all Object Experiencer verbs seem to operate like past participles. Take (1) *I am liked*, and (2) *I am pleased.* Each of them shows a different scenario. In brief, those verbs which hail from adjectives, have a rich derivation.

One might say that this diachronic explanation partitions psych verbs into those determined by C- and S-functors and those determined by fixed argument structure as for *please* and *impress*. If this is the case, it suggests that there is a kind of lexicon that stores a set of instructions to the syntax. Moreover, the speaker would have to retrieve from her/his memory what structure should be used with Ø-categorizing words. Both such a lexicon and mental burden on part of the speaker apparently contradict the assumptions of the Exo-Skeletal model. However, there are more cases where words obtain suppletive forms that are the remnants of erstwhile grammatical rules, such as, for example, *louse-lice, ox-oxen, drive-drove-driven*. Irrespective of structural environment, some nouns cannot receive a plural morpheme *-s* and some verbs cannot receive a past morpheme *-ed*. Does it mean that these exceptions must be memorised by the speaker?

To resolve this, Borer (2013) resorts to the concept of equivalence classes, which helps her to deny the existence of zero derivational affix. For Borer, suppletion is non-complex and distinct forms such as *catch-caught* that result from a spell-out rule. Following her explanation regarding the difference between Argument Structure and Result nominals, *please* does not have to wait for the merger of the causative suffix to be inserted in the causative structure because

it is already rendered causatively by categorical equivalence. All in all, this rationale is still unconvincing because of its complexity and vagueness. There must be some sort of a small lexicon that enables us to store some exceptions, viz., *please* and *like*. In this lexicon there are not only verbs but, for instance, persistent singulars, including *information*, *furniture* and *luggage* etc. It must be noted that plural markings are sometimes able to modify the meaning of certain nouns, as in *money-moneys* and *coffee-coffees*. On the other hand, in his fine-grained semantics, Pesetsky (1995) claims that *fear/frighten* and *like/please* function as converses in the same way *buy/sell* and *get/give* do. This explanation would mean that these verbs are not loosely related free concepts but are burdened by the individual meaning they carry, which, in turn, determines their syntactic structures.

### 6.4. Psych prefixed verbs and psych phrasals

Now the focus will be placed on prefixed verbs (e.g., *discourage, impress*) that used to be very productive in Old English. This high productivity of the verbs in OE can be explained in terms of word order, whereby the object was placed before the verb. It is claimed that the shift from OV to VO contributed to the rise of phrasal verbs. This shift shows that the internal structure of grammar influences the building of lexical items. What has to be observed is that both prefixed and phrasal verbs violate the principle of compositionality because their meanings are frequently idiomatic and unpredictable. In the case of phrasal verbs their meanings can be deduced on the basis of the particle they take. For example, the particle *up* can express the completive sense as in *eat up, drink up* or the improvement as in *perk up, liven up.* Nonetheless, many phrasal verbs have meanings completely different from their base verb and particle. This is so because they constitute a fully-fledged verb phrase which cannot be broken by an adverb, as shown in (23a):

(23) a. *I livened quickly up.
b. I went quickly to the shop.

However, the insertion of an adverb is possible in prepositional verbs, as in (23b). Prepositional verbs differ from phrasal verbs in terms of structure. The former consist of base verb + preposition; the latter in turn of base verb + adverb. The meaning in phrasal verbs is unpredictable and arbitrary in many cases because no functional item appears in their structure.

There is another important property of phrasal verbs. Namely, the movement of the pronominal objects such as *it, her, them.* (24 ab) show two different realizations of the phrasal verb *calm down*. In (24b) the verb phrase *calm down*

is broken by the addition of *me.* It is possible, because *it, them,* and *me* are functional items; *quickly* is a purely lexical item that cannot break the twofold structure of the phrasal verb.

(24) a. Your music calms down my nerves.
b. Your music calms me down.

While it is feasible to move a short noun phrase to the centre of the phrasal verb, it should be noted that a slight change in meaning may occur. It is said that the noun phrase between base verb and particle shows completive sense: *He cut down the tree* vs. *He cut the tree down*. Such an interpretation is triggered by the syntactic structure. Nevertheless, only when the preposition is required in the structure of phrasal verb does it block the particle movement. This happens in so-called three-part phrasal verbs (e.g., *put up with, look up to*).

Psychological phrasal verbs can also be divided into Subject Experiencer and Object Experiencer verbs along with the same interpretative force: causative/eventive (25ab) and receptive or agentive/stative (26ab). Hence, they behave like other verbs.

(25) a. Your illness gets me down.
b. This song cheers me up.

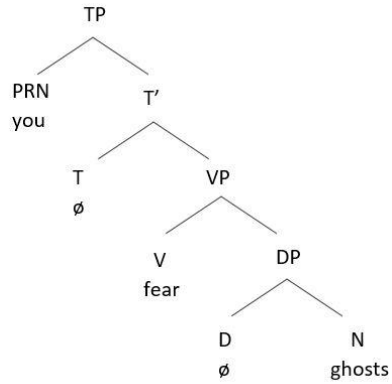
(26) a. She looks down on me.
b. She livened up.
c. She livened the room up.

Note that examples in (26 ab) show the intransitive-transitive shift. Only Subject Experiencer verbs are prone to be used either transitively or intransitively. Undoubtedly, the classification of psychological phrasal verbs is extremely difficult yet not impossible. It is so due to the immense flexibility of phrasal verbs in altering their interpretation on the basis of the syntactic structure they acquire. As shown in (26c), psychological meaning is turned into a normal action. All this might defy the usefulness of the semantic verb classes.

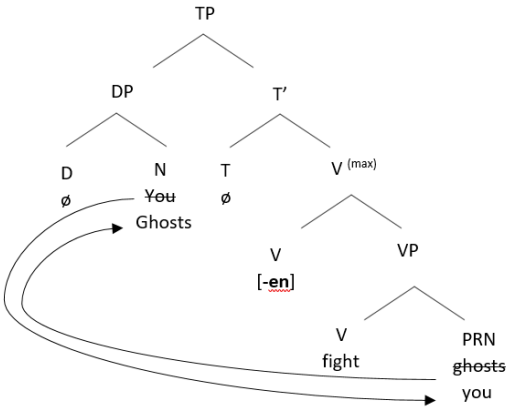
To sum up, the receptive structure is a base structure whereas the causative structure undergoes various transformations due to the addition of causative suffixes. This is shown on the phrase-markers of two functional structures. (27a) constitutes a canonical structure, in which there is no movement of arguments. If *-ize* is added to the predicate, the maximal V becomes a head. However, it does not redistribute arguments. The situation is different when other derivational suffixes are inserted to the root of the psych verb. The maximal V redistributes arguments, as shown in (27b).

(27)

a.




b.




## 7. Conclusions

To sum up, the Exo-Skeletal Model sheds new light on the nature of psychological predicates. Psych verbs seem to behave like other verbs. They can be inserted into two possible functional structures through derivational operations (S-functors) or the insertion of preposition phrase. Suffixes such as *-en, -fy, -ate* impose a causative functional structure, which sometimes has an inchoative meaning. In turn, *-ize* or a few remnants of dative constructions (Prepositional Experiencer) assign a receptive functional structure, which often has a stative meaning. Psych verbs devoid of morphological markings may adapt a functional structure through categorical equivalence. A small lexicon as a storage of exceptional cases of some verbs and persistent plurals is also suggested. Suffix-less psych verbs are an outcome of

language change, that is a synthetic-to-analytic shift. S-functors of these verbs responsible for their syntax may be traced in their etymology. Prefixed and phrasal psych verbs do not show any peculiar behaviours different from other verbs. In this framework thematic roles and c-selection are rejected. A non-Experiencer argument can take two roles: recipient and causer.

Diachronically, it was shown that inflectional suffixes were once mainly held responsible for the distribution of cases. Because of the gradual loss of selected inflectional operations, derivational suffixes as well as periphrases became argument-markers and the number of functional structures was reduced to two – a neutral functional structure fell into disuse. The change from a case-marking to configurational language may result in the impersonal-to-personal shift in psychological predicates. The hypothesis of the vast influx of loanwords as a root cause of argument marking shift is rejected because of easy adaptation of those words into the English grammatical system.

Undoubtedly, a few issues brought up in this paper have been treated perfunctorily and need further study. It is necessary to provide more formal explanations backed up with appropriate projections and terminology. It is also essential to gain deeper insight into the event structure of psychological predicates through the study of telic/atelic, unaccusative/unergative interpretations, as well as Argument Structure nominals and Result nominals formed by psych verbs. Given that the Exo-Skeletal Model opts for the universality of functional structures, psych verbs in other languages also necessitate attention.

As an extension to the assumptions presented in this paper, other universal inquiries might arise. The Exo-Skeletal model postulates that our brains or minds do not store any syntactic properties of individual lexical items but they are treated only as semantic concepts, molded by structural transformations. With this in mind, one may wonder why in the first place our brains/minds cannot retrieve much information from the lexicon, how much space diachronic data takes up in the lexicon, and more concretely, what sort of information it is: etymological, structural or conceptual? These universal questions will have to be left for further investigations.[8]

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