

The Hebrew University

Jerusalem, Israel

The syntax-semantics interface in Hebrew Psychological Nominalizations

Handed in by Odelia Ahdout

In partial fulfillment of the requirements for the degree of

Master of Arts

in

Linguistics

Supervised by Dr. Ivy Sichel

September, 2016

תקציר:

תזה זו סוקרת נומינליזציות (שמות פעולה) הגזורות מפעלים פסיכולוגיים בעברית החדשה. העבודה תתמקד במאפיינים הסמנטיים והתחביריים של פסוקיות עם נומינליזציות פסיכולוגיות. מחקר זה מראה כי ישנם הבדלים עקביים במאפיינים הסמנטיים והתחביריים של נומינליזציות, הבדלים המותנים בראש ובראשונה בצורה המורפולוגית של הנומינליזציות ושל הפעלים שמהם הן גזורות. בעבודה אראה על בסיס ההבדלים הללו כי הבניינים הגזורים את הנומינליזציות הללו, הפעיל ופיעל, נבדלים מהותית אחד מן השני, באופן התואם לניתוח קודם מתחום הבלשנות הגנרטיבית, והמפריך טענות מסוימות שהובאו כנגד הניתוח שאותו ממצאי מחזקים. בעבודה אציע הסבר להבדלים הללו המתבסס הן על ניתוחים של העברית הן על ממצאים משפות אחרות המציגות דפוסים דומים לשל העברית. כמו כן, אראה כי בחינה של נומינליזציות פסיכולוגיות בעברית מהווה תרומה משמעותית למחקר שנעשה עד כה בתחומים משיקים, כגון המבנה התחבירי של נומינליזציות ואילוצים סמנטיים על הארגומנטים שלהן; זאת, בכך שהמחקר מחליש טענות והכללות שגובשו בעיקר על בסיס נתונים מהשפה האנגלית.

Abstract:

This thesis explores psychological nominalizations, nouns derived from psychological verbs, in Modern Hebrew. The study focuses on the semantic and syntactic properties of psychological nominalizations. The research shows that there are consistent semantic and syntactic differences between different psychological nominalizations, which are conditioned, first and foremost, by the morphological form of these nominals, and of the producing verbal forms. On the basis of these differences, I show that the two verbal templates deriving psychological nominals, *pi'el* and *hif'il*, are essentially distinct one from the other, in a manner consistent with a previous Generative account of the Hebrew verbal system, while also weakening claims made against this account. Finally, I show that research of Hebrew makes an important contribution to the study of the structure of derived nominals and the semantic constraints on their arguments; this, by challenging claims made mainly on the basis of English.

Thanks

I would like to thank my supervisor Ivy Sichel for her time, effort and support during the two years of research leading up to this thesis; to Edit Doron and Malka Rappaport-Hovav for providing ideas, inspiration, and for the thoughtful reviews of this study; to my friends and colleagues, Nati Aron, Bar Avineri, Si Berrebi, and Jelke Bloem, for much-needed and intelligent advice. Last but not least, I would like to express my immense gratitude to Noa Bassel, for her endless commenting with patience, wit, care and interest.

Contents

1. Introduction	6
2. Event structure and argument structure in Psych nominals	11
2.1. The syntax and semantics of psychological predicates	12
2.2. The gaps between nominalizations and verbs	15
2.3. The restrictions on English Psych nominalizations	18
2.4. Contrasting evidence from Greek and Romanian	20
3. Hebrew Psych nominals	24
3.1. Semitic morphology	25
3.2. Semantic restrictions in Hebrew OE nominals	26
3.3. Agent Exclusivity	32
4. Explaining event structure variation in thematic terms	34
4.1. The Cause vs. T/SM thematic distinction in psychological predicates	35
4.1.1. The thematic explanation of aspectual variation among Hebrew OE nominals	41
4.2. Event structure effects in OE nominals: non-agentivity	44
5. Explaining variation in morphological terms	50
5.1. Argument realization patterns in OE nominals	51
5.1.1. The Hebrew middle form overrides “Agent Exclusivity”	51
5.1.2. Agent Exclusivity revisited.....	56
5.1.2.1. Links between argument structure and event structure	60
5.2. The role of templatic morphology in determining variation	62
5.2.1. Form and function in the Hebrew verbal system.....	64
5.2.1.1. Hebrew Non-Psych nominalizations	67
5.2.1.2. Differences between Hebrew and Greek/Romanian	73
6. Conclusions	75

1. Introduction

In this paper, I examine nominalizations from the class of psychological predicates in Hebrew, and show that they override two kinds of semantic restrictions associated with English Psych nominals. The first kind is in the **event structures** psychological nominals exhibit, namely whether they are eventive or stative. The second is the types of **argument structure** the nominals are felicitous with. More specifically, the second type of restriction regards the kind of semantic roles possible for the external argument of the nominal, and the way they are realized in the syntax.

Since Chomsky (1970), deverbal nominalizations are generally considered to be restricted in their interpretation and the type of constructions they may appear in, comparing to the corresponding verbs. Psychological nominalizations seem to follow this generalization in a number of ways.

For example, it has been observed by Rappaport (1983), Rozwadowska (1988), Grimshaw (1990) and Pesetsky (1995) that nominals derived from object experiencer (OE) verbs fail to convey the causative change of state meaning denoted by the verb. Instead, many Psych nominals denote only the ensuing mental state, without the causing component. This contrast is exemplified in (1) with the Psych predicate *annoy*: while the verb can generate a causative, even agentive reading, as shown by its compatibility with a volitional modifier (1a), the corresponding nominal resists a causative reading, and is ungrammatical with a causative possessor phrase (1b) or a *by* phrase (1c).

(1) a. *My neighbor (deliberately) annoyed me.*

b. **The neighbor's annoyance of me.*

c. *My annoyance at/*by my neighbor.*

Fábregas and Marín (2012) suggest that, for the class of psychological verbs, the nominalization process entails not only a change of lexical class from verb to noun, but also a truncation of the causative portion of the complex event denoted by the verb, such that the nominal is restricted to denote only the caused mental state. This effect reflects the common trait of psychological nominals – their stativity.

Alexiadou and Iordăchioaia (2014a, 2014b) claim that the stativity of English psych nominals is a consequence of a lack of eventive (change of state) semantics in the deriving verbs themselves, and show that in Greek and Romanian, two languages in which psychological verbs are eventive, the derived nominals are also eventive, i.e. denote a causative change of (mental) state.

This paper adds further evidence to the effect of minimizing the perceived gap between verbs and their derived nominals, because in Hebrew, not all Psych nominals are stative: while one class of OE verbs shows restrictions similar to those described in English (2b), another class behaves altogether differently, excluding any non-eventive readings even in isolation – without the realization of the internal argument (3):

- | | | | | | | | | |
|-----|----|------------|-------------------------------|------------|------------------------------|------------|--------------|---------|
| (2) | a. | <i>ze</i> | <i>bilbel/zi'a'ze'a/ye'eš</i> | | <i>oti</i> | <i>tox</i> | <i>šniya</i> | |
| | | it | confused/shocked/discouraged | | me | in | second | |
| | b. | <i>ani</i> | <i>be-macav</i> | <i>šel</i> | <i>bilbul/za'azu'a/ye'uš</i> | | | Class 1 |
| | | I | in-a-state | of | confusion/shock/despair | | | |
-
- | | | |
|-----|----------------|--|
| (3) | <i>hat'aya</i> | 'deceiving (*the state of feeling deceived)'.
Class 2 |
|-----|----------------|--|

This second class of nominals is especially interesting, as it demonstrates that OE nominalizations may preserve all semantic components of the deriving verb.

In this paper, I claim that the factor conditioning the behaviours of Psych nominals in Hebrew is verbal morphology, as the different verbal forms hosting the two classes of OE verbs in Hebrew encode different properties, which are passed on to the nominals. Hebrew data thus shows us that OE nominals are more similar to the base verb than currently believed to be universally possible.

A second kind of semantic difference between psychological verbs and the corresponding nominals is a thematic restriction to agentive participants, reflected in the ungrammaticality of causer arguments:

- (4) a. *ha-leycan/ha-ksamim* *ši'aše'-u* *et* *ha-yeladim* *b-a-mesiba*
 the-clown/the-magic.tricks amused-3PL ACC the-children in-the-party
 ‘The clown/the magic tricks entertained the children in the party’.
- b. *ši'su'a* *ha-yeladim* *b-a-mesiba* *al yedey* *ha-leycan/*
 the-entertaining (of) the-children in-the-party by the-clown/
 **ha-ksamim*
 the-magic.tricks

This thematic restriction was shown to be overridden under certain conditions in Greek and Romanian (Alexiadou and Iordăchioaia 2014a). Non-agentive causers in these languages are claimed to be available for Psych roots which participate in a causative alternation, wherein both

In this paper I show that Hebrew OE verbs behave similarly, but only when morphological considerations permit it. A claim that as in Greek and Romanian, in Hebrew non-agentive argument structure in OE nominals relies on the existence of a morphologically-related anticausative form. Following an analysis of the Hebrew verbal system by Doron (2003), I claim that only one of the two OE verb classes has a derivationally-related anticausative form hosting SE alternates, while the other verbal template hosting OE verbs does not have a consistent verbal form hosting its SE counterparts. Accordingly, only OE nominals that are related to alternating Psych roots are compatible with causer arguments as well as agentive ones, as in (5b) below:

- ¹ *Eventivity* in the Alexiadou and Iordăchioaia (2014a) paper, as well as in this paper, means having a complex event structure, including a causative sub-event and a result state.

exhausting (of) the-swimmers by the-coach-F/from-the-competition

I claim that two underlying principles are responsible for variation in the behaviours of Psych nominals: the **thematic structure** of corresponding basic verbs and the **morphological form** in which the verbs appear. Regarding thematic structure, on the basis of Doron (2012), I claim that only Psych verbs which potentially take agentive external arguments may derive eventive nominals, whereas Psych verbs which take Subject Matter or Target arguments may only derive stative nominals, if any at all. Regarding morphological form, I claim that in Hebrew, the two classes of OE nominals inherit the specific properties associated with the verbal templates hosting the corresponding OE verb, following suggestions in Doron (2003).

These two factors, thematic structure and morphology, operate in a **parallel** manner, determining the event structures and argument structures of Psych nominals in Hebrew: first, the thematic structure of Psych verbs is claimed by Doron (2012) to determine the type of event structures their nominals exhibit. Importantly, thematic structure in Hebrew Psych verbs is not correlated with class membership, i.e. with the morphological form hosting the verbs and nominals. The second type of explanation takes into consideration precisely this factor in explaining the behaviours of Psych nominals across the two classes. This paper shows that the larger part of variation found among Psych nominals in Hebrew is to be attributed to the verbal forms in which they are hosted. More specifically, what determines the event structure and argument structure of the nominalization are the unique structure each verbal form has, as well as the relations between these verbal forms and others verbal forms in the verbal system. This is similar to the conclusions reached by Doron (2003, 2008), who suggests that there are systematic relations between verbal forms in Semitic languages.

The paper is constructed as follows: in section 2 I survey the prominent literature on psychological predicates and on nominalizations, followed by a description of the semantic restrictions associated with nominals derived from verbs of this class. In section 3 I check whether the same semantic restrictions described for English hold for Hebrew Psych nominals as well, providing a description of the aspectual properties of the different classes of OE nominals in Hebrew. In section 4 I describe a thematic account of Psych verbs which addresses some of the observations made in section 3 regarding the aspectual values of OE nominalizations. In section 5 I bring further data on argument realization patterns available with Hebrew Psych nominals, and offer an explanation for both event structure and argument structure variation, based on a morphological factor. Section 6 concludes.

2. Event structure and argument structure in Psych nominals

As stated above, in English, psychological nominalizations follow some semantic restrictions unattested in the corresponding Psych verbs, and as such contribute to the perception of nominals as defective compared to their verbal source (Chomsky 1970 and subsequent literature). In this paper, I explore the extent to which Hebrew Psych nominals strengthen or weaken the generalizations made on the basis of English data and complement my analysis by comparing Hebrew Psych nominals to Psych nominals in Greek and Romanian.

Throughout this paper, I focus on two properties around which Psych verbs and Psych nouns in English diverge: **event structures**, or the aspectual values exhibited by the predication headed by the psych predicate, and **argument structure configurations**, namely the array of semantic roles available for the external argument of the nominal, and the mapping of these roles to syntactic positions.

2.1. The syntax and semantics of psychological predicates

Psychological predicates show several interesting behaviours in the domains of lexical semantics and syntax: (i) the types of arguments they select, (ii) their aspectual ambiguity, and (iii) the variety of the argument realization patterns they exhibit, varying cross-linguistically as well as within languages.

Semantically, psychological predicates vary from prototypical transitive verbs, by virtue of having a sentient participant which is an experiencer rather than an agent. Talmy (1985) describes the other event participant as some kind of stimulus triggering the mental state.

Syntactically, this thematic grid can be realized in two different configurations: (i) Object experiencer (OE) configuration – the stimuli is realized as the syntactic subject and the experiencer as the syntactic object; (ii) Subject experiencer (SE) configuration, where the experiencer is the syntactic subject and the stimulus is realized as a direct or indirect object. These patterns are exemplified in (7), where *Eliana* and *The news* are assigned the roles of the experiencer and the stimulus, respectively.

- | | |
|--|---------|
| (7) a. <i>Eliana hated/liked/worried about the news.</i> | SE verb |
| b. <i>The news interested/disgusted/bored Eliana.</i> | OE verb |

Later works characterize the thematic structure of Psych verbs differently. For example, Pesetsky (1995) and Arad (1998) claim that subjects of OE verbs are causers, making them more like “standard” transitive verbs.

Arad (1998) also deals with the second semantic peculiarity – aspectual ambiguity in OE verbs. Arad bases her claims on previous accounts (e.g. Grimshaw 1990; van Voorst 1992; Tenny 1994) which show that OE verbs are ambiguous between stative and eventive

interpretation, a property not encountered in non-Psych verbs. Arad specifies three possible readings available for OE predicates, each reading obtained based on the values of two semantic factors: the existence of a volitional initiator, and the existence of a change of state in the experiencer.

(8) *My friend annoyed me.*

Possible interpretations:

- a. My friend (deliberately) annoyed me
- b. My friend annoyed me through his recklessness
- c. My friend's behaviour annoyed me (during the entire evening)

If both an agent and a change of state exist, the reading would be an “ordinary” transitive one (8a). If neither exists – the reading would be stative (8c). If a mental change of state occurs in the experiencer without there being a deliberate intention on the effector's part, the reading would be of a change of mental state due to the existence of a non-agentive stimulus (8b). Arad claims that the ambiguity between readings which include a change of state (the so called agentive and causative readings) to those which do not (i.e. the stative reading) is a syntactic ambiguity (similar claims are made by Landau (2010)).

Possible support for Arad's ambiguity account comes from the Finnish Psych lexicon (Pylkkänen 2000), where OE verbs that are marked with both a causative and an inchoative morpheme are eventive, while OE verbs which are marked with a causative morpheme, but not with an inchoative morpheme, are stative. As such, in Finnish stative and eventive classes of OE verbs are differentiated, while in English (as well as in Hebrew), the two readings are represented by a single lexeme.

Arad, as well as Landau (2010), suggests that this aspectual ambiguity, which she represents via different syntactic structures, is the core factor setting apart Psych from non-Psych verbs. According to Arad, “true” Psych verbs are stative Psych verbs. Arad’s main argument in support of her claims is that many syntactic effects associated with Psych verbs – so-called “Psych effects” (Landau 2010) – are restricted to their stative readings, and are absent when the predicates are disambiguated such that only eventive readings are available. A few examples of “Psych effects” are clitic doubling in Greek (Anagnostopoulou 1999), obligatory resumption in relative clauses in Hebrew (Landau 2010), and unavailability with reflexive morphology in Romance (Belletti and Rizzi 1988) (for syntactic effects associated with Psych verbs, see Giorgi 1983–1984; Pesetsky 1987, 1995; Belletti and Rizzi 1988).

Other phenomena associated with psychological predicates are also better understood when considering aspectual variation. One of which is argument structure alternations², wherein a given Psych root appears in both OE and SE configurations, e.g.³

- (9) a. *The news worried me.* OE verb
 b. *I worried about the news.* SE verb

This variation is accounted for using both thematic and aspectual terms in Dowty’s analysis of ‘mental’ verbs (1991: 579–580, see also Levin and Rappaport-Hovav 2005: 15, 22–24). According to Dowty, in experiencer verbs the verb’s two arguments have the same number

² Another syntactic uniqueness associated with psychological predicates which I do not discuss further but wish to note, is that in addition to argument structure alternations as in (9), for a given language, more than one syntactic structure is used with Psych verbs in general. For example, in Italian, both OE and SE configurations are available, as well as a Dative experiencer configuration, parallel to a few verbs in English, e.g. “the story appealed to me” (Belletti and Rizzi 1988 and see also Grimshaw 1990; Pesetsky 1995; Arad 1998; Reinhart 2001, 2003; Landau 2010).

³ In English, not many such pairs exist (Pesetsky 1995: 96; Alexiadou and Iordăchioaia 2014b, and see section 2.4). However, other languages have systematic pairs of OE-SE verbs (e.g. Greek and Romanian, Alexiadou and Iordăchioaia 2014b). For Hebrew alternating Psych verbs, see section 4.1 and thereafter.

of proto-role entailments and therefore the verb may lexicalize in two different ways, yielding the two syntactic configurations. Whether or not a change of state in the experiencer is implied breaks the tie in the proto-role count, rendering the experiencer more patient or agent-like, respectively.

The focus of this paper is the unique properties that Psychological predicates present as nominals. To examine those, a brief overview of the general nominalization phenomena is required.

2.2. The gaps between nominalizations and verbs

Deverbal nouns, usually referred to as *Nominalizations*⁴ are a hybrid linguistic element: they have the syntactic distribution and the internal structure of noun phrases (Chomsky 1970), but they usually denote events, like verb phrases. They are morphologically related to the corresponding verbs, and show some semantic and syntactic relations to the verbal counterparts, as shall be described in detail throughout the paper.

Yet, since Chomsky (1970), nominals have been characterized as “defective” compared to the corresponding verbs (e.g. Rappaport 1983; Kayne 1984; Abney 1987, and see Sichel 2010 for a re-examination of semantic and syntactic phenomena related with deficiency in nominals).

First and foremost, argument realization is non-obligatory in nominals, as opposed to verbs (Abney 1987; Dowty 1989; Grimshaw 1990; Alexiadou 2001):

- (10) a. *The scientist claimed *(that...).*

⁴ I refer only to the category of nominalizations which are defined by Chomsky (1970) and others as derived nominal, excluding the category of gerundive nominal. The latter are considered more verbal than nominal in their properties.

- b. *The (scientist's) claim (that...) is revolutionary.*

A second discrepancy is that English deverbal nouns cannot assign accusative case to their complement, and require a preposition phrase for argument realization (the object nominal is assigned case by P):

- (11) a. *The army destroyed the city.*
b. *The army's destruction *(of) the city.*

Nominalizations are also claimed to be incompatible with several constructions available for extended VPs (Rappaport 1983; Kayne 1984; Abney 1987). For example, the double object construction in (12) (Larson 1988, Harley and Miyagawa in press), and the ECM construction in (13) are both grammatical with the verbs but not with the nominal counterparts.

- (12) a. *Mary presented the book to John.*
b. **The presentation of John of the book/*John's presentation of the book.*
- (13) a. *I believe Mary to be the smartest in class.*
b. **My belief of Mary to be the smartest in class.*

Another distinction has to do with the denotation of deverbal nouns. Grimshaw points out that while verbs usually denote either events or states, deverbal nominals present a systematic ambiguity between event and result noun readings, the latter denoting a physical entity rather than a process. Grimshaw shows that argument realization characterizes only the event reading, and not the result reading of the nominal.

- | | |
|--|---------------------|
| (14) a. <i>The examination of the patient (by a doctor).</i> | Event reading |
| b. <i>The examination is on the table.</i> | Result noun reading |

This is demonstrated by the fact that a disambiguation using an adverbial modifier, which rules out a result noun reading, makes the internal argument obligatory:

- (15) *The frequent examination *(of athletes) is obligatory.*

This preliminary work by Grimshaw (and literature following Chomsky 1970, e.g. Rappaport 1983; Rozwadowska 1988) has brought to linguists' attention the existence of argument structure in derived nominals, an issue which is still very much in debate.

A final noteworthy difference between verbs and their nominalizations regards the thematic nature of their external argument⁵. It was observed that, in English, while the deriving verbs are felicitous with both agents and causers, the corresponding (eventive) nouns ban non-agentive causers as external arguments⁶:

- (16) a. *The army/the bomb destroyed the city.*
b. *The army's/*the bomb's destruction of the city.*

This thematic effect has been termed “Agent Exclusivity” (Lakoff 1970; Grimshaw 1990; Iwata 1995; Pesetsky 1995; Marantz 1997; Harley and Noyer 2000; Sichel (2010), and examples in Rappaport 1983: 138, 140; Rozwadowska 1988: 156; Landau 2010: 143–146).

Next is an introduction of the semantic effects associated with nominalizations of psychological predicates in English, followed by a comparison to Greek and Romanian Psych nominals.

⁵ One of the commonly debated questions regarding deverbal nouns deals with the syntactic status of the noun phrases corresponding to the external argument of the deriving verb: the pre-nominal genitive NPs/by phrases, e.g. *the army* in (16b),(17b)/(17c) below. Nonetheless, and for the sake of brevity, I refer to these noun phrases as “external arguments”. See section 3.2 for novel Hebrew data which shed light on this matter.

⁶ A similar semantic restriction to agents as external arguments is also apparent in some Voice alternations, for example in Hebrew (Doron 2003) and Greek (Alexiadou and Doron 2012).

2.3. The restrictions on English Psych nominalizations

Psych nominalizations seem to follow even stronger restrictions than non-psych ones. The following contrast shows that a non-Psych nominal like *destruction* preserves more of the semantic content of the corresponding verb, than does a psych nominal like *disappoint*.

- (17) a. *The army destroyed the city.*
b. *The army's destruction of the city.*
c. *The destruction of the city by the army.*
- (18) a. *My student disappointed me.*
b. ??*My student's disappointment of me.*
c. *My disappointment at the results/*by my student.*

In (17) all three constructions denote an event with an entailed change of state and maintain similar thematic relations. Accordingly, the agent role that was realized as the subject in (17a) can be realized as a possessor in (17b) or as a *by* phrase in (17c).

This cannot occur with the external argument of *disappoint* in (18b) and (18c): it is not grammatical with either of the nominal constructions, seems to discard the change of state entailment, and denotes a state rather than event.

English OE nominals are not the only group to show this semantic deficiency; Fábregas, Marín and McNally (2012) claim that, in Spanish and Catalan, only stative Psych nominals exist.

Data such as (18) has led Landau (2010) to state that “psych nominalizations lack any causative force”. It has nonetheless been observed that, for a small number of verbs, the change of state reading in the deverbal Psych noun is more available than for other verbs, as in the case

of *humiliate* below. In the few eventive OE nominals which are available in English, only agents are felicitous, either with the active nominal (19b) or the passive one (19c). Non-agentive causers, when licensed, appear only with the stative reading (19d):

- | | |
|--|---------------|
| (19) a. <i>My enemy/the insult humiliated me.</i> | cause/agent |
| b. <i>My enemy's/*the insult's humiliation of me.</i> | agentive only |
| c. <i>My humiliation (by my enemy/*by the insult).</i> | agentive only |
| d. <i>My humiliation from the insult</i> | stative |

The semantic selection of agentive external arguments over non-agentive ones in OE nominals, as exemplified with this OE nominal is an illustration of an “Agent Exclusivity” effect. English Psych nominals replicate the findings from non-Psych causative nominals, by also banning non-agentive external arguments in eventive nominals.

Accordingly, Psych **verbs** which rule out agents thus lack any eventive reading; if a verb is incongruent with agentive readings even when the external argument is human (i.e. potentially agentive), then for the nominal counterpart neither causes nor agents are grammatical (see section 4.2):

- | | |
|--|-------------------|
| (20) a. <i>The results/my student (*deliberately) amazed me.</i> | non-agentive only |
| b. <i>My amazement (at the results/at my student).</i> | stative only |
| c. <i>*The results'/*the student's amazement of me.</i> | |
| d. <i>My amazement (*by the results/*by my student).</i> | |

To sum up this subsection, two central generalizations regarding English OE nominals emerge: (i) OE nominals are non-causative and stative, as opposed to their causative and eventive (or, at least, ambiguous between eventive and stative) verbal counterparts. (ii) When

they are eventive, OE nominals select for agents, and are ungrammatical with causers as external arguments.

The class of Psych nominals thus supports the claims by Chomsky (1970), that deverbal nouns are very different from the corresponding verbs. In the rest of this paper, I show that Hebrew data weakens the generalizations above, by providing counter-evidence in the shape of eventive OE nominals, as well as eventive SE and OE nominals which license non-agentive causers as PPs. First, I introduce a study (Alexiadou and Iordăchioaia 2014a) which shows that Psych nominals in Greek and Romanian may also be eventive and license non-agentive causers.

2.4. Contrasting evidence from Greek and Romanian

Alexiadou and Iordăchioaia (2014a, 2014b) suggest that the lack of causative force characteristic of English OE nominals is not evident in Greek and Romanian.

First, it is shown that eventive OE verbs in Greek and Romanian derive eventive OE nominals⁷, unlike most of their English counterparts. This is reinforced by the licensing of an agentive preposition, *apo* in Greek (21)b and *de către* in Romanian (22)b, introducing the participant responsible for bringing about the ensuing mental state:

- (21) a. *o janis enohlise ti maria epitides*
 the John annoyed.3SG the Maria intentionally
 ‘John annoyed Maria intentionally’.

- b. *i enholisi tis Marias apo to jani*

⁷ Stative Psych verbs are not explicitly discussed in the paper, but it can be inferred that stative Psych verbs do not derive eventive nominals. This applies to both OE and SE stative verbs.

the bothering the Maria.GEN by the John
 ‘John’s annoying Maria’.

[Greek; Alexiadou and Iordăchioaia 2014a, p. 122-123]

- (22) a. *ion a enervate-o pe maria dinadins*
 John has annoyed-her ACC Maria intentionally
 ‘John annoyed Maria intentionally’.
- b. *enervarea marieri de către ion*
 annoy.IF.the Maria.GEN by John
 John’s annoying Maria’.

[Romanian; Alexiadou and Iordăchioaia 2014a, p. 122-124]

Like the few eventive English OE nominals, some Greek and Romanian OE nominals are shown to adhere to “Agent Exclusivity”. In the example below from Romanian, the OE nominal is ungrammatical with the non-agentive causer *the news*. Notice that ungrammaticality does not stem from a mismatch between the agentive preposition and semantic properties of the argument, as the latter appears with a preposition *de la* ‘from’, the one usually introducing non-agentive causers in the language:

- (23) *încurajarea mariei de către ion/*de la știri*
 encourage.INF.the Maria.GEN by John/from news
 ‘John’s encouraging Maria/*Maria’s getting encouraged with the news’.

[Alexiadou and Iordăchioaia 2014a, p. 123]

However, not all Psych nominals in Greek and Romanian rule out non-agentive causers. Some Psych nominals in these languages license causers, introduced with a non-agentive preposition. For the Psych root (translated as *annoy*), compare (21b), (22b) above, where the non-experiencer argument and the preposition are agentive, to the sentences in (24) and (25) below, which have causers introduced by *me* ‘with’ in Greek and *de la* ‘from’ in Romanian. Notice also that as expected, the agentive preposition is ungrammatical in the latter group of sentences.

- (24) *i enholisi tis Marias me/*apo ta nea*
the bothering the Maria.GEN **with/by** the news
‘Maria getting annoyed from the news’.

- (25) *enervarea marieri de la/*de către joc*
annoy.IF.the Maria.GEN **from/by** game
‘Maria’s getting annoyed from the game’.

[Alexiadou and Iordăchioaia 2014a, p. 122-124]

According to Alexiadou and Iordăchioaia, this duality is enabled only with predicates which have an eventive (i.e. denoting a change of state) SE alternant, while non-alternating OE verbs yield only agentive nominals. This leads them to argue that the agentive configuration is the output of the merge of an OE verb with a nominal affix, while the non-agentive form is derived by a merge of the SE verb with a nominal affix.

Further support for this claim comes from that fact that the non-agentive prepositions which surface with Psych nominals in the non-agentive argument structure are the ones licensed

in the **verbal** SE alternate of the Psych root, which is marked by middle morphology in Greek (26), and a reflexive morpheme in Romanian (27):

- (26) *i maria enohlithike me ta nea* SE verb
the Maria annoyed.NACT **with** the news
‘Maria got annoyed with the news’.

- (27) *maria s-a enervate de la știri* SE verb
Maria RF-has annoyed **from** news
‘Maria got annoyed with the news’.

The resemblance between the syntax of SE verbs and non-agentive Psych nominals reinforces the claim that the SE form structure is the basis for non-agentive argument structures in Psych nominals in Greek and Romanian. The surface-level distinction between the agentive and the non-agentive nominal structures is the *preposition* (agentive vs. causative), as each language has only one nominal form per Psych root⁸. Examples (28) from Greek and (29) from Romanian, illustrate Psych nominal derived from OE/SE alternating verb pairs:

- (28) *i enholisi tis Marias apo to jani/me ta nea*
the bothering the Maria.GEN **by** the John/**with** the news
‘John’s annoying Maria/Maria getting annoyed from the news.’

- (29) *enervarea marieri de către ion/de la joc*
annoy.IF.the Maria.GEN **by** John/**from** game
‘John’s annoying Maria/Maria’s getting annoyed from the game’.

⁸ Hebrew morphologically distinguishes these two forms in both verbs and nominals. I return to this issue in section 5.2.1.2.

Greek and Romanian data thus calls for a reconsideration of the two generalizations made on the basis of English Psych nominals, namely that these nominals are mostly non-causative and stative, as well as agentive-only when eventive.

According to the authors, the Psych lexicon of Greek and Romanian verbs differs from that of English, as the latter lacks a morphological alternation between OE and SE verbs (Alexiadou and Iordăchioaia 2014a, 2014b: 72-77)⁹. It seems then that languages divide into two groups regarding the restrictions on OE nominals: Greek and Romanian on the one hand and English and others (e.g. Spanish, Catalan) on the other.

The goal of the next section is to show that, as its rich morphological system might lead to expect, Hebrew patterns with Greek and Romanian, suggesting that the restrictions observed in the literature are only characteristic of certain languages, English among them.

3. Hebrew Psych nominals

In this section, I explore the behaviour of Hebrew OE nominalizations, with two reference points in mind: the first, English Psych nominals, mostly showing a lack of causative force or eventivity, as well as adhering to “Agent Exclusivity” when eventive. The other reference point is Greek and Romanian, languages that have nominals which preserve the causative, eventive semantics of the deriving verbs, and furthermore allow the licensing of non-agentive causers for

⁹ Alexiadou and Iordăchioaia (2014a, 2014b) follow recent approaches which take the anticausative form to involve a causative event as well (Doron 2003, 2012; Chierchia 2004; Alexiadou, Anagnostopoulou, and Schäfer 2006, 2015; Koontz-Garboden 2009). According to the authors, the only thing distinguishing OE from SE verbs (or causative from their anticausative alternates) is the presence of Voice (2014a: 126), licensing an external argument. The presence of complex event structure in OE and SE verbs is checked for using aspectual and event structure tests. A final piece of evidence which the authors take as signaling the presence of causation in anticausative Psych verbs is the choice of preposition; Psych noncausative (SE) alternates take the same preposition as do non-Psych anticausatives in these languages.

alternating Psych roots. First, I present some background on verbal and nominal morphology in Hebrew.

3.1. Semitic morphology

Native Hebrew words are built by intercalating a bi-/tri-/quadro-consonantal root and an abstract prosodic pattern of consonants and vowels, known in the literature as a *template*. All Hebrew verbs must appear in one of seven verbal templates, two of which are designated for passive verbs. In Hebrew, morphological relatedness is determined on the basis of the shared consonantal root. Some interrelations between the verbal templates also exist, and these are based on shared morpho-phonological properties of the templates. These interrelations are discussed in more detail in section 5.

Hebrew verbs and their nominalizations share a consonantal root as well as a syllable structure. The overt morphological connection between verbs from the different templates and their nominals allows us to track the verbal properties within each nominalization. For example, the root *x.š.v* below, inserted in the verbal template *pi'el*¹⁰ in (30a), has a (morpho-phonologically) transparently related nominal (30b):

(30) a. *Pi'el* verbal template: *CiCCeC*¹¹; derived-nominal template: *CiCCuC*

b. *Pi'el* verb: *xišev* ‘to calculate’; derived nominal: *xišuv* ‘calculation’.

Hebrew OE verb classes

¹⁰ I refer to the Hebrew verbal templates by their traditional names (which reflect the vocalic prosody of the active Voice of the template). These names are hereby marked in *italics*.

¹¹ *C* represents Semitic root consonants.

Two verbal templates host OE verbs: *pi'el* and *hif'il*. OE verbs appearing in *pi'el* are henceforth referred to as **Class 1** verbs. The OE verbs hosted in *hif'il* are henceforth referred to as **Class 2** verbs. Below are examples of Class 1 and Class 2 verbs and their nominal counterparts, in (31a) and (31b), respectively:

- (31) a. **Class 1:** verbal template *CiCCeC* + consonantal root *š.l.h.b.* – *šilhev* ‘to enrapture’;
nominal template *CiCCuC* + *š.l.h.b.* – *šilhuv* ‘causing rapture’.
- b. **Class 2:** verbal template *hiCCiC* + root *p.x.d.* – *hifxid*¹² ‘to scare’; nominal template *haCCaCa* – *hafxada* ‘scaring’.

It is important to note that there are no noticeable differences in the distribution of lexical meanings between the two verbal templates; both templates host a variety of caused Psych states, for example annoyance (e.g. Class 1 *icben* ‘to annoy’, Class 2 *hirgiz* ‘to irritate’), excitement (Class 1 *rigeš* ‘to excite’, Class 2 *hilhiv* ‘to excite’), amusement (Class 1 *bider* ‘to entertain’, Class 2 *hicxik* ‘make laugh, amuse’), and so on. There is no correlation, therefore, between the type of mental states denoted by the verbs and the morphological form in which these verbs are hosted¹³.

3.2. Semantic restrictions in Hebrew OE nominals

Psych nominals in Hebrew are not a unified class with regard to eventivity (or lack thereof), or with regards to “Agent Exclusivity” effects¹⁴. Regarding event structures, some OE nominals

¹² In Hebrew, there is a phonological rule whereby the phonemes /p/, /k/ and /b/ spirantize post-vocally, to yield [f], [x] and [v], respectively.

¹³ Exceptions are quadro-consonantal and reduplicated binary roots (e.g. in *ši'amem* ‘to bore’ and *bilbel* ‘to confuse’) which are restricted to *pi'el* on phonological grounds.

¹⁴ A note on inconsistencies exhibited with Psych nominals is due: between a fifth and a quarter of Psych verbs in Hebrew (both OE and SE) produce no nominal at all. In contrast, non-Psych causative verbs

show a lack of eventivity, while others do not. Sichel (2010) observes that only Class 2 nominals are eventive, while Class 1 nominals are not. In other words, event structure is correlated with class membership. I claim further that Class 1 nominals are usually either stative-only or ambiguous between stative and eventive meanings, as are English non-Psych nominals¹⁵. In contrast, Class 2 nominals are rarely ambiguous, and are overwhelmingly restricted to eventive readings.

Both classes of Hebrew OE nominals produce eventive nominals. This is exemplified for a Class 1 nominal in (32b) and a Class 2 nominal in (33b). These nominals, unlike their common English counterparts, preserve the causative change of state readings available in the verbal predication, as also attested in Greek and Romanian.

(32) a. *ha-moxrim pit-u et ha-ovrimve-ha-šavim*

the-salesmen lured.ACT¹⁶.CLASS1-3PL ACC the-passersby

le-hikanēs l-a-xanut

to-enter to-the-store

‘The salesmen lured the passerby into entering the store’.

b. *pituy ha-ovrimve-ha-šavim le-hikanēs l-a-*

the-luring.ACT.CLASS1 the-passerby to-enter to-the-

xanut al yedey ha-moxrim

store by the-salesmen

‘The luring of the passerby into entering the store by the salesmen’.

hosted in the same verbal templates (*pi’el* and *hif’il*) rarely lack a corresponding nominal. I return to this matter in section 4.1.

¹⁵ There are a few uncommon exceptions in the English psych nominal domain, such as *humiliation* above, which are ambiguous rather than stative-only.

¹⁶ ACT stands for morphologically-active.

- (33) a. *axiya ha-katan šel miri hifxid ota*
her.brother the-small of Miri scared.ACT.CLASS2 her
be-xavana
on-purpose
‘Miri’s little brother scared her on purpose’.
- b. *ha-hafxada šel¹⁷ miri al yedey axiya*
the-scaring.ACT.CLASS2 of Miri by her-brother
ha-katan
the-small
‘The frightening of Miri by her little brother.’

While the Class 2 nominal *hafxada* ‘scaring’ is eventive only, the Class 1 nominal *pituy* ‘temptation’ is ambiguous between a result noun reading and an eventive reading. The former is the more common, while the latter is accessible only in the presence of the internal argument.

The data in (34) presents the aspectual variety of Class 1 predicates: while the verbs can be eventive or stative, as shown by their compatibility with temporal modifier like *tox šniya* ‘in a matter of seconds’ and *bemešex ša’ot* ‘for hours’ (34a); their nominals are stative, as implied by their grammaticality with the phrase *macav sel x* ‘state of x’ (34b), and the temporal modifier *bemešex ša’ot* ‘for hours’. Other nominals receive result noun readings which denote an (abstract) entity (34c). This is implied by the possibility of pluralization¹⁸:

- (34) a. *ze bilbel/zi’aze’a/ye’eš oti tox šniya/*

¹⁷ In this example the head nominal is followed by a genitive complement (*šel* ‘of’). An alternative construction used with nominals is the construct state, e.g. (32b).

¹⁸ See Grimshaw (1990: 54) on the relevance of pluralization as a diagnostic of result nouns.

it confused/shocked/discouraged.ACT.CLASS1 me in second

be-mešex ša'ot

for hours

b. *hayiti be-macav šel bilbul/za'azu'a/ye'uš*

I in-a-state of confusion/shock/despair.ACT.CLASS1

be-mešex ša'ot

for hours

c. *bidur* ‘entertainment’, *pituy(im)* ‘temptation(s)’, *riguš(im)* ‘excitement(s)’, *timtum* ‘stupidity’.

It is important to note that, as in the English examples (19b), (19c), (20c) and (20d), Hebrew stative-only OE nominals also rule out agentive PPs:

(35) a. *ha-bos šeli dixdex oti*

the-boss my made.moody.ACT.CLASS1 me

‘The article/my boss made me moody’.

b. *ha-dixdux šeli (*al yedey ha-bos)*

the-moodiness.ACT.CLASS1 my by the-boss

‘My (state of) moodiness’.

Class 2 nominals, contrastingly, behave unlike any Psych nominals by lacking stative readings altogether, an observation which becomes even more exceptional considering the following: in example (36a), a Class 2 nominal is, in addition to being eventive, also agentive notwithstanding the lack of an explicit external argument. The presence of the implicit agentive external argument is exemplified by its control of the subject of the purpose clause, and by an

agentive adverb modifier (*mexuvan* ‘intentional’). The agentive change of state reading is moreover the only available reading even in the absence of both external and internal arguments (36b):

- (36) a. *hat'ayat*¹⁹ *ha-carxanim* *ha-mexuvenet/*
the-deception.ACT.CLASS2 (of) the-consumers the-intentional
kedey le-ha'alot et ha-kniya šel ha-mucar
in.order to-raise ACC the-purchasing of the-product
‘The intentional deceiving of the consumers/The deceiving of the consumers in order to raise the purchasing of the product’.
- b. *hat'aya* ‘deceiving (*the state of being deceived)’, *ha'acava* ‘causing sorrow (*sadness)’, *harga'a* ‘calming down (*calmness)’.

Thus, Class 2 nominals are unique in the landscape of nominalizations in general, not only by virtue of their exclusive eventivity, but also as they *imply* an agent even in the absence of a realized external argument.

It is important to note that the behaviour of Class 2 nominals suggests a strong link between *obligatory eventivity* and the presence of an *obligatory agent (implicit or explicit)*. This is compatible with previous observations that agents entail eventivity and are incompatible with states (e.g. Kratzer 1996). I do not argue for a direction of causality for this correlation, but in section 5 I suggest an explanation to both phenomena in correlation based on the interrelations between the Hebrew verbal templates, following Doron’s (2003) analysis.

¹⁹ The last vowel [-a] of the basic nominal form (as in the *b* example below) alternates with [-at] when appearing in construct state.

Table 1 below summarizes the possible types of readings OE nominals may get via representative examples, according to the deriving verbal template.

Reading Verbal template	Eventive (+ change of state)	Non-eventive (Stative/result nouns)
Class 1 (<i>pi'el</i>)	usually requires realization of arguments, ex. (4b)	<i>ye'uš</i> 'despair' <i>za'azu'a</i> 'shock' <i>sipuk</i> 'satisfaction' <i>še'amum</i> 'boredom'
Class 2 (<i>hif'il</i>)	<i>haksama</i> 'charming s.o.' <i>hargaza</i> 'annoying s.o.' <i>hataša</i> 'causing exhaustion'	-

- (37) a. ***The army's** destruction of the city.* pronominal genitive NP
 b. *The destruction of the city **by the army**.* *by* phrase

These a-adjuncts are likened to the implicit arguments of passives, which are suppressed and hence also non-obligatory. The characterization of pre-nominal genitive NPs/*by* phrase in nominals as adjunct-like is also promoted in Kratzer (1996) and Alexiadou (2001).

Other authors attribute the pre-nominal genitive NPs/*by* phrases in nominals an argumental status. For example, on the basis of syntactic evidence from Hebrew structures containing derived nominals, Sichel (2009) suggests that implicit agents in nominalizations are structurally represented, and analyses them as a pronominal empty category. Similarly, Bruening (2013) defines these NPs as null NPs projected from the nominalizing head, and claims that, unlike the implicit argument of passives, they are not existentially bound.

The existence of Psych nominals with what seems like an implicit agent, stand as supporting evidence for authors which attribute these elements an argumental status (e.g. Sichel 2009, Bruening 2013). The evidence from Hebrew is especially strong, as the nominals involved imply an agent even in isolation, i.e. without the realization of the internal argument; recall Grimshaw's account, according to which many nominals are syntactically ambiguous between result nouns and eventive nouns. This holds even for nominals derived from prototypically transitive verbs like *destruction* (see section 2.2 above). Class 2 nominals are then uncharacteristically unambiguous.

3.3. Agent Exclusivity

The second generalization that was based on English data is that whenever OE nominals are eventive they select agents, although the corresponding verbs are compatible with both agents and causers. On a par with the English observations, Hebrew eventive OE nominals show certain "Agent Exclusivity" effects. Class 2 nominals were already shown above to have obligatory

implicit agents, as exemplified again below (39b). Restriction to agents is also the case for Class 1 nominals which get eventive readings, as shown in (38b):

- (38) a. *ha-moxrim/ha-moda'ot* *pit-u* *et*
the-salesmen/the-advertisements lured.ACT.CLASS1-3PL ACC
ha-ovrimve-ha-šavim le-hikanes l-a-xanut
the-passersby to-enter to-the-store
‘The salesmen/the advertisements lured the passerby into entering the store’.
- b. *pituy* *ha-ovrimve-ha-šavim le-hikanes l-a-*
the-luring.ACT.CLASS1 the-passerby to-enter to-the-
*xanut al yedey ha-moxrim/ *ha-moda'ot*
store by the-salesmen the-advertisements
‘The luring of the passerby into entering the store by the salesmen/*the advertisements’.
- (39) a. *ha-mefakdim/ha-pkudot* *hišpil-u* *et*
the-commanders/the-commands humiliated.ACT.CLASS2-3PL ACC
ha-xayalim
the-soldiers
‘The commanders/the commands humiliated the soldiers’.
- b. *ha-hašpala* *šel* *ha-xayalim al yedey*
the-humiliating.ACT.CLASS2 of the-soldiers by
*ha-mefakdim/*ha-pkudot*
the-commanders/the-commands

‘The humiliation of the soldiers by the commanders/the command’.

It thus appears that Hebrew OE nominals also adhere to “Agent Exclusivity”. Nonetheless, similarly to Greek and Romanian, a subset of OE nominals in Hebrew is grammatical with non-agentive causers, introduced by causative PP. This phenomenon is presented in section 5.1.2.

In the following section I present Doron’s (2012) thematic characterization of Hebrew Psych verbs, which can be used as a basis to explain some of the variation presented above. This study establishes a correlation between the thematic structure of Psych verbs and the aspectual properties of their nominalizations, and although it does not cover all instances of semantic inconsistencies between the two classes, it can explain why Class 1 nominals tend to be stative, and why some nominals from both classes lack a derived nominal altogether (see footnote 14).

4. Explaining event structure variation in thematic terms

In the previous chapter, I have shown that in Hebrew, the two classes of OE nominals behave differently: nominals belonging to Class 1 show event structures as expected on the basis of English data, while nominals of Class 2 preserve both causative and eventive semantics of the base verbs.

The study described below is a thematic characterization of Psych verbs, which also provides an explanation to some aspects of the variation in event structures exhibited by Psych nominals. More specifically, Doron’s account can explain the aspectual properties of the nominalizations based on the semantic nature of the non-experiencer argument. Crucially, however, the thematic picture painted by Doron does not capture what appears to be the most

notable aspectual difference between the two classes of OE nominals – the ambiguity of Class 1 nominals vs. the sweeping non-ambiguity of Class 2 nominals. Nonetheless, the analysis by Doron sheds light on the way thematic properties of Psych verbs determine eventivity or lack thereof in their derived nominals, to be complemented by my own analysis, in section 5.

4.1. The Cause vs. T/SM thematic distinction in psychological predicates

Doron's (2012) study offers an alternative implementation of Pesetsky's (1995) classification of Psych verbs into two groups, as reflected in the following example:

- (40) a. *The television set worried John.*
b. *John worried about the television set.*

As opposed to previous accounts of the aspectual properties and argument structure of Psych verbs, which uniformly take the non experiencer argument of these verbs to be a theme (Belletti and Rizzi 1988), Pesetsky (1995) defines *two* subclasses of Psych verbs.

One class is **Cause-Experiencer** verbs, as in (40a). In these verbs, the stimulus can indirectly bring about the mental state denoted by the verbs, by triggering an emotion that is actually directed towards a different object, the Target/Subject Matter (T/SM), thus creating a causal chain. The second class is **Target/Subject Matter (T/SM)-Experiencer** verbs, as in (40b). These verbs denote a mental state directed towards an object which triggers the emotion directly. The link between the source and the result state is unmediated by a third party.

In (40a), the television set is not the T/SM, but the Cause of the worry. The state of worrying may be related to different factors, e.g. that poor color display might damage his children's' eyesight. However, in (40b), the TV set is the direct trigger of John's worry. On the

basis of this semantic contrast, Pesetsky suggests that Psych verbs are not a unified class thematically, since the non-experiencer arguments have different semantic roles in each subclass.

Notice that it also follows that OE verbs take causers, while SE verbs take T/SMs, or, in other words, the thematic classification of the verb correlates with syntax. In section 2.1 I also mention that English OE verbs are in principle ambiguous between states and events, while SE verbs are strictly stative (following Dowty 1991: 579–580, Levin and Rappaport-Hovav 2005: 15, 22–24). Thus, the thematic classification is correlated with both syntactic and aspectual properties of the verbs, as illustrated with example (40), repeated below:

- (41) a. *The television set worried John.* OE verb/ambiguous (cause)
 b. *John worried about the television set.* SE verb/stative (T/SM)

Doron (2012) questions the validity of the syntactic correlation obtained from Pesetsky's analysis, and proposes that (i) SE forms may also involve causation, and (ii) OE verbs may also take T/SMs. Doron demonstrates her claims with Hebrew OE-SE alternating verbs, which are not very common in English (Pesetsky 1995: 96; Alexiadou and Iordăchioaia 2014b, and section 2.1). First, Doron points out that *non*-Psych verbs in English do realize non-agentive causers with a non-agentive preposition in (42) (example taken from Pesetsky 1995: 196). Doron compares this English example to Hebrew anticausatives, which host Hebrew SE verbs, e.g. in (43b):

- (42) *Sue yelled **out of** frustration* *out of* = P_{CAUS}

- (43) a. *ha-haxlata 'icbena et ron Active verb*
 the-decision annoyed.ACT.CLASS1 ACC Ron
 'The decision annoyed Ron'.

- Ron got-annoyed.MID²⁰.CLASS1 **from-the-decision**

(44) *i maria enohlithike me ta nea*
the Maria annoyed.NACT with the news
‘Maria got annoyed with the news’.

- Maria RF-has annoyed **from** news

(46) *Mary (deliberately) angered me.*

²¹ But see a refinement of this claim in section 5.2.

The triggering annoyance may be involuntary, but may also be intentional. Doron claims that, differently from causers, T/SMs are passive entities towards which the attention of the experiencer is directed, and are never agentive; this is the case even in cases where the non-experiencer is human, i.e. capable of acting volitionally. Doron thus proposes that incongruence with agentive readings is a behaviour differentiating causers from T/SMs. I exemplify this test on several verbs, listed by Doron as T/SM-experiencer verbs. Importantly, verbs from both OE classes may take a T/SM argument, which means that thematic structure is not correlated with class membership/morphological template hosting Psych verbs. (47a) is a Class 1 verb, while (47b) is a Class 2 verb.

- (47) a. *hi ritqa oto*
 she fascinated.ACT.CLASS1.SG.3SG.F him
 (**be-xavana/*kedey še-ya 'arix ota*)
 on purpose/in.order.to that-appreciate.FUT.2SG.M her
 ‘She fascinated him (*on purpose/*so he would appreciate her)’.
- b. *ha-mora hitmiha oti*
 the-teacher puzzled.ACT.CLASS2.SG.F me
 (**be-xavana/*kedey še-etanyen b-a-nose*)
 on purpose/in.order.to that-interested.FUT.1SG in-the-subject
 ‘The teacher puzzled me (*on purpose/*to make me interested in the subject)’.

A second diagnostic comes from Pesetsky’s (1995) original study. According to Pesetsky, T/SM verbs should, in principle, be felicitous with the addition of a causer argument to

the predication, because causers and T/SMs are two distinct semantic roles²². Doron shows that this expectation is borne out in Hebrew: in the examples below with verbs Doron classifies as T/SM-experiencer verbs, a “true” Causer *hu* ‘he’ is added to denote the indirect cause of the ensuing mental state, with the T/SM argument realized via a PP, here headed by *be-* ‘with’:

- (48) a. *hu yige’a oti be-targilim kašim*
 he wearied.ACT.CLASS1 me **with**-exercises difficult.PL
 ‘He wearied me with difficult exercises’.
- b. *hu nixem oti be-šokolad*
 he comforted.ACT.CLASS1 me **with**-chocolate
 ‘He comforted me with chocolate’.

For the verbs in (49)–(51) below, a cause cannot be added (*a* examples), thus implying that the non-experiencer argument in these verbs (realized with a PP headed by *mi/me-* ‘from’) is a causer. To show that this is not a case of semantic incoherence, I add the periphrastic counterparts of each sentence. All the ungrammatical sentences in the *a* examples are perfectly grammatical and coherent when the complex predication *garam V_{INF}* ‘cause V_{INF}’ is used (*b* examples):

- (49) a. **ha-mexkar hifxid oti mi-štiyat kafe*
 the-research scared.ACT.CLASS2 me from-drinking coffee
- b. *ha-mexkar garam li le-faxed mi-štiyat kafe*
 the-research made to.me to-be.scared from-drinking coffee

²² On the impossibility of adding a cause to a T/SM predication in English (“The Target/Subject Matter Restriction”), see Pesetsky (1995: 60), and possible explanations in Reinhart 2001; Doron 2012).

‘The article made me scared of coffee-drinking’.

- (50) a. **ha-pirsum* *hilxic* *oti* *me-ha-dedlayn*
 the-announcement stressed.ACT.CLASS2 me from-the-deadline
- b. *ha-pirsum* *garam li* *le-hilaxec* *me-ha-dedlayn*
 the-announcement made to.me to-stress from-the-deadline

‘The announcement made me stressed about the deadline’.

- (51) a. **ha-katava* *‘icben-a* *oti* *me-ha-xok*
 the-article annoyed.ACT.CLASS1-3SG.F me from-the-law
 ha-xadaš
 the-new
- b. *ha-katava* *garma li* *le-hit’acben* *me-ha-xok* *ha-xadaš*
 the-article made.3SG.F to.me to-be.annoyed from-the-law the-new

‘The article made me annoyed about the new law’.

The difference in the kind of preposition heading the PP introducing the non-experiencer argument, presumably T/SMs in (48) and causers in (43b), is Doron’s third diagnostic for the presence of a T/SM. The preposition used to introduce a T/SM argument (*be-*, ‘with, about’) in anticausative SE alternates of OE verbs, is not the one used for introducing the causer argument in Hebrew anticausative verbs (both Psych and non-Psych). In (34b) above, the *cause* of the mental state is introduced via a PP headed by *mi/me-* ‘from’.

Contrastingly, in the SE alternates of the two OE T/SM verbs *yige’a* ‘to exhaust’ (48) and *nixem* ‘to comfort’ below, the preposition that surfaces is the non-causative one, *be-* ‘with,

about'. This further leads Doron to classify both these verbs as well as their SE counterparts as T/SM-experiencer verbs:

- (52) a. *hityaga-ti* *be-targilim* *kašim*
 got.wearied.MID.CLASS1-1SG **with**-exercises difficult.PL
- b. *hitnaxam-ti* *be-šokolad*
 got.comforted.MID.CLASS1-1SG **with**-chocolate

4.1.1. The thematic explanation of aspectual variation among Hebrew OE nominals

What is then the relevance of these claims to the matter at hand, namely the variable semantic behaviours exhibited among OE nominals? First, it is important to note that Doron's generalizations are not in complete accordance with the descriptive picture painted here, namely that Class 1 nominals are either stative or ambiguous, while Class 2 ones are eventive only. Doron states that it is usually Class 1 verbs which lack eventivity, but does not account for the ambiguity exhibited by some nominals from this class, nor to the observation that for some reason, Class 2 nominals do not show this ambiguity.

Nonetheless, to understand how the thematic factor, i.e. the semantic role of the non-experiencer argument, is related to the aspectual properties of OE nominals in Hebrew, it is first important to note that Doron attributes different structures to each of the subtypes of Psych verbs. Doron's generalizations are summarized below:

- (53) a. In Cause-experiencer verbs, the cause is root-external, and the experiencer is **the only internal argument**.

b. T/SM-experiencer verbs have **two internal arguments**, the T/SM and the experiencer.

On the basis of the structural claims in (53), Doron derives the availability of eventive nominalizations for some OE verbs. Doron observes that amongst Psych verbs, only cause-experiencer verbs have eventive nominals (either OE or SE), while T/SM-experiencer verbs produce stative nominals. These observations are in fact a fourth diagnostic used by Doron for differentiating cause- from T/SM-experiencer verbs.

As already established, T/SMs are not construable as agentive; recall that eventive nominalizations are restricted to an agentive external argument as follows from “Agent Exclusivity”. Predications with causers, as argued above and illustrated in example (46), are in principle ambiguous between an agentive and a causative, non-volitional reading when the argument is human (see also Kallulli 2006), and as such may obey “Agent Exclusivity”. Accordingly, cause-experiencer verbs may produce eventive Psych nominals. The semantic nature of T/SM arguments, on the other hand, is not compatible with agentivity, and as such T/SM-experiencer verbs cannot produce eventive nominals.

The verbs below are classified by Doron as T/SM-experiencer verbs, and indeed derive either *stative* nominals or none at all²³, the latter option being the only possible one for Class 2 nominals, which altogether lack stative readings²⁴. Notice that this account cuts across

²³ Doron does not discuss Psych verbs which do not produce a nominal at all. I generalize her account here to include these verbs as well.

²⁴ It is not clear the Class 1 verbs in (54a) do not derive *any* nominal, as other so-called T/SM-experiencer verbs in this class do produce stative nominals. In footnote 14 I mention that there are substantial gaps in the lexicon of both OE and SE nominalizations. Focusing on OE verbs which lack a nominalization, it is hard to pinpoint a single factor that is responsible for the gap; the group of OE verbs which fail to produce nominals altogether is not homogenous: some of its members may be classified as T/SM verbs (as in this example), some as non-agentive (see (62) below), and others are perfectly acceptable with agentive

the two OE classes, i.e. it does not correlate with templatic morphology (although, again, Doron mentions that it is mostly Class 1 verbs which are T/SM verbs).

(54) a. **Class 1:** *sikren* ‘to intrigue’, **sikrun*; *inyen* ‘to interest’, **inyun*; *riteq* ‘to fascinate’, **rituq*; *komem* ‘caused indignation’, **kikmum*; *iyef* ‘to tire’, **iyuf*.

b. *orer* ‘to wake, to arouse’, *irur* ‘(a state of) excitation’; *ye’eš* ‘to despair’, *ye’uš* ‘(a state of) despair’.

(55) **Class 2:** *hig’il* ‘to disgust’, **hag’ala*.

Similarly, SE verbs which are classified by Doron as T/SM verbs (notice the choice of preposition, *be-* ‘with, about’) are also shown to produce non-eventive nominals, e.g.

(56) *hit’anyen (be)-* ‘be interested (in)’, *hit’anyenut (be-)* ‘being/*becoming interested (in)’.

To sum up, Doron’s study of the thematic structures of Psych verbs in Hebrew accounts for the aspectual variation exhibited by Psych nominals based on the semantic properties of the Psych **verbs**: T/SM arguments are by definition non-agentive, and the lack of eventive readings for this group of verbs immediately follows. The correlation between the thematic/argument structure of the verbs and the aspectual properties of the nominals applies on both OE and SE verbs: causative OE and SE verbs may derive eventive nominals, and both T/SM-experiencer OE and SE verbs are expected to fail at doing so. This observation is important, because it means that Doron’s account is cross-categorical, and does not distinguish between OE and SE verbs as does Pesetsky, who, as mentioned above, correlates the thematic structures of Psych verbs with their syntax, i.e. the OE vs. SE configurations.

readings, e.g. *icben* ‘to annoy’, **icbun*; *ixzev* ‘to disappoint’, **ixzuv*. In other words, Doron’s account – as well as the other explanations I suggest in this thesis – does not cover all instances of gaps.

The table below summarizes Doron’s thematic account with regards to OE verbs:

Table 2. Doron’s thematic account.

OE verb OE nominal	Cause-experiencer	T/SM-experiencer
Class 1	Eventive	Stative or N/A ²⁵
Class 2	Eventive	N/A

4.2. Event structure effects in OE nominals: non-agentivity

Keeping in mind Doron’s account of eventivity in Psych nominals, i.e. that only verbs that have a potentially-agentive external argument may derive eventive nominals due to “Agent Exclusivity”, I offer to broaden her generalization, still relying on “Agent Exclusivity”. While Doron contrasts cause-experiencer verbs and T/SM-experiencer verbs (the former including agents), stating that only the former group is expected to produce eventive nominals, I suggest that the more precise contrast is between agentive and non-agentive verbs, where similarly, only the former subset of Psych verbs may produce eventive nominals. My proposal here in fact subsumes Doron’s generalization, as I claim that the new thematic group presented here – non-agentive verbs – includes both verbs which take T/SMs as well as verbs which allow causers, but rules out agents²⁶.

In principle, I agree with Doron that some OE verbs in Hebrew appear to take a T/SM rather than a cause argument, and that the selection of a T/SM argument is a reflection of their

²⁵ See footnote 23.

²⁶ Accordingly, what Doron defines as a *causer* – an argument potentially compatible with an agentive reading, is different than how I refer to causers here – non-agentive external arguments which are nonetheless causers rather than T/SMs.

lexical semantics. For example, the mental state with verbs such as *riteq* ‘to fascinate’, *’inyen* ‘to interest’ and *sikren* ‘to intrigue’ is one most naturally construable as directly triggered by the perception of the external stimulus.

Nonetheless, a point I would like to make here is that, putting aside what seem to be “core”, prototypical T/SM verbs, i.e. *riteq* ‘to fascinate’, *’inyen* ‘to interest’ and *sikren* ‘to intrigue’, I believe that a broader generalization can be made using thematic principles as a factor conditioning aspectual values of Psych nominals. I suggest that not only Psych verbs which take T/SMs fail to produce eventive nominals, but also verbs that are **non-agentive** fail to do so. Non-agentive Psych verbs are verbs that cannot get an agentive construal because of some idiosyncratic components of their lexical semantics, and unlike T/SM verbs, do license causative arguments. With non-agentive verbs, the lack of eventivity in their derived nominals follows from the incongruence with agents – the only thematic role compatible with eventive OE nominals, according to “Agent Exclusivity”.

To define non-agentive OE verbs, I repeat example (20) with the verb *amaze*. In section 2.3, following Alexiadou and Iordăchioaia (2014a: 120), I demonstrated that this verb does not accept agentive readings, and accordingly does not produce eventive nominals, because the latter are restricted to agentive external argument according to “Agent exclusivity”:

- | | |
|--|-------------------|
| (57) a. <i>The results/my student (*deliberately) amazed me.</i> | non-agentive only |
| b. <i>My amazement (at the results/at my student).</i> | stative only |
| c. <i>*The results’/*the student’s amazement of me.</i> | |
| d. <i>My amazement (*by the results/*by my student).</i> | |

In the literature on Psych verbs, it has been observed (van Voorst 1995, and also see Rozwadowska 1988: 155–156) that some OE verbs are conceptually infelicitous with agents, an incongruence having to do with the seeming lack of *control*²⁷ the agent has on the bringing about of the mental state in the experiencer. To show this, I use the test offered by Doron – showing that agentive modification and subject control are ungrammatical²⁸. As reflected in the translation, only a non-agentive cause interpretation is available for the external argument *my friend*:

- (58) a. *ha-xaver* *šeli* *hid'ig* *oti*
 the-friend my worried.ACT.CLASS2 me
 (**be-xavana*/**kedey* *le-darben* *oti* *li-fnot* *le-ezra*)
 on-purpose/in.order to-motivate me to-seek for-help
 ‘(Something about) my friend worried me’.

Hebrew manifests another effect of non-agentivity, regarding an entailed change of state. Interestingly, some Hebrew OE verbs show different entailment patterns depending on the thematic role of the external argument. For example, for the verb *nixem* ‘to console’, a change of state is entailed with the causer (59b) but not with the agent argument (59a):

- (59) a. *ha-xaver-a šeli nixma oti etmol*
the-friend-F my consoled.ACT.CLASS1.3SG.F me yesterday
be-mešex ša'ot, aval lo hitnaxam-ti
in-duration hours but not became.consoled.MID.CLASS1-1SG

²⁷ For a discussion of the notion of agentive control, see e.g. Martin and Schäfer 2014.

²⁸ Doron's first diagnostic for T/SMs in Psych verbs – availability with an agentive reading (47) – does not discern between non-agentive verbs and T/SM-experienter verbs, i.e. a negative result when checking for agentive readings is a compatible result with both types of verbs. Therefore, this test seems more suitable as a diagnostic for non-agentivity rather than for the role of T/SM.

b.	<i>*ha-šokolad</i>	<i>nixem</i>	<i>oti</i>	<i>etmol,</i>	<i>aval</i>
	the-chocolate	consoled.ACT.CLASS1	me	yesterday	but
	<i>lo</i>	<i>hitmaxam-ti</i>			
	not	became.consoled.MID.CLASS1-1SG			

It is also interesting to note that, in pairs/groups of verbs with close meanings in Hebrew, some are more felicitous with agents than others, while all are completely grammatical with non-agentive causers³⁰ (60b), (61b):

- (60) a. *hu* *hifxid/*hiv'it* *oti* *be-xavana*
 he scared/mortified.ACT.CLASS2 me on-purpose
 b. *ha-xadašot* *hiv'it-u* *oti*

³⁰ This thematic tendency is especially prominent with psychological verbs which are based on an analogical extension of a verb with a basic physical change of state meaning. These are usually non-felicitous with agentive causers [ii], but are perfectly felicitous with non-agentive causers [i]:

[i]	<i>ha-sipur</i>	<i>tiltel/sixrer/ri'anen/pike'ax/</i>		
	the story	shook/dazzled (physical: spun)/invigorated (refreshed)/disillusioned (sobered up)/		
	<i>riteq/</i>	<i>hirti'ax/hirdim</i>		<i>oti</i>
	fascinated (confined).ACT.CLASS1/infuriated (boiled)/bored (made fall asleep).ACT.CLASS2			me
[ii]	<i>*hu tiltel/sixrer/ri'anen/pike'ax/riteq/hirti'ax/hirdim</i>		<i>oti</i>	<i>be-xavana</i>
	he shook/dazzled/invigorated/disillusioned/fascinated/infuriated/bored		me	on-purpose

- | | | | |
|---------|-------------------|------------------------------|----------------------|
| | the-sights | mortified.ACT.CLASS2-3PL | me |
| (61) a. | <i>hu</i> | <i>hivhil/*hixrid</i> | <i>oti be-xavana</i> |
| | he | startle/terrified.ACT.CLASS2 | me on-purpose |
| b. | <i>ha-xadašot</i> | <i>hixrid-u</i> | <i>oti</i> |
| | the-news | terrified.ACT.CLASS2-3PL | me |

The verbs above also stand as evidence to some type of “bias” against agents (in contrast to non-agentive causers) among Psych verbs.

If indeed non-agentive OE verbs are a thematically distinct group in Hebrew, the next step is to check whether verbs that fit the definition of non-agentive verbs, indeed fail to derive eventive nominals, as follows from “Agent Exclusivity” constraints. In fact, some OE verbs from both OE classes fit this characterization, and lack a derived nominal altogether³¹:

- (62) a. **Class 1:** *pikē’ax* ‘to disillusion s.o. (lit. to sober up)’, **piku’ax*; *civre’ax* ‘to make moody’ **civru’ax*; *himem* ‘to stun’, **himum*.
- b. **Class 2:** *hidhim* ‘to astonish’, **hadhama*; *hifli* ‘cause wonder’, **hafla’a*; *hixrid* ‘to startle, to terrify’; *hiv’it* ‘to mortify’.

Another property indicating that these verbs are not T/SM experiencer verbs, is that the SE forms of the verbs in (62) license (optional) *mi/me-* ‘from’ phrases, as is characteristic of the anticausative alternates of causative verbs. Recall that, in contrast, the SE alternates of T/SM verbs were shown to often have the preposition *be-* ‘with’, e.g.

- | | | | |
|---------|-----------------------------|----------------------|-------------------|
| (63) a. | <i>hictavrax-ti</i> | <i>me-ha-kišalon</i> | <i>b-a-mivxan</i> |
| | become.moody.MID.CLASS1-1SG | from-the-failure | in-the-exam |

³¹ See footnotes 14 and 24.

<i>nidham-ti</i>	<i>me-ha-binyanim</i>	<i>ha-mefo 'ar-im</i>
was.amazed.MID.CLASS2-1SG	from -the-buildings	the-luxurious-M.PL
'I was amazed at the luxurious buildings'.		

Table 3. A comparison between the two thematic accounts.

	Doron (2012)			Non-agentivity		
	Cause-experiencer		T/SM-experiencer	Agentive OE verbs	Non-agentive OE verbs	
Thematic roles licensed by the verb	agent	(non-agentive) causer	T/SM	agent	(non-agentive) causer	(T/SM)
[+Eventive] nominal?	+	-	-	+	-/+ (see section 5.1 for exceptions)	-

49

The thematic characterizations presented in this section explain variability in event structure in OE nominals in a manner which *cuts across* the two classes of verbs: the thematic structure of Psych verbs determines the lack of eventivity in Class 1 nominals e.g. (54b), and perhaps also the lack of any deverbal noun for some OE verbs regardless of morphological class, e.g. (54a) for Class 1 and (55) for Class 2. However, it does not explain the near-complete lack of stative interpretations with Class 2 nominals, a trait claimed to be characteristic of Psych nominals in English.

Another point where the thematic account is lacking was alluded to above, where I noted that in Greek and Romanian, only a subset of Psych nominals license non-agentive causers, and are grammatical with both agents and causers, while the rest are restricted to agents. In Hebrew as well, one class of OE nominals license non-agentive causers, and as will be shown, the thematic account cannot account for this second aspect of variation either, as the availability with causers depends on class membership, and not on the thematic characterization on the OE verbs.

In order to address these matters, I first demonstrate the second kind of variable behavior that draws a clear line between the two classes of nominals – the argument realization patterns they permit. I then offer an analysis of OE nominals which emphasizes the role of templatic morphology in determining the properties of OE nominals.

5. Explaining variation in morphological terms

In the previous section, it is shown that Hebrew OE nominals seem to adhere to “Agent Exclusivity”, the semantic restriction to agentive external arguments in (OE) nominals. However, in this section I show that some OE nominals override this restriction, licensing non-agentive

causers as PPs, and that this property is correlated with class membership – only verbs from the **second** class of OE nominals show this behaviour.

5.1. Argument realization patterns in OE nominals

To introduce the second kind of variation between OE nominals from the two classes, I first have to present another class of Psych nominals in Hebrew. These differ from OE nominals described so far in two aspects: first, they appear in morphologically-*middle* forms, as opposed to their active form, OE counterparts. Second, they have a Subject Experiencer (SE) configuration, where the experiencer is the syntactic subject, and the non-experiencer argument is only optionally realized, via a PP. The second property in which OE and SE nominals differ is that the latter have *intransitive* syntax. Aspectually, these SE verbs are eventive, and denote an entrance into a state, or ambiguous between an inchoative and a stative reading.

5.1.1. The Hebrew middle form overrides “Agent Exclusivity”

In Hebrew, SE alternates of OE verbs are hosted in morphological middle forms, as described for Greek and Romanian, and demonstrated in (42)b above, and below with the Psych root *hipnet* ‘to hypnotize’:

- (64) a. *ha-muzika* *hipnet-a* *oto* OE verb
 the-music hypnotized.ACT.CLASS1-3SG.F him
 ‘The music hypnotized him’.
- b. *hu* *hithapnet* *me-ha-muzika* SE verb
 he became.hypnotized.MID.CLASS1 from-the-music
 ‘He became hypnotized from the music’.

As claimed in section 4, many of the SE verbs in Hebrew are eventive and take a cause argument, while others are stative and take T/SM arguments. Additionally, it has been claimed that each thematic structure – causative vs. T/SM – appears with an (optional) PP, headed by a preposition which typically introduces the thematic role of cause vs. T/SM. In this section, I focus on eventive, cause-experiencer SE forms, and do not discuss stative-only, T/SM-experiencer SE verbs. This is because the latter group is not expected to derive eventive SE nominals following the two studies introduced in the previous sections, Doron (2012) and Alexiadou and Iordăchioaia (2014a).

Class 1 verbs, hosted in the verbal template *pi'el*, have a corresponding middle form *hitpa'el*, which hosts their SE alternates. Importantly, the connection between these two templates holds outside of the realm of Psych verbs. For example, some of the roots which participate in the causative/anticausative alternation are hosted in these two templates, the causative counterpart in *pi'el*, and the anticausative one in *hitpa'el*.

An example of an alternation with a Psych root is below, where the active form in (65a) hosts the OE verb *sixrer* ‘make giddy’, and the middle form in (65b) hosts the SE verb *histaxrer* ‘become giddy’. The SE nominalization is in (65c). A similar pattern is presented in (66) with the verb *ši'amem* ‘to bore’/*hišta'amem* ‘to be/get bored’.

- (65) a. *ha-mofa sixrer* *et ha-cofim*
 the-show caused.giddiness.**ACT.CLASS1** ACC the-spectators
 ‘The show caused the spectators to feel giddiness.’
- b. *ha-cofim histaxrer-u* *(me-ha-mofa)*
 the-spectators became.giddy.**MID.CLASS1-PL** from-the-show

‘The show caused the spectators to feel giddy.’

c. *ha-histaxrerut* *šel* *ha-cofīm* *(me-ha-mofa)*
 the-becoming.giddy.MID.CLASS1 of the-spectators from-the-show

(66) a. *ha-ma’amar* *ši’amem* *ota*
 the-article bored.ACT.CLASS1 her

‘The article bored her’.

b. *hi* *hišta’amem-a* *(me-ha-ma’amar)*
 she got.bored.MID.CLASS1-3SG.F from-the-article

‘She got bored from the article’.

c. *ha-hišta’amemut* *šel* *ha-student-it* *(me-ha-ma’amar)*
 the-getting.bored.MID.CLASS1 of the-student-SF from-the-article

As opposed to Class 1 verbs, **Class 2** verbs do not have one consistent form hosting their SE alternates, making the OE-SE alternation for Class 2 verbs much less consistent than the *pi’el-hitpa’el* alternation discussed above. SE forms corresponding to Class 2 OE verbs are usually hosted in *nif’al*, e.g. (67b). The middle form nominal derived from the SE verb is in (67c):

(67) a. *ha-xarakim* *hig’il-u* *et* *ha-yeled*
 the-insects caused.disgust.ACT.CLASS2-3PL ACC the-boy

‘The insects disgusted the boy’.

b. *ha-yeled* *nig’al* *(me-ha-xarakim)*

‘The boy got disgusted by the insects’.

However, other SE forms corresponding to Class 2 verbs appear in the active *pa'al* template (68) (parallel to the English *fear* class), in the *hitpa'el* template (69), and occasionally in more than one of these three options, e.g. the OE verb *hif'im* 'to thrill' and the SE alternates in *hitpa'el/nif'al*: *hitpa'em/nif'am* 'to be/become thrilled'. It is important to note that *pa'al*, besides being morphologically **active** rather than middle, hosts SE verbs which have a **stative** aspectual value (as is the case for the English *fear* class), in contrast to the eventive *hitpa'el* and *nif'al* SE verbs:

b. <i>ka 'as-ti</i>	<i>al</i>	<i>ha-haxlata</i>
was.angry.ACT.SIMPLE-1SG	about	the-decision
'I was angry at the decision'.		

c. *ha-ka'as* *šeli* *al ha-haxlata*
the-anger my about the-decision
‘My anger at the decision’.

54

- (69) a. *ha- 'icuv* *hilhiv* *oti*
 the-design excited.ACT.CLASS2 me
 'The design excited me'.
- b. *hitlahav-ti* *me-ha- 'icuv*
 got.excited.MID.CLASS1-1SG from-the-design
 'I got excited by the design'.
- c. *ha-hitlahavut* *šeli* *me-ha-icuv*
 the-getting.excited.MID.CLASS1 my from-the-design

The consistency of the alternation of roots between the active template *pi'el* and the middle template *hitpa'el* vs. the lack of a fixed template hosting anticausative alternates of *hif'il* verb led Doron (2003) to claim that the former pair of templates are morphologically-related, while the *hif'il* template altogether lacks a derivationally-related middle template.

The table below illustrates the lexicon of Psych verbs in Hebrew and the interrelations between active (OE) and middle (SE) forms.

Table 4: OE and SE verbs.

Class Voice	Simple	Class 1	Class 2
Active/OE	<u><i>pa'al</i></u> verbs (<i>fear</i> class) (hosting some Class 2 stative SE verbs), e.g. <i>paxad</i> 'be scared'	<u><i>pi'el</i></u> ' <i>ixzev</i> 'disappoint' ' <i>imlel</i> 'make miserable' ' <i>icben</i> 'annoy'	<u><i>hif'il</i></u> <i>hifxid</i> 'frightened' <i>hel'a</i> 'make weary' <i>he'eciv</i> 'sadden'
Middle/SE	<u><i>nif'al</i></u> (hosting some Class 2 SE	<u><i>hitpa'el</i></u> <i>hit'axzev</i> 'get disappointed'	

	verbs) <i>nil'a</i> 'become weary' <i>ne'ecav</i> 'become sad'	<i>hit'amlal</i> 'become/be miserable' <i>hit'acben</i> 'become annoyed'	
--	--	---	--

As briefly mentioned above, the argument structure of SE verbs and nominals in Hebrew is identical to that described for Greek and Romanian SE verbs in (26) and (27), where a morphologically non-active predicate has an obligatory experiencer argument realized as the subject, and a non-obligatory cause introduced via a causative PP, e.g. (70) and (71).

- (70) *hu hit'axzev me-ha-tocar ha-sofi*
he became.dissatisfied.MID.CLASS1 from-the-product the-final
- (71) *hi hitbalbel-a me-ha-hanxayot*
she became.confused.MID.CLASS1-3SG.F from-the-instructions

This resemblance is the basis for my analysis of the data introduced in the next subsection.

5.1.2. Agent Exclusivity revisited

In Hebrew, not only nominals derived from middle verbs as in (43b),(65c) and (66c) exhibit structures with a subject experiencer and a cause introduced in a characteristic PP. **Active**, OE verbs may also produce such nominals. Crucially, this argument structure configuration is exclusive to **Class 1** verbs, and ungrammatical for Class 2 verbs.

In (72b) and (73b) below, the agentive argument structure is shown to be felicitous with OE nominals from both classes of OE nominals. This was already established in section 3.3, where it was also shown that these nominals adhere to “Agent Exclusivity”. However, the non-

agentive PP (illustrated by the choice of *mi/me-* ‘from’) is only grammatical for Class 1 nominals³³. Compare (72c) with (73c).

- (72) a. *ha-manhig* *šilhev* *et* *ha-kahal*
 the-leader enraptured.ACT.CLASS1 ACC the-crowd
 ‘The leader enraptured the crowd’.
- b. *ha-šilhuv* *šel* *ha-kahal* ***al yedey*** *ha-manhig*
 the-enrapturing.ACT.CLASS1 of the-audience **by** the-leader
 ‘The enrapturing of the crowd by the leader’.
- c. *ha-šilhuv* *šel ha-kahal* (***me-ha-ne’um***)
 the-enrapturing.ACT.CLASS1 of the-audience **from**-the-speech
 ‘The enrapturing of the crowd from the speech’
- (73) a. *ha-mefakdim/ha-pkudot* *hit’-u* *et* *ha-xayalim*
 the-commanders/the-commands mislead.ACT.CLASS2-3PL ACC the-soldiers
 ‘The commanders/the commands mislead the soldiers’.
- b. *hat’ayat* *ha-xayalim* ***al yedey*** *ha-mefakdim*
 the-misleading.ACT.CLASS2 (of) the-soldiers **by** the-commanders
 ‘The misleading of the soldiers by the commanders’.
- c. *hat’ayat* *ha-xayalim* (****me-ha-pkudot***)
 the-misleading.ACT.CLASS2 (of) the-soldiers **from**-the-commands

³³ Aside from eventive Class 1 verbs exhibiting the non-agentive argument realization in (72c), some class 1 nominals which are stative-only and are thus not felicitous with agents, such as the nominal *dixdux* ‘moodiness’ in (35b), also exhibit this argument structure. The nominal clause then denotes a stative event as well:

[i] *ha-dixdux* *šeli* (*me-ha-yaxas* *šel* *ha-bos*)
 the-moodiness.ACT.CLASS1 my from-the-treatment of the-boss
 ‘My moodiness (because of the treatment of my boss)’.

What is surprising in examples like (72c) is the incongruence between the active morphology and the syntax which is characteristic of Hebrew middles in general (74).

It emerges then that (at least some) OE nominals derived from Class 1 verbs can appear with agents *or* causers, each introduced by the appropriate preposition, in a manner resembling Psych nominals derived from the subset of alternating OE-SE verbs in Greek and Romanian.

Moreover, I show above that the argument structure found with middle, SE nominals in Hebrew is further exhibited by **active**, OE nominals, and that this possibility is restricted to Class 1 OE nominals only.

58

active nominal of the verb *šilhev* ‘to enrapture’. The comparison yields near-synonymous readings, in which a change of state is triggered by a non-agentive causer:

- (75) *ha-hištalhevut* (75) *(šilhuv)*
the-becoming.enraptured.**MID**.CLASS1 causing.rapture.**ACT**.CLASS1
šel ha-kahal (me-ha-ne’um)
of the-audience from-the-speech
‘The enrapturing of the crowd by the speech’.

The table below summarizes the available argument realization patterns according to verbal template.

Table 5. Argument realization options.

Verbal form Arg. Structure	Active forms		Middle forms
	OE <i>pi’el</i> (Class I)	OE <i>hif’il</i> (Class II)	<i>hitpa’el/nif’al</i>
agentive	<i>šilhuv</i> the.enrapturing (of) <i>ha-kahal</i> the-audience <i>al yedey ha-manhig</i> by the-leader ‘The enrapturing of the crowd by the leader’.	<i>ha-hat’aya šel ha-xayalim</i> the-misleading of the-soldiers (<i>al yedey ha-mefakdim</i>) by the-commanders ‘The misleading of the soldiers (by the commanders)’.	--
non-agentive (causative PP)	<i>ha-šilhuv šel</i> the-enrapturing of		<i>ha-hištalhevut</i> the-becoming.enraptured

	<i>ha-kahal</i> the-audience <i>me-ha-ne'um</i> from -the-speech ‘The enrapturing of the crowd by the speech’.	--	<i>šel ha-kahal</i> of the-audience <i>me-ha-ne'um</i> (from) -the-speech) ‘The enrapturing of the crowd by the speech’
--	---	----	--

5.1.2.1. Links between argument structure and event structure

This subsection explores the possible reasons for the lack of non-agentive argument structure for Class 2 nominals and its availability for OE nominals corresponding to verbs from the Class 1. But first, a few words should be devoted to the potential connection between the two types of behaviours setting apart Class 1 and Class 2 nominals: event structure and argument structure.

Unlike Class 1 OF nominals, for Class 2 OE nominals, an agentive reading is always implied, even when an external argument is not syntactically realized. This is a semantic property that correlates with eventivity – the denotation of a change of state in the experiencer argument, as discussed in section 3.2.

In section 3.2.1, I claimed that the restriction to agents for Class 2 OE nominals is correlated with the blocking of stative readings for this group, as agents are incongruent with states. The additional observation that nominals from this class are also unavailable with a non-agentive argument realization pattern (via a causative PP headed by the preposition *mi/me*-‘from’) is another demonstration of the restriction to agentivity exhibited by this class. Contrastingly, Class 1 nominals are available with non-agentive causers as well as agents, and accordingly show a very high rate of salient stative and result noun readings. In other words,

there seems to be a connection between the restriction to eventive readings and the agentive argument structure on the one hand, and between ambiguity/stativity and the ability to license non-agentive causers on the other.

The table below summarizes the types of variation exhibited by Hebrew OE nominals, based on Class membership, as discussed above:

Table 6: a summary of variation in the behaviour of Hebrew OE nominals

OE verb OE nominal	Class 1	Class 2
Event Structure	stative/eventive/ambiguous	eventive + implicit agent
Argument Structure	agentive/agentive and non-agentive	agentive only

As illustrated in the table above, seeing as argument realization patterns correlate with the kinds of event structures characteristic of nominals based on class membership, an account covering both semantic variation and variability in argument realization patterns is desirable. What I claim in the next subsection to be the underlying factor connecting the semantic and syntactic behaviours is related to (independent) differences between the morphological templates in which Psych verbs are hosted in Hebrew. More specifically, this factor involves the properties associated with each verbal (and nominal) template, as well as the interrelations between verbal templates in the Hebrew verbal system.

5.2. The role of templatic morphology in determining variation

As argued above, class membership, and more specifically, the morphological form hosting OE verbs in Hebrew, is one factor distinguishing (i) OE nominals which license non-agentive causers from OE nominals that fail to do so, as well as (ii) ambiguous/stative only OE nominals from eventive-only OE nominals. Morphological class, then, and more specifically the structural properties associated with the morphological templates hosting OE verbs and nominals, immediately presents themselves possible sources for this variation.

The Hebrew data on non-agentive causers available in Psych nominals replicate similar findings from Greek and Romanian (section 2.4), where a subset of Psych nominals allow both an agentive and a non-agentive argument realizations options. I shortly recap the suggested analysis of Greek and Romanian non-agentive nominals. As expected from the “Agent Exclusivity” phenomenon, Psych nominals in these languages are felicitous with agentive external arguments, as in (21b) and (22b) above. However, some Psych nominals were shown to also be grammatical with causative PPs. The authors claim that in these languages, only OE verbs that have eventive SE alternates produce eventive nominals which license non-agentive arguments. Accordingly, they claim that only alternating OE-SE pairs, wherein both alternates are eventive³⁴, may produce nominals which allow non-agentive as well as an agentive argument realization pattern.

A few similarities between Hebrew on the one hand, and Greek and Romanian on the other, motivate a similar generalization regarding Hebrew non-agentive Psych nominals. First and foremost, Hebrew has what seems to be a (morphological) Psych causative alternation

³⁴ Pairs of seemingly (morphologically) alternating verbs which are not both eventive are taken to be idiosyncratic alternates.

between transitive (OE) Psych verbs and intransitive (SE) Psych verbs. Furthermore, as in Hebrew Class 1 verbs, Greek and Romanian eventive SE verbs are morphological-middle forms: non-active forms in Greek, and reflexive forms in Romanian. Finally, Hebrew non-agentive Psych nominals are also a subset of OE nominals in general, i.e. some factor is conditioning their availability in the language. Considering the insights of the study on Greek and Romanian, what may this factor be?

As stated in section 5.1.1, the lack of consistent middle form hosting SE alternates of Class 2 verbs, vs. the consistent *pi'el* (active, Class 1)-*hitpa'el* (middle, SE) alternation is a factor which sets apart the two verbal templates hosting OE verbs in Hebrew. According to Doron (2003), while active *pi'el* and middle *hitpa'el* are related morphologically, and as such may constitute a Voice alternation, the active *hif'il* template and its common middle form *nif'al* are not morphologically related. In other words, Class 1 nominals have SE alternates which are hosted in a morphologically-related verbal template, while Class 2 nominals do not, as illustrated above in (64)–(66) for the former class, and in (67)–(69) for the latter.

Applying the insights from Alexiadou and Iordăchioaia (2014a) to Hebrew, it appears that the factor which bans non-agentive causers in some Greek and Romanian Psych nominals is a systematic OE-SE alternation. I argue that, similarly to Greek and Romanian, the source for the morphologically-active nominals licensing a causative-PP in Hebrew are the middle, SE verbs, which shows the same causative-PP argument realization.

From the data on Class 1 vs. Class 2 nominals, it is implied that something about the verbal forms in which the verbs are hosted contribute or determine the semantic and syntactic variation found with OE nominals across the two classes. Doron (2003) provides a thorough

analysis of the verbal system as a whole, and of the functions associated with each verbal template. In the following subsection I discuss this study, and its connection to the question at hand: what is the basis for the claim that the *pi'el* and the *hif'il* templates are distinct, both regarding their structures and functions, as well as their relations to other verbal forms constituting the Hebrew verbal system, especially middle forms.

5.2.1. Form and function in the Hebrew verbal system

In Doron's (2003) system, all verbal templates are morphemes which spell-out either Agency or Voice functional heads. "Agency" refers to the nature of the semantic relation between the external argument and the event denoted by the verb. A modification by an Agency head involves the modification of this relation. On the basis of meaning contrasts between semantically-basic verbs (which appear in one of the basic "Simple" verbal templates, *pa'al* or *nif'al*) and *pi'el* or *hif'il* verbs, Doron proposes two types of Agency "causative" and "intensive". The "causative" relation is represented by the *hif'il* morpheme, the overt realization of the verbal head γ , which according to Doron defines an event as a causative one, e.g.

(76) *hif'il* verb *hirti'ax* 'cause sth. to boil' vs. *pa'al* verb *ratax* 'to boil'.

The "intensive" relation is represented by the *pi'el* morpheme. Modification by the action head ι adds entailments to the basic event to the extent that the "intensive" verb denotes an action performed by an actor, who must be an animate being, e.g.

(77) *pi'el* verb *piter* 'to fire' vs. *pa'al* verb *patar* 'to excuse s.o. from sth.'.

The term “intensive” reflects the observation that sometimes modification by this Agency head involves an increase in the length and intensity of the event (e.g. *pi’el* verb *kipeq* ‘to bounce, prance’ vs. basic verb *kafac* ‘to jump’)³⁵.

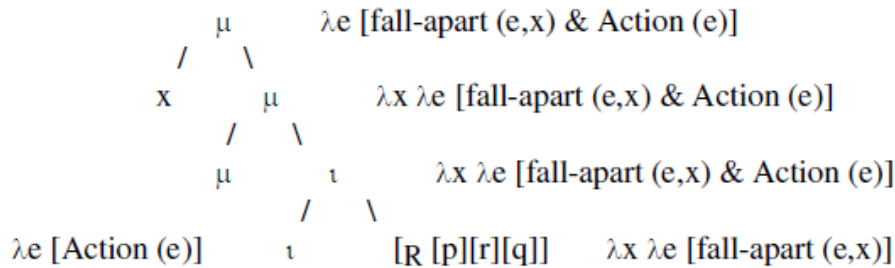
Doron draws a syntactic distinction between *hif’il* verbs and *pi’el* verbs. Basing her claims on whether the application of the syntactic head involves an increase in valence, Doron proposes that while the *pi’el* verbal template is derived via a modification of the *root*, the *hif’il* template is derived via a modification of an existing *verb* (one of the morphologically-basic ones). Modification of a root, as is the case for roots which are hosted in *pi’el*, does not include an increase in valence, as the modified event is changed only in its semantics, from a basic event to an action³⁶. Modification of a verb, as is the case for *hif’il* verbs, on the other hand, includes an increase in valence – the addition of a causing participant.

The second type of functional heads is Voice heads – passive and the middle. According to Doron, unlike passives, which exist only if a corresponding active verb is available, middle verbs do not require an active verb as a basis for the derivation. This claim is exemplified by middle verbs which are derived from adjectives or nouns. This leads Doron (2003: 38) to suggest that middle verbs in Hebrew are derived via a modification of a root with a functional head μ . μ modifies the root by disabling the licensing of an external argument, for example for the *hitp’ael* verb *hitpareq* ‘to fall apart’:

³⁵ The *pi’el* template also hosts causative verbs, a matter which Doron does not address. See the next subsection, and Arad (2005: 167–173) for causation in *pi’el* and *hif’il* verbs.

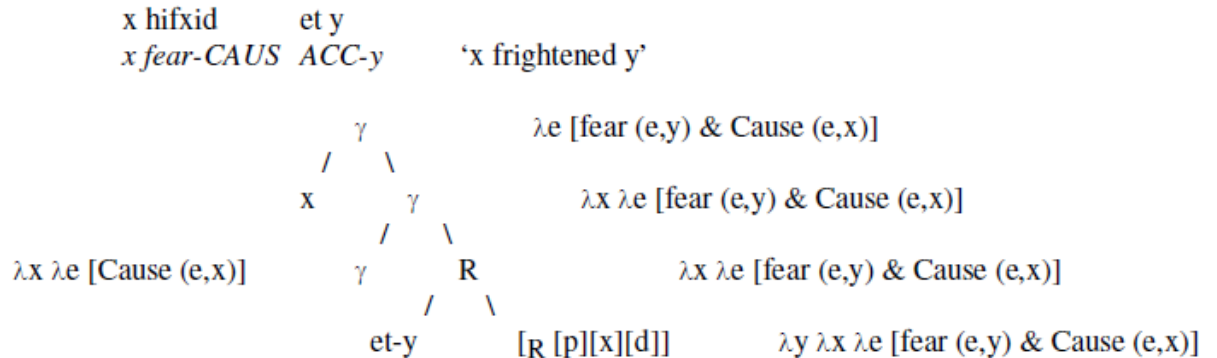
³⁶ As Doron notes, an exception to this claim is *pi’el* verbs which modify unaccusative verbs, marked in middle morphology (which is also the case for Psych verbs appearing in these template).

x hitpareq
x fall-apart-INTNS-MID 'x fell apart' (unaccusative)



[Doron 2003, p. 32]

Doron's proposal adopted here – that *hif'il* verbs have no middle forms – stems from the definition of middle Voice as a modification of a root rather than a verb: the head γ modifying basic verbs as causative, adds an argument (a cause) to a root with its internal argument³⁷:



[Doron 2003, p. 32]

As the middle Voice head does not modify a root with its arguments, but may only modify the root itself, Doron derives the observation that Hebrew lacks a middle form

³⁷ Doron (2003: 44) claims that "...the causative agency-head merges with a fully constructed verb". The same claim, that the causative head requires a verb as the basis for the derivation, is made regarding *passive* verbs in Hebrew; as mentioned in the paragraph above, the passive Voice head requires an active counterpart as the basis for the derivation. It is then interesting to note another kind of behaviour in common to both passives and *hif'il* nominalizations: they both imply an agent (on Hebrew passives, see Doron 2003: 35). These two observations deem *hif'il* nominalizations more like passive verbs in Hebrew.

corresponding to *hif'il* verbs. In contrast, this is not the case for *pi'el* verbs, which may be modified by the middle Voice head, as they apply on roots and not on verbs.

Based on the analysis of Greek and Romanian (Alexiadou and Iordăchioaia 2014a), I suggest above that the lack of a morphologically related middle form is what makes them ungrammatical with a non-agentive, causative-PP argument structure. In section 5.1.2.1 I also suggested that there is a connection between obligatory agentivity and the blocking of non-eventive readings. These two phenomena precisely – obligatory agentivity and obligatory eventivity are manifested in the OE nominals of Class 2. Following the same logic, the presence of non-eventive readings in Class 1 nominals is a reflection of the lack of restriction to agents. Attributing both phenomena a common source – the independent properties of the morphological templates in which these verbs and nominals appear – allows a better coverage of both types of variation. This end cannot be achieved by means of the thematic explanation(s) described in section 4, as the characterization of Psych verbs in thematic terms does not make distinctions based on morphological class, but on the idiosyncratic lexical contents of the Psych roots.

If indeed the source for the variation is the structure of the Hebrew verbal system, it is expected that similar trends would be manifested in nominalizations *outside* of the Psych domain. In the next subsection, I show that this expectation is borne out, and that nominals derived from causative non-Psych verbs in these two templates show similar differences in their semantic properties.

5.2.1.1. Hebrew Non-Psych nominalizations

Finally, further support for a morphological template-based analysis arises from the semantics of nominals derived from *non*-Psych verbs of the same templates. Crucially, non-Psych verbs of the

hif'il form – the template hosting Class 2 nominals – also derive eventive-only nominals, which only rarely get stative or result noun readings. Moreover, as reflected in (78c), these nominals are interpreted as agentive, transitive and eventive even in isolation:

- (78) a. *ha-poše'a* *he'elim* *re'ayot* *hif'il* non-Psych verb
the-criminal concealed.ACT.CLASS2 evidence
'The criminal concealed evidence'.
- b. *ha'alamat* *re'ayot* *hif'il* non-Psych nominal
concealing.ACT.CLASS2 (of) evidence
'The concealment of evidence'.
- c. *ha'alama* 'concealing, hiding'

To check whether the observation regarding an event structure difference between Class 1 and Class 2 nominals indeed holds, I surveyed 120 causative verbs hosted in *hif'il*, and 99 causative verbs hosted in *pi'el*, checking for (i) eventivity, (2) non-eventive (result noun) readings³⁸, and (iii) availability with a non-agentive argument structure, the following conclusions emerge:

(i) Eventive readings: most derived nominals from *both* templates exhibit a transitive argument structure, where the transitive meaning of the corresponding verb is retained in the derived

³⁸ As already established a high proportion of *pi'el* (but not *hif'il*) OE nominals have stative readings, as such resembling English OE nominals. Intuitively, the truncation of the causative sub-event hypothesized for Psych nominals (see section 1) naturally means obtaining result nouns, and/or a stative nouns – psychological predicates naturally being lexemes which describe mental “states” (consequently, sometimes it is hard to differentiate the two readings). However, outside of the psychological domain stative readings for causative verbs are rare, with some exceptions being *pi'el* verbs *šituk* ‘paralysis’, *sixsux* ‘conflict’. This is not surprising, since change-of-state/state ambiguity is a property of psychological predicates, and is uncharacteristic of causative verbs in general (see section 2.1). Therefore, the availability of stative readings is not used as a criterion in the comparison between *pi'el* and *hif'il* non-Psych verbs, and I focus on the presence of result noun and/or transitive/eventive readings as the central semantic issues at hand.

nominal; 94% of *pi'el* nominalizations in and 97% of *hif'il* nominalizations are eventive (see table 7 below). In (79) are examples of eventive *pi'el* nominals, and eventive *hif'il* nominals in (80):

- (79) a. *zeruz* *ha-leda* (*be-emca'ut* *trofut*)
 inducing (of) the-labor with-means.of medicine
- b. *kibuy* *ha-orot* (*al yedey* *ha-madrix-a*)
 turning-off (of) the-lights by the-guide-F
- c. *šipur* *ha-tnaim* (*al yedey* *ha-hanhala*)
 improving (of) the-conditions by the-management
- (80) a. *ha'axalat* *ha-tinok* (*al yedey* *ha-metapel*)
 feeding (of) the baby' by the-caretaker
- b. *hagdalat* *ha-revaxim* (*be-emca'ut* *haška'ot*)
 increasing (of) the profits with-means.of investments
- c. *hazramat* *ma'im* (*be-emca'ut* *cinor-ot*)
 streaming (of) water using pipeline-s

In the realm of non-Psych transitive verbs, nominals derived from verbs belonging to both templates preserve the causative/eventive meanings of the deriving verbs. In other words, the lack of causative force and the stative aspectual values of many *pi'el* (Class 1) OE nominals are not a general trait of nominals derived from *pi'el* verbs, and the two templates do not seem to diverge regarding the eventivity of their nominalizations.

(ii) Result noun readings: here lies the important difference between *pi'el* and *hif'il* nominalizations. More than half of *pi'el* nominals have result noun readings (which are natural with pluralization, see footnote 18), while only 11% of *hif'il* nominals do, e.g.

(81) a. ***Pi'el***: *iluc[-im]* ‘restriction[s]’; *bitul[-im]* ‘cancellation(s)’; *xisun[-im]* ‘vaccination(s)’.

b. ***Hif'il***: *havlata/havlatot* ‘marking/s’; *ha'araxa/ha'araxot* ‘extension/s’; *hatava/hatavot* ‘/s’).

Importantly, for *hif'il* nominals, even those which receive plural marking, denotes a pluralization of caused **events**, and not a pluralization of entities. For example,

(82) *ha'axal-a/ot* ‘a feed/feedings’; *hazaz-a/ot* ‘a moving of x to location y (singular/plural)’.

Therefore, as with Psych nominals, non-Psych *pi'el* nominals are ambiguous between eventive and result noun readings much more often than *hif'il* ones. Moreover, for *pi'el* nominals oftentimes the salient reading is the result noun reading. Contrastingly, *hif'il* nominals are almost always non-ambiguous, and denote the causative change of state reading even in the absence of any overtly realized arguments. With regards to ambiguity then, the generalizations obtained from nominalizations of OE verbs reflect basic differences between nominalizations derived from the two templates.

(iii) Availability with non-agentive argument structures: recall that some *pi'el* (Class 1) OE nominals license non-agentive causers with a characteristic preposition, as in example (72c). Non-Psych causative nominals in general seem to allow this much less often. However, the ban

on a non-agentive argument structure is sweeping with *hif'il* nominals, while *pi'el* nominals allow some exceptions:

- (83) a. *ha-ru'ax* *ha-xazaka* *kofef-a* *et* *ha-giv'olim*
the-wind the-string bended-1SG.F ACC the-stalks
‘The strong wind made the stalks bend’.
- b. *kifuf* *ha-giv'olim* *me-ha-ru'ax* *ha-xazaka*
bending (of) the-stalks from-the-wind the-strong
‘The bending of the stalks because of the wind’.
- (84) a. *ha-mahamurot* *b-a-dereẖ* *tiltel-u* *et* *ha-kirkara*
the-bumps in-the-road shook-3PL ACC the-carriage
‘The bumps in the road shook the carriage’.
- b. *ha-tiltul* *šel* *ha-kirkara* *me-ha-mahamurot* *b-a-dereẖ*
the-shaking of the-carriage from-the-bumps in-the-road
‘The shaking of the carriage because of the bumps in the road’.
- (85) a. *ha-pe'ilut* *ha-bilti-xukit* *b-a-mif'al* *ẕihama* *et*
the-activity the-illegal in-the-factory contaminated.F ACC
ha-nahar
the-river
- b. *ha-ẕihum* *šel* *ha-nahar* *me-ha-pe'ilut* *ha-bilti-xukit*
the-contamination of the-river from-the-activity the-illegal
b-a-mif'al
in-the-factory

‘The contamination of the river due to the illegal activity in the factory’.

The two tables below show the percentage of each type of reading found with OE nominals according to template. The first table specifies the percentage of eventive and result noun readings for non-Psych causative nominals. The second table specifies the percentage of OE nominals which get eventive readings, stative readings, result noun readings, and the proportion of nominals felicitous with a non-agentive argument structure.

Table 7. Readings available for nominalizations of causative verbs based on template.

NON-PSYCH	Transitive/eventive	Result noun
% <i>pi'el</i>	0.94	0.52
% <i>hif'il</i>	0.97	0.10

Table 8. Readings available for nominalizations of OE verbs based on template.

PSYCH	Transitive/eventive	Stative	Result noun	Non-agentive argument structure
% <i>pi'el</i>	0.44	0.34	0.33	0.40
% <i>hif'il</i>	0.85	0.06	0.09	0.03

To sum up, the important generalization to be made from the sample of non-causative verbs in *pi'el* and *hif'il* is that the former nominals behave like “typical” nominalizations, following e.g. Grimshaw’s (1990) ambiguity account (see section 2.2), while the latter nominals are again exclusively eventive, ruling out readings which are not eventive. I take these data as a further indication of the existence of a meaningful difference between the two transitive Hebrew verbal templates, *pi'el* and *hif'il*. This observation is again in line with the analysis laid out by Doron (2003).

5.2.1.2. Differences between Hebrew and Greek/Romanian

In this chapter, I show that this study further extends the claims by Alexiadou and Iordăchioaia (2014a), who suggest that the ban on non-agentive causers in Psych nominals does not hold in nominals which are claimed to be derived from intransitive, SE verbs. Similarly, in Hebrew, causer arguments are available with intransitive nominals, but also with **transitive**, OE nominals, belonging to Class 2. Consequently, the original observation – that Psych nominals are incompatible with causer arguments – is further weakened, as another group of Psych nominals are shown to be compatible with causers.

It is however important to point out a crucial difference between Hebrew and Greek and Romanian. In the latter two languages, Voice distinctions are not preserved in the derived nominals; thus, for alternating OE-SE verbs, one derived nominal form appears with both argument structure configurations: agentive and non-agentive. In Hebrew the Voice alternation is preserved in the derived nominals as well, active (OE forms) and middle (SE forms) having **distinct** morphological forms in both verbs and nominals. Thus, crucially, In Hebrew the structural distinction suggested by Alexiadou and Iordăchioaia, between Psych nominals with the agentive vs. non-agentive argument realization, is morphologically-marked. The kind of preposition licensed is an additional means of distinguishing between the presumed OE-derived vs. SE-derived structured, alongside the more immediate to the overt morphological distinction.

Example (86)a has an OE Class 1 verb in the template *CiCCeC* (the underlying CV template of *pi'el* verbs). Its derived nominal (86b) appears in the formally-related nominal template *CiCCuC*. Example (86c) has an SE Class 2 verb in the structure *hitCaCCeC*, with its derived nominal in the formally-related CV template *hitCaCCut* (86d).

- (86) a. *ha-mofa/ha-kosem* *sixrer* *et* *ha-cofim*
the-show/the-magician caused.giddiness.**ACT.CLASS1** ACC the- spectators
‘The show/the magician caused the spectators to feel giddiness.’
- b. *ha-sixrur* *šel* *ha-cofim* *me-ha-mofa/*
the-causing.giddiness.**ACT.CLASS1** of the-spectators from-the-show/
al yedey *ha-kosem*
by the-magician
‘The spectators becoming giddy because of the show/by the magician.’
- c. *ha-cofim* *histaxrer-u*³⁹ (*me-ha-mofa*)
the-spectators became.giddy.**MID.CLASS1-3PL** from-the-show
‘The show caused the spectators to feel giddy.’
- d. *ha-histaxrerut*⁴⁰ *šel* *ha-cofim* (*me-ha-mofa*)
the-becoming.giddy.**MID.CLASS1** of the-spectators from-the-show
‘The spectators becoming giddy because of the show.’

This raises an important theoretical issue; in Greek and Romanian, the derived nominal is neutral with regards to morphological form. As such, it is not problematic to claim that the middle (SE) verbal structure is the basis for the derivation of both agentive (including Voice) and non-agentive (lacking Voice) nominals. In Hebrew however, the active vs. middle Voice distinction is cross-categorical and applies on both verbal and nominal forms, and as such, it is not expected that a middle verbal form (SE verb) would produce an active nominal form; it is

³⁹ Phonetic rules cause metathesis of the template consonant *t* and the first root consonant when the latter is a sibilant.

⁴⁰ See footnote 39. Furthermore, when the root is quadro-consonantal, an additional vowel *e* is inserted, yielding the template *hitCaCCeCut*.

problematic to claim that e.g. the *pi'el* OE nominal *šilhuv* ‘enrapturing’, with the underlying templatic structure *CiCCuC*, in its non-agentive incarnation with a causative PP, is derived from the *hitpa'el* middle SE verb *hištalhev* ‘became enraptured’, which has the underlying verbal structure *hitCaCCeC*. In other words, in Hebrew nominal forms are morphologically marked in a way which unequivocally indicates their verbal origin.

If the basis for the intransitive, non-agentive argument structure is the SE form, which is morphologically middle, how does one account for the instances of nominals with active morphology and intransitive syntax, characteristic of middle SE forms? I believe that answering this question can teach us about the connection between morphology and syntax, and how Voice distinctions are manifested in different languages. More specifically, Hebrew distinguishes active and middle forms in both verbs and nominals, while Greek and Romanian do so only in the verbal forms; my proposal here then suggests that the Voice distinction in Hebrew exists in Greek and Romanian, even though it is not morphologically overt. I leave the reader with this issue in mind.

6. Conclusions

The main goal of this paper was to expand our knowledge regarding Psych nominals and nominals in general via a comparison of current theoretical views in light of novel Hebrew data. Along the way, various other informative matters surfaced, which shed light on more-general issues in the study of the interrelations between syntax and semantics.

In this paper, I showed that in Hebrew, a language with a rich verbal and nominal morphology, derived nominals preserve meaning components which are lost in the derivation in languages where morphology is scarce, such as English. In many of the languages represented in

the literature, nominalization is achieved via a limited number of nominalizing affixes, which attach to verbs arbitrarily, not following any morphological or semantic rule. This is not the case in Hebrew, where each verbal form has a specific nominal form.

One important observation is that OE nominals of one class are non-ambiguous by exhibiting eventive semantics in all environments, thus having what seems to be an implicit agent (see Borer 2012, for similar claims for *ing* nominals and synthetic compounds, and Sichel 2009). This finding, surprising by itself in the domain of Psych nominals (and nominals in general), constitutes evidence for theories claiming that external arguments in nominalizations are indeed arguments (e.g. Sichel 2009; Bruening 2013), rather than adjuncts (e.g. Grimshaw 1990; Kratzer 1996), despite their being non-obligatory.

A second matter which the Hebrew data contribute to its understanding is the phenomena of “Agent Exclusivity”. As I have shown, the Hebrew data extends the findings from Greek and Romanian non-agentive nominals to morphologically-**active** nominals as well, as Hebrew has a class of OE nominals which are felicitous with causers as well as agents.

Argument structure variation between the two classes was claimed to be conditioned by the underlying structures of the different morphological forms in Hebrew. I have suggested that the unavailability of non-agentive argument structure in Class 2 nominals is related to the structure of the Hebrew verbal system. OE verbs which appear in *hif’il*, the verbal template which does not have a morphologically-related middle form, are infelicitous with the argument structure which does not make room for the agentive argument.

From all the above it follows that morphology determines the semantic and syntactic properties of OE nominals in different ways: on the one hand **allowing** eventive Psych nominals,

but on the other hand, **restricting** their possible event structures and argument realization patterns, depending on the verbal templates in which the OE verbs appear. This provides important new evidence for the claim that templatic morphology represents distinct structures (Doron 2003, 2008), as opposed to other studies, which e.g. view templates as strictly grammatical, devoid of any semantic content (e.g. Ornan 1971), or attribute to templates a grammatical function as the phonological spell-out of a morpho-syntactic feature, Voice (Arad 2005). The specific properties some authors attribute to the verbal forms in Hebrew actually surface in their derived **nominals**. Thus, this study teaches us about the Hebrew templates through their nominalizations.

References

- Abney, Steven Paul. 1987. *The English Noun Phrase in its Sentential Aspect*. Ph.D. thesis, MIT.
- Alexiadou, Artemis. 2001. *Functional structure in nominals: nominalization and ergativity*. Vol. 42. John Benjamins Publishing.
- Alexiadou, Artemis, Elena Anagnostopoulou & Florian Schäfer. 2006. The properties of anticausatives cross-linguistically. In: Mara Frascarelli (ed.), *Phases of Interpretation*. Mouton, Berlin, pp. 187–212.
- Alexiadou, Artemis, Elena Anagnostopoulou & Florian Schäfer. 2015. *External arguments in transitivity alternations: a layering approach* (Vol. 55). Oxford University Press, USA.
- Alexiadou, Artemis & Edit Doron. 2012. The syntactic construction of two non-active voices: passive and middle. *Journal of Linguistics*, 48(01), 1–34.
- Alexiadou, Artemis & Gianina Iordăchioaia. 2014a. Causative Nominalizations: Implications for the Structure of Psych Verbs. Asaf Bachrach, Isabelle Roy and Linnaea Stockall (eds.) *Structuring the Argument*, 119–140. Amsterdam & Philadelphia: John Benjamins.
- Alexiadou, Artemis & Gianina Iordăchioaia. 2014b. The psych causative alternation. *Lingua*, 148, 53–79.
- Amritavalli, Raghavachari. 1980. Expressing Cross-Categorial Selectional Correspondences: An Alternative to the X Syntax Approach. *Linguistic Analysis Seattle, Wash.*, 6(3), 305–343.
- Anagnostopoulou, Elena. 1999. On Experiencers. In: Alexiadou, Artemis, Geoffrey C. Horrocks and Melita Stavrou (eds.), *Studies in Greek Syntax*, Dordrecht: Kluwer, 67-93.
- Arad, Maya. 1998. Psych-notes. *UCL Working Papers in Linguistics* 10, 203–223.
- Arad, Maya. 2005. *Roots and patterns: Hebrew morpho-syntax* (Vol. 63). Springer Science & Business Media.
- Belletti, Adriana & Luigi Rizzi. 1988. Psych-verbs and theta-theory. *Natural Language & Linguistic Theory*. 6, 291–352.
- Borer, Hagit. 2012. In the event of a Nominal. in Martin Everaert, Marijana Marelj & Tal Siloni (eds.), *The Theta System: Argument Structure at the Interface*. Oxford: Oxford University Press.
- Bruening, Benjamin. 2013. By phrases in passives and nominals. *Syntax*, 16(1), 1–41.

- Chomsky, Noam. 1970. Remarks on Nominalization. In Roderick A. Jacobs and Peter S. Rosenbaum (eds.), *Readings in English Transformational Grammar*, 184–221. Boston: Ginn.
- Doron, Edit. 2003. Agency and voice: The semantics of the Semitic templates. *Natural Language Semantics*, 11(1), 1–67.
- Doron, Edit. 2008. *trumato shel habinyan lemashma'ut hapo'al* [The contribution of the template to verb meaning]. In G. Hataav (ed) *Modern Linguistics of Hebrew*. Jerusalem: Magnes Press. 57-88.
- Doron, Edit. 2012. The Causative Component of Psych Verbs. A class on “Morphosyntax and Argument Structure”. Universitat Pompeu Fabra, Barcelona, May 8, 2012. Handout.
- Dowty, David. 1989. On the semantic content of the notion 'Thematic Role'. In *Properties, Types and Meaning II*, ed. G. Chierchia, B. Partee & R. Turner, 69-129. Dordrecht: Kluwer.
- Dowty, David. 1991. Thematic Proto-Roles and Argument Selection, *Language* 67, 547–619.
- Fábregas, Antonio & Rafael Marín. 2011. The role of Aktionsart in deverbal nouns: State nominalizations across languages. *Journal of Linguistics* 48(01). 35–70.
- Fábregas, Antonio, Rafael Marín & Louise McNally. 2012. From psych verbs to nouns. Violeta Demonte & Louise McNally (eds.), *Telicity, change, and state: A cross-categorical view of event structure*. Oxford University Press, Oxford, 162-184.
- Harley, Heidi & Shigeru Miyagawa. in press. Syntax of Ditransitives. *Oxford Research Encyclopedia of Linguistics*.
- Harley, Heidi & Rolf Noyer. 2000. Formal versus encyclopedic properties of vocabulary: Evidence from nominalizations. *The lexicon-encyclopedia interface*, 349–374.
- Iwata, Seizi. 1995. The distinctive character of psych-verbs as causatives. *Linguistic analysis*, 25(1-2), 95–120.
- Giorgi, Alessandra. 1983–84. Toward a Theory of Long Distance Anaphors: A GB Approach, *The Linguistic Review* 3, 307–361.
- Grimshaw, Jane. 1990. *Argument Structure*. MIT Press: Cambridge, MA.
- Kallulli, Dalina. 2006. Unaccusatives with dative causers and experiencers. Daniel Hole, André Meinunger und Werner Abraham (Hrsg.), 271-300.
- Lakoff, George. 1970. *Irregularity in Syntax*. New York: Holt, Reinhart and Winston.

- Landau, Idan. 2010. *The Locative Syntax of Experiencers*. MIT Press, Cambridge, MA.
- Levin, Beth & Jason Grafmiller. 2013. Do you always fear what frightens you. *From quirky case to representing space: Papers in honor of Annie Zaenen*. Stanford, CA: CSLI Publications.
- Levin, Beth & Malka Rappaport-Hovav. 2005. *Argument realization*. Cambridge University Press.
- Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. *University of Pennsylvania working papers in linguistics*, 4(2), 14.
- Marín, Rafael & Louise McNally. 2011. Inchoativity, change of state, and telicity. *Nat. Lang. Linguist. Theory* 29 (2), 467--502.
- Martin, Fabienne, and Florian Schäfer. 2014. Causation at the syntax-semantics interface. *Causation in Grammatical Structures*, 209-244.
- Ornan, Uzi. 1971. 'Binyanim uvsisim, netiyot ugzarot' [Templates and bases, inflections and derivations], *Hauniversita* 16: 15--22.
- Pesetsky, David. 1987. Binding Problems with Experiencer Verbs, *Linguistic Inquiry* 18, 126--140.
- Pesetsky, David M. 1995. *Zero Syntax: Experiencers and Cascades*. MIT Press.
- Pykkänen, Liina. 2000. On stativity and causation. *Events as grammatical objects: The converging perspectives of lexical semantics and syntax*, 417-445.
- Rappaport, Malka. 1983. On the nature of derived nominals. In Beth Levin, Malka Rappaport & Annie Zaenen (eds.) *Papers in Lexical-Functional Grammar*. Indiana University Linguistics Club, p. 113--142.
- Reinhart, Tanya. 2001. Experiencing derivations. In: *Proceedings of Semantics and Linguistic Theory* 11. CLC Publications, Ithaca, NY, pp. 365--387.
- Reinhart, Tanya. 2003. The theta system--an overview. *Theoretical linguistics*, 28(3), 229--290.
- Rozwadowska, Bożena. 1988. Thematic Restrictions on Derived Nominals in Thematic Relations. *Syntax and semantics*, 21, 147--165.
- Rozwadowska, Bożena. 2012. On the onset of psych eventualities. In: Eugeniusz Cyran, Henryk Kardela, Bogdan Szymanek, (Eds.), *Sound, Structure and Sense*. Studies in Memory of Edmund Gussmann. Wydawnictwo KUL, Lublin.

- Sichel, Ivy. 2009. New evidence for the structural realization of the implicit external argument in nominalizations. *Linguistic Inquiry*, 40(4), 712–723.
- Sichel, Ivy. 2010. Event structure constraints in nominalization. *The syntax of nominalizations across languages and frameworks*, 23, 151–190.
- Talmy, Leonard. 1985. Lexicalization Patterns: Semantic Structure in Lexical Forms, in T. Shopen, ed., *Language Typology and Syntactic Description 3: Grammatical Categories and the Lexicon*, Cambridge University Press, Cambridge, 57–149.
- Tenny, Carol. 1994. *Aspectual Roles and Syntax-Semantics Interface*. Kluwer Academic Press, Boston.
- van Voorst, Jan. 1992. The aspectual semantics of psychological verbs. *Linguist. Philos.* 15, 65–92.
- van Voorst, Jan. 1995. Le contrôle de l'espace psychologique. *Langue française* 105. 17–27.