

The Causative Component of Psychological Verbs¹

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Abstract

The paper distinguishes two different subclasses of psychological verbs (psych verbs), each associated with a different way for expressing the causes of the mental state described by the verb. (1) **Relational psych verbs** describe the mental state as a two-place relation between an Experiencer (Exp) and the mental representation of a Target/Subject Matter (T/SM); e.g. Exp relates to a mental representation of the target of Exp's love/curiosity. These verbs allow the expression of a third argument, a Cause, which brings about the relation between Exp and T/SM. (2) **Property psych verbs** describe the mental state as a one-place property of Exp; e.g. Exp is in the state of fear/anger. These verbs too may encode a Cause argument, but here the causal relation is evaluated differently depending on the construction. The paper shows that the interaction between the two subclasses of verbs and the category of causation is not special to the mental domain but also holds for stative physical verbs such as locative verbs, where the arguments Location and Theme replace Exp and T/SM. Hence this is a general distinction among verbs denoting stative relations between two arguments: verbs denoting two-place relations vs. verbs denoting one-place properties attributed to a Cause.

Keywords: agent, cause, force, target matter, psychological predicates, linking problem, templates, Hebrew

1. Introduction

The nature of the fundamental category of causation is still under debate. Here I will examine it by studying its linguistic contribution to the semantics of natural language verbs. In general, verbs linguistically describe events (including states as well as dynamic events) by specifying both their temporal profile and their participants. The participants are linguistically represented as arguments of the verb, classified according to their *thematic roles* (such as Agent, Experiencer, Location, Theme). Thematic roles are a designated set of linguistically significant relations (first introduced by Fillmore 1968 and Jackendoff 1972) in which arguments stand to the described event. These relations are significant in determining the aligning of arguments to grammatical functions such as subject, object, indirect object etc.

The received view in linguistics since Dowty 1979 and Parsons 1990 has been that the meaning of a causative verb includes a component, represented as CAUSE, which is a relation between a pair of events. An alternative view (Doron 1999, 2003, Neeleman and van de Koot 2012, Aimar 2018) is that a causative verb describes a single event, which includes a participant with the thematic role of *Cause*. Hence, causation as encoded by causative verbs is not a relation between

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events but a relation between a participant and the event it participates in, i.e. a thematic role. Clearly, if the participant itself happens to be an event, then *Cause* indeed relates two events. But this is a special case, and in general the Cause participant may be an entity of various different types, not necessarily an event.

The present paper studies the thematic role of *Cause* in its interaction with the other thematic roles that characterize a particular class of verbs – the so-called *psychological verbs* (psych verbs). Psych verbs are a recognized subclass of mental verbs – alongside perception verbs, mental-state verbs (also called propositional attitude verbs), emotive-factive verbs (propositional attitude verbs involving emotions such as surprise, happiness, or regret), and mental-act verbs (verbs of apprehending, deciding, choosing, calculating, reasoning etc). Mental verbs have been distinguished from physical verbs like physical-action verbs, motion verbs, verbs of spatial configuration, verbs of locative placement, verbs of emission, and others studied by lexical semanticists and philosophers.

There has been a long debate on the argument structure of psych verbs (e.g. Belletti and Rizzi 1988, Pesetsky 1995, Arad 1999, McGinnis 2000, Reinhart 2002, Landau 2010) and on the alternation in the aspectual categories of these verbs (Marin and McNally 2011; Alexiadou and Iordachioaia 2014). Here I would like to discuss the different thematic roles of the arguments of psych verbs. A famous puzzle associated with psych (and locative) verbs is the “linking problem”: the alternation in the alignment of thematic roles to grammatical functions. I will suggest a solution to the linking problem, which is valid both for psych and locative verbs.

Another issue raised by psych verbs is the interaction of their canonical arguments with the argument bearing the thematic role of *Cause*. I will contrast the thematic role of *Cause* with the thematic role of *Force* (Talmy 2000; Croft 1991; Copley and Harley 2015; Copley, Wolff, and Shepard 2016), and show that it is the same contrast, which also plays a role in the lexical semantics of locative verbs.

The thematic role of *Cause* is special in that it is typically the role of a supplementary argument, one which is not necessarily part of the basic characterization of the event described by the verb. The verb always has another argument with a variety of possible roles, none of them *Cause*. Verbs which allow a *Cause* argument sometimes describe events, which can alternatively be viewed as spontaneous (in which case the verb is alternatively *unaccusative*). Other verbs require the *Cause* argument as an obligatory participant. The different role of *Agent* is an obligatory participant of all the events encoded by the verb. Verbs with an *Agent* participant, unlike verbs with a *Cause* participant, are never interpreted as unaccusative. Moreover, the two roles affect the aspectual class of a verb in different ways. Verbs with a *Cause* argument may be stative, but not verbs with an *Agent* argument, unless the *Agent* is a *Force*. *Force* is like an *Agent* in being an obligatory participant of the event, but it does not involve action. Hence verbs with a *Force* argument may be stative. Still, *Force* is not a type of *Cause*, as will be shown in section 2.

Section 2 shows how in Semitic, causative morphosyntax differs from agentive morphosyntax. Section 3 discusses *relational psych verbs*, psych verbs which denote a stative relation between two arguments, the experiencer (*Exp*) and the Target/Subject Matter (*T/SM*) toward which emotion or evaluation is directed by *Exp*. I show that despite what is mostly assumed in the literature, these verbs do not exhibit the linking problem. Section 4 shows that the causative morphosyntax of Hebrew allows the addition of a third argument, a *Cause*, to relational psych (and locative) verbs. Section 5 rejects the implicit assumption in the linguistic literature that all psych verbs are relational. I argue that some psych verbs are *property psych verbs*, i.e. they denote a state which is a one-place property of *Exp*. I show that the other argument often found with these verbs is not *T/SM* but *Cause*. Section 6 is the conclusion.

2. Cause vs. Agent/Force

The difference between *Cause* and *Agent* as thematic roles is illustrated here for physical verbs. Causative physical change of state verbs such as *destroy* and *kill* in (1) may take abstract causes as their subjects. This is different for the agentive verbs in (2).

- (1) *Physical verb with a Cause subject*
 - a. Military losses destroyed the empire.
 - b. The inappropriate use of the drugs killed the patient.
- (2) *Physical verb with an Agent subject*
 - a. The lion hunted a big bison.
 - b. The wind slammed the window blinds.

Agents are often intentional entities, as in (2a). Verbs such as *hunt* require their subject to be an intentional Agent. Other verbs which select for Agent subjects, such as *slam*, do not require intentional entities, but allow Agents which are elements of nature, as in (2b), or artifacts constructed to engage in certain actions, e.g. Levin and Rappaport Hovav's 1995 example *The teapot whistled*. Crucially, subjects which are abstract causes cannot fulfill the role of Agent, hence (3) is unacceptable, in contrast both to (1b) and (2b):

- (3) *Inappropriate use of the cord slammed the window blinds.

Cause and Agent are not arguments of the verb's roots (Kratzer 1996). The differences between them have been attributed to the nature of the functional v head, which verbalizes the root. Folli and Harley (2007) distinguish VCAUS vs. VDO for languages such as English and Italian. In the Semitic languages, the difference between these different v heads is expressed by the morphology of the verb (Doron 2003, Kastner 2018). Semitic verbs are constructed by intertwining a *consonantal root* morpheme with the v head (whose exponent is traditionally called *template*) that derives the actual verb by determining its syllabic structure. Hebrew has three different templates that derive verbs in the active voice. The marked templates are the CAUSATIVE and the INTENSIVE, exponents of VCAUS and VINTNS respectively.² The difference in form between them correlates with the role assigned by the v head to the *external argument* of the verb (the argument of the verb which functions as subject in the active voice). Hence, Semitic verbal morphology is special not only in having roots, which are consonantal morphemes, but also in morphologically marking whether the external argument of the verb is a **Cause** – in the CAUSATIVE template, or an **Agent** in the INTENSIVE template. Verbs constructed from the root with the unmarked functional v are derived by the default SIMPLE template, the verbalizer VSMPL. In (4), three equi-rooted verbs derived by the three different templates are shown for the same root 'ripe/cook'. The contrast between (4b) and (4cii) again shows that Causes, but not Agents, may be abstract:³

² The system contains a lot of noise due to phonological considerations and lexical idiosyncrasy, which brings about a reversal of the exponents in the environment of many roots. Systematicity is only guaranteed when the different templates are contrastive – i.e. derive equi-rooted verbs as in (4) in the text (cf. Doron 2003). But see section 5 for a novel environment of systematicity.

³ In the transcription of the examples, the pairs of allophones *b-v*, *k-x*, *p-f* are rendered according to the Hebraist tradition *b-b*, *k-k*, *p-p*. Glosses use the following abbreviations: ACC – accusative case; ADJ – adjective; CAUS – CAUSATIVE template; INTNS – INTENSIVE template; MID – middle voice; PASS – passive voice; SMPL – SIMPLE template; SUPR – superlative.

(4) *v̑bšl* ~> ripe/cook

a. Simple template

bašlu ha-tna'im le-heskem ezori kolel
ripened.SMPL the-conditions for-agreement regional comprehensive
'The conditions have ripened for a comprehensive regional agreement.'^w

b. Causative template

... ma še-ke.kol.ha.nir'e *hibšil* et-ha- 'isqa
... what that-probably ripened.CAUS ACC-the-deal
'The companies worked together before, which probably cooked the deal.'^w

c. Intensive template

- i. *hu bišel* et-ha- 'isqa ha-gdola be.yoter
he cooked.INTNS ACC-the-deal the-big SUPR
'E.M. announced that he had cooked up the biggest deal in the history of Israeli high-tech.'^w
- ii. * ... ma še-ke.kol.ha.nir'e *bišel* et-ha- 'isqa
... what that-probably cooked.INTNS ACC-the-deal
'*The companies worked together before, which probably cooked up the deal.'

I now introduce the distinction between Agent and Force formulated by Scott DeLancey as

"...the distinction between active (prototypically, moving) participants in the event and inactive entities which somehow produce their effect simply by being in the right place at the right time." (DeLancey 1983: 61)

The Agent/Force distinction can be represented through the theoretical tools developed by Schäfer (2008); Alexiadou, Anagnostopoulou and Schäfer (2015). These authors suggest that an Agent argument is always introduced by an additional functional Voice head (additional to the v verbalizer). This ascertains that verbs with Agents can passivize (since active/passive is a distinction encoded in the Voice head). Example (4ci) above, with an Agent subject, may indeed passivize as in (5):

(5) *ha- 'isqa ha-gdola be.yoter* ... *bušla* al.yedey E.M.
the-deal the-big SUPR cooked.INTNS.PASS by E.M.
'The biggest deal in the history of Israeli high-tech had been cooked up by E.M.'

If no Voice head is selected, the thematic role assigned to the subject by VINTNS is actually not Agent, but its subtype *Force*. In such a case, the verb does not passivize. Parallel facts for VCAUS without a Voice head will be shown later in section 5.

(6)a. *gal ha-ḥom bišel l-o et-ha-móah*
wave(of) the-heat cooked.INTNS to-him ACC-the-brain
'The heat-wave cooked his brain.'^w

b. **ha-móah bušal l-o 'al.yedey gal ha-ḥom*
the-brain cooked.INTNS.PASS to-him by wave(of) the-heat
'His brain was cooked by the heat-wave.'

The examples in (7) and (8) similarly illustrate the difference between Agent and Force as arguments of the intensive template:

(7) Intensive template with Agent

- a. *ha-cava ha-adom šihrer et-asirey ha-mahane*
the-army the red released.INTNS ACC-inmates(of) the-camp
'The Red Army released the camp's inmates.'^w
- b. *asirey ha-mahane šuhreru al.yedey ha-cava ha-adom*
inmates(of) the-camp released.INTNS.PASS by the-army the red
'The camp's inmates were released by the Red Army.'

(8) Intensive template with Force

- a. *ha-hómer šihrer edim re'ilm bi.zman ha-apíya*
the-substance released.INTNS fumes toxic during the-baking
'The substance released toxic fumes during the baking.'
- b. * *edim re'ilm šuhreru al.yedey ha-hómer bi.zman ha-apíya*
fumes toxic released.INTNS.PASS by the-substance during the-baking
'Toxic fumes were released by the substance while baking.'

The distinction between Agent and Force solves a puzzle which I left open in Doron (2011), where I noted a particular subclass of psych verbs which was systematically in the INTENSIVE template. Yet the existence of psych verbs in the INTENSIVE template is very mysterious under the assumption that this template is the exponent of VINTNS, which introduces an Agent argument. How is this consistent with the fact that psych verbs are non-agentive stative verbs? But if VINTNS assigns the different role of Force, which is compatible with stative verbs, then the INTENSIVE verbalizer is actually compatible with the semantics of psych verbs. The lack of a Voice head in psych verbs moreover explains why Hebrew psych verbs do not passivize.

3. Relational psych verbs

Psych verbs have been taken to denote a relation between two arguments, the experiencer (Exp) and the argument toward which emotion or evaluation is directed by Exp, entitled "object of emotion" in the philosophical literature (Kenny 1963 and Nissenbaum 1985) or Target of Emotion/Subject Matter of Emotion (T/SM) in the linguistic literature (Pesetsky 1995). Grammatically, it appears that either argument may be subject. Exp may be the subject, as illustrated in (9a), and in this case the psych verb is called a *SubjExp verb*. Or Exp is the object of the verb, as in (9b), and such a verb is called an *ObjExp verb*:

- (9)a. *SubjExp verb*
We admire science.
Mary didn't care for the play.
- b. *ObjExp verb*
Science fascinates us.
The play didn't appeal to Mary. (Pesetsky 1995:52)

This section discusses *relational* psych verbs such as the ones in (9), psych verbs which indeed denote a relation between Exp and the target of emotion. I leave until section 5 the discussion of *property* psych verbs – verbs which denote a one-place property of Exp which is not directed toward a second argument.

The examples in (9) illustrate the famous "linking problem" presented by psych verbs. Whereas for other verbs the thematic role of an argument relative to other arguments determines its grammatical function, here we seem to find an alternation in the alignment of thematic roles to

grammatical functions. Psych verbs seem to allow an alternation in the alignment of Exp and T/SM to their grammatical function – subject vs. object.

I will argue that the alternation is only apparent. Of the roles Exp and T/SM, Exp always receives the function of subject, as in (9a). Where Exp is object, as in (9b), it is because the other argument has the thematic argument of Force. This conception is in accordance with the view voiced by Scott DeLancey:

“A situation in which a person experiences some cognitive or emotional state can be construed ... as a state which the individual enters into, parallel to *sick* or *grown-up*; or as a force which enters into the individual, as a *disease*. The first of these is grammaticalized as dative-subject predicates like *like*; the second is grammaticalized as a species of change-of-state predicate like *please*.” (DeLancey 2001)

The same solution for the linking problem is also valid for locative verbs.

3.1 Relational SubjExp psych verbs

What characterizes relational SubjExp verbs is that both Exp and T/SM are arguments of the root, i.e. these verbs have binary roots, which denote locative relations. These verbs are locative in the sense that they describe feelings and emotions as located within Exp: “Experiencers are mental locations (containers) in which the mental state resides” (Landau 2010:11). A similar point was made in DeLancey (2001). Hence the Exp role parallels the role of Location in locative verbs. The thematic roles of the arguments are determined by “inherent prepositions” which surface in positions where the argument lacks grammatical case such as nominative.⁴

The Hebrew examples in (10) are in the simple template and do not passivize. Their adjectival passives in (11) reveal the inherent locative preposition underlyingly attached to the locative experiencer (Doron 2003):

(10) Relational psych verbs in the SIMPLE template

- a. *ha-talmid 'ahav et-ha-ši 'ur*
the student loved.SMPL ACC-the-class
- b. *ha-talmid sana et-ha-ši 'ur*
the student hated.SMPL ACC-the-class
- c. *ha-talmid zakar et-ha-ši 'ur*
the student remembered.SMPL ACC-the-class
- d. *ha-talmid ma'as b-a-ši 'ur*
the student loathed.SMPL at-the-class

(11) Locative preposition surfaces on non-nominative Exp

- a. *ha-ši 'ur 'ahuv 'al ha-talmid*
the-class love.SMPL.ADJ.PASS on the-student
'The class is pleasing to the student.'

⁴ Inherent prepositions are the assigners of the so-called “inherent case” which differs from “grammatical case” in being dependent on thematic roles (Emonds 1985).

- b. *ha-ši'ur sanu* 'al ha-talmid
the-class hate.SMPL.ADJ.PASS on the-student
'The class is destable to the student.'
- c. *ha-ši'ur zakur* l-a-talmid
the-class remember.SMPL.ADJ.PASS to-the-student
'The class is borne in the student's mind.'
- d. *ha-ši'ur ma'us* 'al ha-talmid
the-class loathe.SMPL.ADJ.PASS on the-student
'The class is loathsome to the student.'

The same distribution is found with physical locative verbs:

- (12) Relational locative verbs in the SIMPLE template
 - a. *ha-qarqa'* *sap̄ga* īomer radioaqtivi
the-ground absorbed.SMPL substance radioactive
 - b. *ha-smika* 'atp̄a et-ha-tinoq
the-blanket wrap.SMPL ACC-the-baby
- (13) Locative preposition surfaces on non-nominative Loc
 - a. *īomer* radioaqtivi adayin sap̄ug b-a-qarqa'
substance radioactive still absorb.SMPL.ADJ.PASS in-the-ground
'Radioactive substance is still soaked up in the ground.'^w
 - b. *ha-tinoq* 'atup̄ b-a-smika
the-baby wrap.SMPL.ADJ.PASS in-the-blanket
'The baby is wrapped up in the blanket.'

3.2 Relational ObjExp psych verbs

The relative prominence of the two arguments of relational psych verbs is reversed in verbs which present the T/SM as a Force. In Hebrew, the functional verbalizer VINTNS, when it does not introduce an additional Agent argument through the use of a Voice head, assigns the thematic role of Force to the active participant which forcefully penetrates the location, a construal already described by DeLancey (2001). DeLancey speaks of a "Force which enters the individual". The following are Hebrew examples of such verbs:⁵

- | | |
|--|---------------------------------------|
| (14)a. <i>ha-balšanut</i> <i>inyyena</i> ota | b. <i>ha-i.cédeq</i> <i>qomem</i> ota |
| linguistics interested.INTNS her | injustice revolted.INTNS her |
| c. <i>ha-maxaze</i> <i>ye'eš</i> ota | d. <i>ha-nosé</i> <i>riteq</i> ota |
| the-show dismayed.INTNS her | the-topic riveted.INTNS her |
| e. <i>ha-signon</i> <i>ikzeb</i> ota | f. <i>ha-nosé</i> <i>'iyef</i> ota |
| the-style disappointed.INTNS her | the-topic tired.INTNS her |
| g. <i>ha-ši'ur</i> <i>ši'amem</i> ota | h. <i>ha-tašlum</i> <i>rica</i> ota |
| the-class bored.INTNS her | the-payment gratified.INTNS her |

⁵ In some circumstances, its is actually a CAUSAITVE template exponent which surfaces as the exponent of the functional head VINTNS. An example is *hirtia'* deter.CAUS. The converse is true too: *rigeš* 'excite.INTNS actually belongs to verbs with VCAUS. As already mentioned, such occasional lack of transparency in the correspondence between the syntactic make-up of the verb and its exponent template is to be expected in the system.

- | | | | | | | | |
|----|-------------------|-----------------|------------|----|------------------|------------------|---------------|
| i. | <i>šmo</i> | <i>sigren</i> | <i>ota</i> | j. | <i>ha-macab</i> | <i>dike</i> | <i>ota</i> |
| | his.name | intrigued.INTNS | her | | the-situation | depressed.INTNS | her |
| k. | <i>ha-šókolad</i> | <i>pita</i> | <i>ota</i> | l. | <i>ha-mišpat</i> | <i>iyem</i> | <i>aleyha</i> |
| | the-chocolate | seduced.INTNS | her | | the-trial | threatened.INTNS | her |

As follows from the lack of a Voice head, the verbs in (14) do not passivize, as already noticed by Landau (2010: 60-63).

- (15) a. **hi ‘unyena* *al.yedey ha.balšanut*
 she interested.INTNS.PASS by linguistics
 b. **hi qumema* *al.yedey ha.i.cédeq*
 she revolted.INTNS.PASS by injustice

Some roots allow a Voice head to be added to the derivation after all. In such a case, an agentive, non-psych action verb is derived:

- (16)a. *yedidah pita* *ota* b. *ha-biryon iyem* *aleyha*
 her.friend seduced.INTNS ACC-her the-thug threatened.INTNS her
 'Her friend seduced her.' 'The thug threatened her.'

For such verbs, passive is possible. The *by*-phrase then denotes either the Agent, or an instrument deployed by an implicit Agent:

- (17)a. *hi puteta* *al.yedey yedid.ah / al.yedey ha.šókolad*
 she seduced.INTNS.PASS by her.friend / by.means.of chocolate
 b. *hi ’uyma* *al.yedey ha-biryon / al.yedey ha-xipus*
 she threatened.INTNS.PASS by the-thug / by.means.of the-search

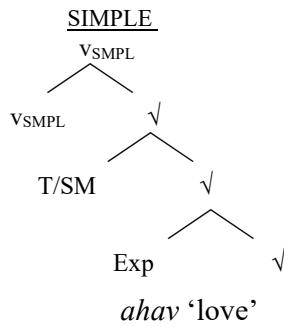
What is striking in all the examples in (14) is that if the subject is not Agentive, then it is always the argument toward which the mental state is targeted, since the latter is an argument of the relational psych verb.

Parallel locative verbs are shown in (18):

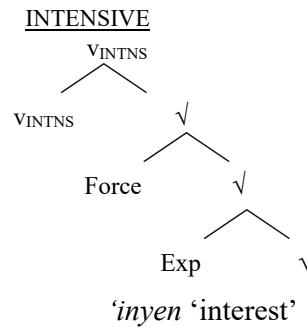
- (18) Relational locative verbs in the INTENSIVE template (Force subject)
- a. *ha.mayim mil’u* *et-ha-’émeq*
 water filled.INTNS ACC-the-valley
 - b. *ha.šéleg kisa* *et-ha-har*
 snow covered.INTNS ACC-the-hill
 - c. *ha.krazot qištu* *et-ha-’ir*
 posters decorated.INTNS ACC-the-town
 - d. *qtoret ha-mor bisma* *et-beit.ha.miqdaš*
 incense(of) the-myrrh perfumed.INTNS ACC-the.temple

The structure of relational psych verbs is schematically shown here:

(19) a. **Relational SubjExp**



b. **Relational ObjExp**



4. Causativization of relational psych verbs

Both SubjExp and ObjExp relational psych (and locative) verbs can be causativized, i.e. acquire a new subject, the Cause argument. Adding the Cause argument requires “demotion” of the verb’s original subject (Keenan and Comrie 1977). The original subject is Exp in the case of SubjExp psych verbs, and Force in the case of ObjExp psych verbs. Demotion consists of allowing the demoted argument to surface with its inherent preposition

4.1. Causativization of relational SubjExp verbs

Relational SubjExp verbs were introduced in section 3.1 above, where it was also shown that Exp’s inherent prepositions were ‘*al* ‘on’ and *l-* ‘to’. These indeed surface when we add the Cause argument in (20), whereas the T/SM remains the direct object of the verb:

(20) Causative relational SubjExp verbs

- a. *ha-more he’ehiv* ‘*al ha-talmid et-ha-ši’ur*
the teacher **loved.CAUS** on the student ACC-the class
‘The teacher made the student love the class.’
- b. *ha-more hisni’* ‘*al ha-talmid et-ha-ši’ur*
the teacher **hated.CAUS** on the-student ACC-the-class
‘The teacher made the student hate the class.’
- c. *ha-more hizkir* ‘*l-a-talmid et-ha-ši’ur*
the teacher **remembered.CAUS** to-the-student ACC-the-class
‘The teacher reminded the student of the class.’
- d. *ha-more him’is* ‘*al ha-talmid et-ha-ši’ur*
the teacher **loathed.CAUS** on the-student ACC-the-class
‘The teacher made the student loathe the class.’

The same distribution is found with physical locative verbs, with the inherent preposition *b-* ‘in’:

(21) Causative locative verbs

- a. *hem hispigu ḥomer radioaqtivi b-a-qarqa’*
they **absorbed.CAUS** substance radioactive in-the-ground
‘They made radioactive substance seep into the ground.’
- b. *hem ‘atpu et-ha-tinoq b-a-smika*
they **enveloped.SMPL** ACC-the-baby in-the-blanket
‘They enveloped the baby in the blanket.’

4.2. Causativization of ObjExp verbs

The most surprising property of causative ObjExp verbs is their systematic INTENSIVE form, the same as that of the basic ObjExp verb. Yet the additional argument is interpreted as a Cause despite the INTENSIVE morphology. This is due to the fact that it is the local functional head (VINTNS in this case) which determines the spellout of the root, rather than the higher functional head (VCAUS). The relevant functional heads are shown in the causatives structure in (27b) below.

In order to uncover the different inherent prepositions, which introduce the Force argument, we check the corresponding middle-voice verbs.⁶ The choice of prepositions marking Force depends on the root, and varies quite a bit: *be-* ‘in’, *néged* ‘against’, *me/mi* ‘from’, *klapey* ‘towards’, *l-* ‘to’. The same point was made for English in Levin (1993:190).

- | | | | | | | |
|--------|--------------------|--------------------|------------|-----|----------------------------|-------------------------|
| (22)a. | <i>ha.balšanut</i> | <i>'inyena</i> | <i>ota</i> | a'. | <i>hi hit'anyena</i> | <i>be-balšanut</i> |
| | linguistics | interested.INTNS | her | | she interested.INTNS.MID | in-linguistics |
| b. | <i>ha.i.cédeq</i> | <i>qomem</i> | <i>ota</i> | b'. | <i>hi hitqomema</i> | <i>néged ha.i.cedeq</i> |
| | injustice | revolted.INTNS | her | | she revolted.INTNS.MID | against injustice |
| c. | <i>ha-signon</i> | <i>'ikzeb</i> | <i>ota</i> | c'. | <i>hi hit'akzeba</i> | <i>me ha-signon</i> |
| | the-style | disappointed.INTNS | her | | she disappointed.INTNS.MID | from the-style |
| d. | <i>ha-ši'ur</i> | <i>ši'amem</i> | <i>ota</i> | d'. | <i>hi hišta'amema</i> | <i>me ha-ši'ur</i> |
| | the-class | bored.INTNS | her | | she bored.INTNS.MID | from the-class |
| e. | <i>šmo</i> | <i>sigren</i> | <i>ota</i> | e'. | <i>hi histaqrena</i> | <i>klapey šmo</i> |
| | his.name | intrigued.INTNS | her | | she intrigued.INTNS.MID | towards his.name |
| f. | <i>ha-šókolad</i> | <i>pita</i> | <i>ota</i> | f'. | <i>hi hitpateta</i> | <i>l-a.šókolad</i> |
| | the-chocolate | seduced.INTNS | her | | she tempted.INTNS.MID | to-chocolate |

We indeed find the same inherent preposition surfacing on the Force argument when a Cause is added to the verb:

- | | | | | |
|--------|---|--------------------|------------|-------------------------|
| (23)a. | <i>ha-marce</i> | <i>'inyen</i> | <i>ota</i> | <i>be-balšanut</i> |
| | the lecturer | interested.INTNS | her | in-linguistics |
| b. | <i>ha-séret</i> | <i>qomem</i> | <i>ota</i> | <i>néged ha.i.cédeq</i> |
| | the film | revolted.INTNS | her | against injustice |
| c. | <i>hitnahaguta</i> | <i>'ipyā</i> | <i>oto</i> | <i>mim.éna</i> |
| | her.behaviour | tired.INTNS | her | him from.her |
| | 'Her behaviour made him tired of her.' | | | |
| d. | <i>hitnahaguta</i> | <i>ye'aša</i> | <i>oto</i> | <i>mim.éna</i> |
| | her.behaviour | dismayed.INTNS | him | from.her |
| | 'Her behaviour made him dismayed at her.' | | | |
| e. | ha-marce | <i>riteq</i> | <i>ota</i> | <i>l-a-nosé</i> |
| | the-lecturer | riveted.INTNS | her | to-the-topic |
| f. | <i>'azibata</i> | <i>ikzeba</i> | <i>oto</i> | <i>mim.éna</i> |
| | her.leaving | disappointed.INTNS | him | from.her |
| | 'Her leaving made him disappointed in her.' | | | |
| g. | <i>šmo</i> | <i>sigren</i> | <i>ota</i> | <i>klapav</i> |
| | his.name | intrigued.INTNS | her | towards.him |

⁶ On the middle voice as a non-active voice different from the passive voice see Doron (2003), Alexiadou and Doron (2012).

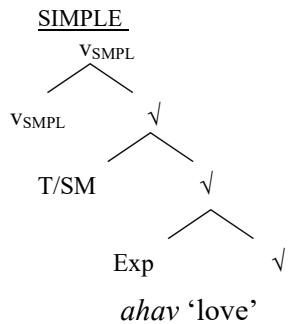
'His name made her intrigued about him.'

With locative verbs, the inherent preposition is always *be-* 'with':

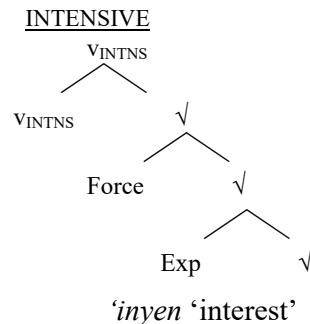
- | | | | |
|------------------------------|--------------------------|-------------------------------|----------------------------------|
| (24)a. <i>ha-mayim mil'u</i> | <i>et-ha-'émeq</i> | a'. <i>ha-'émeq hitmala</i> | <i>be-mayim</i> |
| water | filled.INTNS | the-pool | filled.INTNS.MID with-water |
| b. <i>ha-šéleg kisa</i> | <i>et-ha-har</i> | b'. <i>ha-har hitkasa</i> | <i>be-šéleg</i> |
| snow | covered.INTNS | the-hill | covered.INTNS.MID with-snow |
| c. <i>ha-krazot qištū</i> | <i>et-ha-'ir</i> | c'. <i>ha-'ir hitqašta</i> | <i>be-krazot</i> |
| posters | decorated.INTNS | the-town | decorated.INTNS.MID with-posters |
| d. <i>ha-qtoret bisma</i> | <i>et-ha-miqdaš</i> | d'. <i>ha-miqdaš hitbasem</i> | <i>be-qtoret</i> |
| the-incense | perfumed.INTNS | the-temple | perfumed.INTNS.MID with-incense |
| (25)a. <i>ha-sufa mil'a</i> | <i>et-ha-breka</i> | <i>be-mayim</i> | |
| the-storm | filled.INTNS | ACC-the pool | with-water |
| b. <i>ha-sufa kista</i> | <i>et-ha-har</i> | <i>be-šéleg</i> | |
| the-storm | covered.INTNS | ACC-the-hill | with-snow |
| c. <i>hu qišet</i> | <i>et-ha-'ir</i> | <i>be-krazot</i> | |
| he | decorated.INTNS | ACC-the-town | with-posters |
| d. <i>ha-kohanim bismu</i> | <i>et-beit.ha.miqdaš</i> | <i>be-qtoret ha-mor</i> | |
| the-priests | perfumed.INTNS | ACC-the.temple | with-incense(of) the-myrrh |

The basic structures in (26) repeat (19), and (27) are the causative versions:

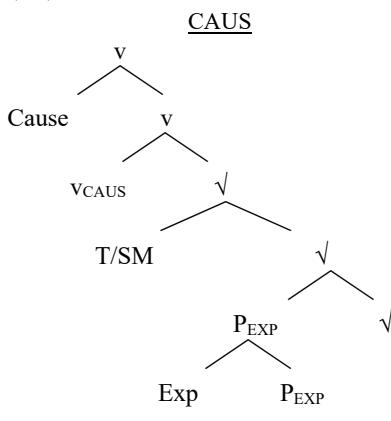
(26)a. **Relational SubjExp**



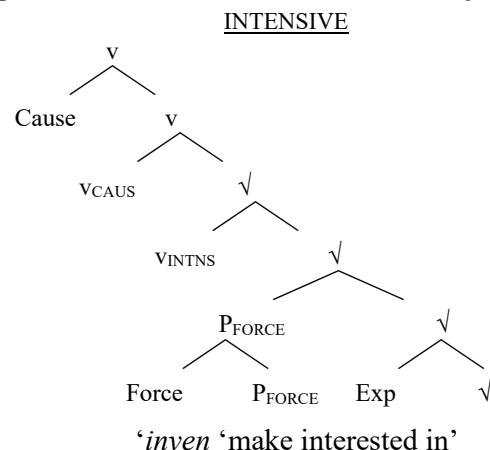
b. **Relational ObjExp**



(27)a. **Causativized Relational SubjExp**



b. **Causativized Relational ObjExp**



5. Causative property psych verbs

The ObjExp verbs below differ in several respects from the relational ObjExp verbs which have the structure (26b) above. First, they are typically in the CAUSATIVE template, whereas the relational ObjExp verbs are in the INTENSIVE template. I will argue that the CAUSATIVE template of these verbs indicates that their subject has the thematic role of Cause rather than T/SM or Force. These psych verbs do not denote a relation between Exp and the target of the mental state, but a one-place property of Exp brought about by a Cause.

(28) Causative property ObjExp verbs

- | | |
|--|---|
| a. <i>ha-ma'amar hirgiz ota</i>
the-article angered.CAUS her | b. <i>ha-ma'amar hik'is ota</i>
the-article annoyed.CAUS her |
| c. <i>ha-televízya hiphida ota</i>
the-TV frightened.CAUS her | d. <i>ha-televízya hid'iga ota</i>
the-TV worried.CAUS her |
| e. <i>ha-doh heherid ota</i>
the-report appalled.CAUS her | f. <i>ha-siyur hip'im ota</i>
the-trip thrilled.CAUS her |
| g. <i>ha-nisuy hidhim ota</i>
the-experiment astounded.CAUS her | h. <i>ha-sipur hibhil ota</i>
the-story alarmed.CAUS her |
| i. <i>ha-sipur hib'it ota</i>
the-story horrified.CAUS her | j. <i>ha-mahaze he'elib ota</i>
the-show insulted.CAUS her |
| k. <i>ha-macab hisbía' et.recon.a</i>
the-situation satisfied.CAUS her | l. <i>ha-mahaze hiršim ota</i>
the-show impressed.CAUS her |
| m. <i>ha-mahaze hišpil ota</i>
the-show humiliated.CAUS her | n. <i>ha-ma'amar hipťia' ota</i>
the-article surprised.CAUS her |
| o. <i>ha-sipur hitrid ota</i>
the-story bothered.CAUS her | p. <i>ha-maxaze hiqsim ota</i>
the-show charmed.CAUS her |
| q. <i>ha-nose hik'ib la</i>
the-topic distress.CAUS her | r. <i>ha-sipur his'ir ota</i>
the story agitated.CAUS her |
| s. <i>ha-nose hipli ota</i>
the-topic amazed.CAUS her | t. <i>ha-maxaze he'esiq ota</i>
the-show preoccupied.CAUS her |
| u. <i>ha-nose hitrip ota</i>
the topic incensed.CAUS her | v. <i>ha-dox hitmía ota</i>
the report puzzled.CAUS her |
| w. <i>ha-nisayon he'ecim ota</i>
the-experience empowered.CAUS her | x. <i>ha-mar'e hig'il ota</i>
he-sight disgusted.CAUS her |
| y. <i>ha-kanábis hirgía' ota</i>
the-Cannabis calmed.CAUS her | z. <i>ha-mar'e hid'ib ota</i>
the-sight hurt.CAUS her |

As was shown in (15) above, INTENSIVE relational ObjExp do not passivize. If a passive form exists, it is actually the passive of a corresponding agentive, non-psych action verb, as in (16) – (17). This may happen with CAUSATIVE ObjExp psych verbs too, but here, most passive forms are actually exponents of SubjExp middle-voice verbs (Landau 2010: 62). Since the CAUSATIVE template has no middle-voice exponent, in some cases the passive-voice exponent serves as a middle-voice verb (Doron 2008). The preposition in this case is *me* ‘from’ rather than *al.yedey* ‘by’

- (29)a. *yedidah / ha-macav hipťia' ota*
Her.friend/the-situation **surprised.CAUS** her
- b. *hi hupté'a al.yedey yedidah / me ha-macav*
she **surprised.INTNS.PASS** by her.friend / from the-situation

- (30)a. *yedidah / ófen.ha.dibur šelo hišpil ota*
 her.friend/ speech.style his **humiliated.CAUS** her
- b. *hi hušpela al.yedey yedidah / me ófen.ha.dibur šelo*
 she **humiliated.CAUS.PASS** by her.friend / from speech.style his

But most SubExp verbs corresponding to the CAUSATIVE ObjExp verbs in (28) are SIMPLE active-voice verbs. When we search for the relevant inherent preposition, we mostly find causative prepositions (PCAUS): *mi/me* ‘from/of’, *‘al* ‘for, on account of, about’. This is very different from the various prepositions we found in (22) above for the SubjExp INTENSIVE.MID template verbs (*be-* ‘in’, *néged* ‘against’, *me/mi* ‘from’, *klapey* ‘towards’, *l-* ‘to’).

- (31)a. *hi ragza ‘al ha-šhitut*
 she **angered.SMPL** at the-corruption
- b. *hi ka‘asa ‘al ha-ha'ašamot*
 she **annoyed.SMPL** at the-accusations
- c. *hi pahada me ha.mávet*
 she **feared.SMPL** from death
- d. *hi da'aga l-a-yalda*
 she **worried.SMPL** for-the-girl
- e. *hi tamha ‘al ha-toca'ot*
 she **puzzled.SMPL** for the-results
- f. *hi harda me ha-macab*
 she **appalled.SMPL** from the-situation
- g. *hi nip̄‘ama me ha-eru‘im*
 she **thrilled.SMPL.MID** from the-events
- h. *hi hitpal'a ‘al ha-eru‘im*
 she **amazed.INTNS.MID** from the-events
- i. *hi sab‘a.racon me ha-macav*
 she **satisfied.SMPL** from the-situation
- j. *hi ka'aba ‘al ha-macav*
 she **distressed.SMPL** from the-situation
- k. *hi da'aba ‘al ha-macav*
 she **hurt.SMPL** from the-situation

The following examples show that the Hebrew causative prepositions PCAUS are indeed *mi/me* ‘from/of’, *‘al* ‘for, on account of, about’, quite independently of psych verbs. The examples in (32) below are all from the web.

- (32)a. *hu hištolel mi zá‘am*
 he went-wild **from** rage
- b. *ha-débeq namas me ha-ḥom*
 the-glue melted **from** the-heat
- c. *hem he‘enišu ota ‘al de‘otéha*
 they punished her **for** opinions.her
- d. *libam gas ba ‘al ki he‘éza le-harim roš me-ašpatot*
 their.heart rough at.her **for** that she.dared to-raise head from-dumps

'They disparage her for having dared to raise from the dump.'

Here too, the alternation in psych verbs (between the CAUSATIVE template and P_{CAUS}) is found with locative verbs (Doron 2005):

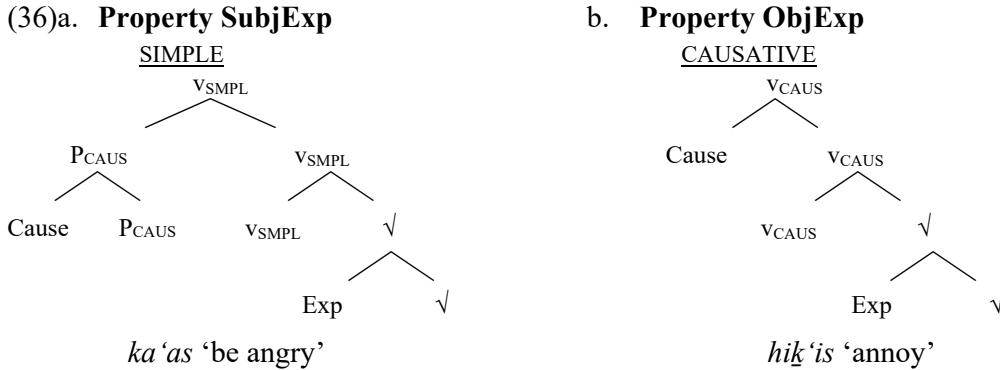
- (33)a. *ha-‘ec hīšir et-ha-‘alim*
the-tree **shed.CAUS** ACC-the-leaves
- b. *ha-kéleb hidip̄ réah ra‘*
the-dog **emanated.CAUS** smell foul
'The dog emitted a foul smell.'
- (34)a. *ha-‘alim našru me ha-‘ec*
the-leaves **shed.SMPL** from the-tree
- b. *réah ra‘ nadap̄ me ha-kéleb*
smell foul **emanated.SMPL** from the-dog

An additional contrast between the INTENSIVE relational verbs and the CAUSATIVE property verbs is attested for the nominalized versions of these verbs. Ahdout (2016) shows that the nominalization of INTENSIVE psych verbs can be stative (35a), whereas the nominalization of the CAUSATIVE verbs is dynamic only (35b).

- (35)a. *ha-ye’uš šelahem me ha-séret*
the-dismay.INTNS theirs from the-film
'their dismay at the movie.'
- b. *ha-ha‘alaba šelahem ‘al.yedey ha-bamay / *me ha-séret*
the-insulting.CAUS theirs by the-director / *from the-film
'Their insulting by the director's / *the film's

I refer the reader to Ahdout (2016) for a full account of (35), but here suffice it to say that this contrast follows from the difference in structure between INTENSIVE relational verbs (26b) and CAUSATIVE property verbs (36b). The relation denoted by the root in (35a) may remain stative when nominalized, whereas the nominalization of a causative relation is interpreted as dynamic (Grimshaw 1990).

I suggest the following structures, where the Cause role is assigned in two different ways, but in neither case is it an argument of root:



Pesetsky (1995) discusses in detail the semantic differences between SubjExp and ObjExp versions of parallel English verbs:

- (37)a. *SubjExp verb*

Bill was angry at the article in the *Times*.

- b. *ObjExp verb with Cause subject*

The article in the *Times* angered Bill. (Pesetsky 1995: 56)

(37b) has a reading that (37a) does not have, where Bill does not find anything objectionable about the article in the *Times*, he thinks it is splendid. His anger is not directed at the article, but maybe he is angry at the government for the corruption revealed by the article. (37a) cannot be interpreted in this way, but only means that Bills finds the article itself objectionable in some respect. Similarly, in (38), and similar contrasts were also noted in Croft (1993).

- (38)a. *SubjExp verb*

John worried about the television set.

- b. *ObjExp verb with Cause subject*

The television set worried John. (Pesetsky 1995: 57)

(38b) has a reading that (38a) does not have, where John does not worry *about* the television set, but where he worries about something else, and his worrying is *caused* by the television set. For example, because the TV set is not in its usual place, he may worry that his baby son pushed it and got stuck underneath. Thus the television set is the Cause of John's worry in (38b). He is not worrying *about* the TV set, but *because* of it. In (38a), on the other hand, the television set is the object of John's worry.

Pesetsky attributes this semantic difference to a split between the roles of T/SM and Cause. In the (a) examples, the non-Exp argument is a T/SM, whereas in the (b) examples – it is a Cause. This split in thematic roles explains the semantic differences, but generates a puzzle, which Pesetsky called the “T/SM restriction”. Psych verbs can take a T/SM argument as in (37a) and (38a), and a Cause argument as in (37b) and (38b), but not both in the same sentence, as shown by (39):

- (39) a. * The article in the *Times* angered Bill at the government.

b. * The television set worried John about the whereabouts of his baby son.

The restriction is clearly not semantic, since the three arguments can be expressed together in a periphrastic construction, as in (40):

- (40) a. The article in the *Times* caused Bill to be angry at the government.

b. The television set caused John to worry about the whereabouts of his baby son.

In Hebrew, we find that CAUSATIVE psych verbs abide by the T/SM restriction:

- (41)a. *ha-šmu'ot **hиргуз** ota 'al ha-šhitut
the rumours **angered.CAUS** her at the corruption

- b. *ha-ne'um **хик'ис** ota 'al ha-ha'ašamot
the speech **annoyed.CAUS** her at the-accusations

- c. *ha-ma'amar **hip̄hid** ota me-ha-mávet
the article **frightened.CAUS** her from-death

- d. *ha-ma'amar **hip̄im** ota me ha-eru'im
the article **excited.CAUS** her from the events

- e. *ha-dox **хеверид** ota me-ha-macav
the report **appalled.CAUS** her from the situation

- f. *ha-sipur **hibhil** ota me-ha-'alila

- the story **scared.CAUS** her from-the-plot
- g. * ha-tipul **hirgía‘** ota *me-ha-kanábis*
 the treatment **calmed.CAUS** her from-the-Cannabis

Nevertheless, I propose to reject the “T/SM restriction”. It does not hold for relational ObjExp verbs, as we saw above in (23). Hence, a Cause is in general compatible with a T/SM or Force argument. Instead, the ungrammaticality of the examples in (39) and (41) can simply be attributed to the fact that both arguments are assigned the same thematic role of Cause, once by the verbalizer **VCAUS** and once by **P_{CAUS}**. This contradicts the well-known requirement that in a non-periphrastic construction, each thematic role can only be assigned once.

But what accounts for the semantic differences uncovered by Pesetsky regarding (37) and (38)? I attribute it to the difference in the transparency of the two environments where Cause is assigned. Vendler (1962) and Davidson (1967), following a long tradition, argue that causality is transparent:

“If it was a drying she gave herself with a coarse towel on the beach at noon that caused those awful splotches to appear on Flora's skin, then it was a drying she gave herself that did it; we may also conclude that it was something that happened on the beach, something that took place at noon, and something that was done with a towel, that caused the tragedy.” (Davidson 1967: 698)

Yet an environment with **P_{CAUS}** is not transparent, as shown in (42), it seems to involve explanation beyond mere causation:

- (42)a. Flora contracted those awful splotches from drying herself with a coarse towel
 b. #Flora contracted those awful splotches from drying herself with a towel

The contrast between the intensionality of the verb complement and the extensionality of the verb subject was also noted by Levin and Grafmiller (2013). They note a contrast in acceptability between a SubjExp verb, which they found in their corpus, and the corresponding unacceptable ObjExp verb:

- (43) a. *SubjExp verb*
 Did you fear a negative response from fans?
 b. *ObjExp verb*
 ??Did a negative response from fans frighten you?

“...the *frighten* variant (43b) can only be understood as presupposing that a negative response has in fact happened, while the *fear* example (43a) carries no such presupposition. In (43a) the experiencer fears merely the possibility of something happening. That is, there was no specific event that happened to cause him or her to become afraid...” (Levin and Grafmiller 2013: 24)

Another demonstration of the lack of intensionality of the causative subject is its resistance to logophors. Logophoric elements can appear in causal environments (Charnavel 2018), but when they do, they reflect a mental representation by an Exp. This is natural for relational psych verbs as in (44a), but much less natural for causative property psych verbs as in (44b), where the subject is an environment, which does not represent the perspective of Exp:

- (44)a. *ha-biqóret ‘al ‘acma qomema ota*
 the-criticism of herself **revolted.INTNS** her
 b. ? *ha-biqóret ‘al ‘acma hišpila ota*
 the-criticism of herself **humiliated.CAUS** her

The following table summarizes the contrasts uncovered in the present section between relational and property ObjExp verbs:

	Relational psych verbs	Property psych verbs
ObjExp verbs	INTENSIVE template	CAUSATIVE template
	Force subject	Cause subject
	violate T/SM restriction	uphold T/SM restriction
	allow logophors	disallow logophors
	Passive is Agentive	Passive expones the middle voice
	Stative nominalization	Dynamic nominalization
Corresponding SubjExp verbs	INTENSIVE middle voice	SIMPL active voice
	Force argument with varied P	Cause argument exclusively with P_{CAUS}

I find it striking that the distinction between relational and property psych verbs systematically corresponds to a form distinction between the templates, which derive these verbs in Hebrew. This form distinction is not an accidental phonological fact. I must admit that so far I believed that finding equi-rooted verbs was the only way to demonstrate the systematic semantic contrast encoded by the templates. But, here is a novel environment which demonstrates this systematicity, though the verbs are not equi-rooted. We have two subclasses of ObjExp verbs which differ in the semantics of their subject argument: Force vs. Cause. What could be more natural than deriving these verbs by the templates which signify these meanings!

6. Conclusion

One construal of psych verbs is that of a locative state: a mental representation of the T/SM is located within the experiencer's mind (DeLancey 1983; Landau 2010). Two additional psych verb construals were proposed by DeLancey (1983). Under the second construal, the psych verb describes a Force entering the Experiencer's consciousness. This is represented in Hebrew by the INTENSIVE template, which typically describes agentive dynamic events, but here reflects the presence of inactive but effective Force. This construal reflects the involvement of Force, not the involvement of change. Under the third construal, the psych verb denotes a state of mind of the experiencer, which may be viewed as caused, and is expressed in Hebrew by dedicated causative morphology, the CAUSATIVE template.

The difference between the construals shows that psych verbs do not after all suffer from a “linking problem”: the thematic role of Force which is assigned to the subject of psych verbs differs from the thematic role of T/SM assigned to objects.

The categories of Cause and Force play a crucial role in the representation of verbs. The present study has shown this for psych verbs. The centrality of these categories is demonstrated by the fact that they are encoded in the morphosyntax of Hebrew verbs: Some psych relations form a subtype of the causative relation and are expressed in the CAUSATIVE template, whereas others describe the presence of a force, and are expressed in the INTENSIVE template (which surfaces even when an eventual Cause is added).

The existence of psych verbs in the INTENSIVE template is mysterious under the assumption that this template introduces an Agent argument, whereas psych verbs are non-agentive stative verbs. But if the INTENSIVE template is actually associated with the different role of Force, which is compatible with stative verbs, then the INTENSIVE verbalizer is actually compatible with the semantics of psych verbs.

The present study has also shown that psych verbs, though describing the mental rather than the physical domain, actually do not lexicalize new types of thematic roles. Psych verbs can be construed as different relations, but the participant roles in these relations are parallel to the ones found in the physical realm of locative verbs.

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