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12

On Stativity and Causation

LIINA PYLKKÄNEN

12.1 Introduction

Since Dowty (1979), much research in lexical semantics has assumed that states are semantic primitives in word meaning. Recent syntactic literature on argument structure has, however, challenged this claim. Specifically, Grimshaw (1990) and Pesetsky (1995) propose that the problematic argument realization of psychological Experiencer-object verbs is due to their causative semantics. Since causative meanings usually have some internal structure, and since many Experiencer-object verbs are aspectually stative, this proposal entails that the meanings of stative verbs are not necessarily basic. Given the traditional view of states as primitive elements in word meaning, the claim is not trivial and therefore calls for further investigation.

In this paper I argue that independent evidence for the compatibility of stativity with causative semantics can be found in Finnish. I investigate the meanings of Finnish psychological Experiencer-object verbs, whose semantic properties clearly show that the interpretations of stative verbs are not necessarily simple. While these Experiencer-object predicates are morphologically causative, they exhibit all the aspectual properties of stative verbs, just like their non-causative Experiencer-subject counterparts. I will argue that, in Finnish, morphologically causative psych verbs denote properties of complex stage-level states while morphologically noncausative psych verbs denote properties of simple individual-level states. The behavior of psych predicates underlines the importance of separating causativity from aspect:

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causative predicates are not aspectually a uniform class and therefore cannot be identified with accomplishment-like verbs, as has commonly been done since Dowty 1979.

12.2 The Data: Finnish Psych Predicates

In Finnish, causative psych verbs are formed from noncausative psych predicates by the addition of the causative suffix *-tta*. As in many other languages, causativization affects the argument realization of the predicate: with noncausative psych verbs the Experiencer is the subject, as in (1a), while with causative psych verbs it is realized as the object, as in (1b):

(1) a. Mikko inhoa-a hyttysi-ä.
Mikko.NOM findDisgusting-3SG mosquitos-PAR
'Mikko finds mosquitos disgusting'

b. Hyttyset inho- **tta**- vat Mikko-a
mosquitos.NOM findDisgusting-**caus**-3PL Mikko-PAR
'Mosquitos disgust Mikko'

Both of the forms in (1) are fully stative, which will be shown in Section 2. Due to their stativity, the only available object case is partitive, which in Finnish encodes atelicity.

In addition to stative psychological predicates, Finnish has also nonstative Experiencer-subject and Experiencer-object predicates. They differ from stative psych verbs in two ways: (i) they involve the inchoative morpheme *-stU* and (ii) the object of the non-causative form appears in the elative rather than the partitive case. In Section 5 it will become apparent that also the interpretation of the object with these nonstative psych predicates is crucially different from the way the object of stative Experiencer-subject verbs is interpreted (in fact, to the extent that it probably isn't an argument of the verb).

(2) a. Mikko viha-stu-i uutisi-sta
Mikko.NOM anger-INCHOATIVE-3SG.PAST news-ELA
'Mikko became angry because of the news'

b. Uutiset viha-stu-tti-vat Mikko-a
news.NOM anger-INCHOATIVE-CAUS.PAST-3PL Mikko-PAR
'The news made Mikko become angry'

The table below summarizes the verb classes mentioned above, with their rough English equivalents and case-assigning properties:

TABLE 1

	ExpSubj-ThemeObj	ThemeSubj-ExpObj
Stative	(I)Subj$_{-NOM}$, Obj$_{-PAR}$ *inhoa* 'find disgusting' *sääli* 'pity' *sure* 'be sad'	(II)Subj$_{-NOM}$, Obj$_{-PAR}$ *inho-tta* 'disgust' *sääli-ttä* 'cause to pity' *sure-tta* 'cause to be sad'
Corresponding class in English	*fear, love, hate*	*concern, perplex, bother*
Nonstative	(III)Subj$_{-NOM}$, Obj$_{-ELA}$ *raivo-stu* 'become furious' *kauhi-stu* 'become terrified' *viha-stu* 'become angry'	(IV)Subj$_{-NOM}$, Obj$_{-ACC/PAR}$ *raivo-stu-tta* 'cause to become furious' *kauhi-stu-tta* 'cause to become terrified' *viha-stu-tta* 'cause to become angry'
Corresponding class in English	-	*frighten, surprise, amuse*

The argument realization of psych verbs is, of course, puzzling for any theory that maintains a fixed mapping between thematic roles and argument positions. Why are Experiencer participants realized as subjects in one case and as objects in the other? The causative morphology on the Experiencer-object forms offers, of course, an obvious clue. Since Experiencer-object predicates are realized with overt causative morphology also in other languages, such as Japanese, it has been proposed that it is the causative meanings of the Experiencer-object forms that bring about the switch in grammatical relations. Both Grimshaw (1990) and Pesetsky (1995) propose that the thematic role of the subject in the causative is, in fact, Causer, rather than Theme. The argument realization of the Experiencer-object form is then attributed to the fact that Causers are more highly ranked on the thematic hierarchy than Experiencers.

The focus of this paper will be to investigate the consequences of a causative analysis to stative psych predicates. To maintain such an analysis, we need to have an understanding of what it means for a predicate to be both stative and causative. The traditional thinking on causative meanings is that they can be decomposed into at least two subparts: some kind of a process and a change of state. States, on the other hand, are traditionally considered semantic primitives, a view reflected by the following quotes:

> ..."stative predicates are somehow simpler or more limited in their interpretations than other kinds of verbs...(Dowty 1979: 126)
>
> " States do not have any internal structure, but events do... States do not take place and are the opposite of events." (Van Voorst 1992: 81)
>
> "States have an atemporal and abstract quality" (Bach 1981: 71)
>
> "States differ from events in that they lack explicit bounds." (Steedman 1997: 901)

Thus, it is not immediately obvious how stativity and causativity could combine in word meaning. In this paper, I try to develop an account of this by examining the behavior of stative psych causatives in Finnish. I start out by showing that Finnish has a class of psych predicates which are uncontroversially stative both in their causative and noncausative uses. Then, I proceed to examine semantic differences between the causative and non-causative forms. Finally, I investigate differences in the interpretations of stative and nonstative psych causatives, concluding that these two types of predicates are different in ways independent of aspect.[1]

12.3 Stativity

In this section I show that both causative and noncausative psych predicates (i.e. classes I and II in Table 1) are aspectually stative. The stativity of noncausative psych verbs is, of course, not surprising. The stativity of morphologically causative psych verbs, on the other hand, is.

Test 1: Accusative object case

Showing that these psych predicates are atelic is trivial; accusative case marking offers a good telicity diagnostic in Finnish. The examples in (3) show that accusative case marking on a direct object makes the event described by the verb telic, while partitive case marking leaves the completion of the activity open. Verbs whose event structure necessarily involves a culmination, i.e. achievement verbs, are incompatible with partitive objects (4). Inherently atelic predicates, such as states, on the other hand, are only

[1]The discussion will largely be limited to the *interpretations* of psych verbs, leaving aside many of their syntactic properties. However, since the original presentation of this paper, much interesting work has taken place on this topic, see e.g. Arad 1998 and McGinnis (to appear).

compatible with partitive case-marked objects, as is shown in (5).

(3) a. Pekka rakensi talo-a.
Pekka.NOM built house-**par**
'Pekka was building a house.'

b. Pekka rakensi talo-n.
Pekka.NOM built house-**acc**
'Pekka built a house.'

(4) a. Matti voitti kisa-n
Matti.NOM won race-**acc**
'Matti won the race'

b. *Matti voitti kisa-a
Matti.NOM won race-**par**
'Matti won the race'

(5) a. Pekka rakastaa Liisa-a
Pekka.NOM loves Liisa-**par**
'Pekka loves Liisa'

b. *Pekka rakastaa Liisa-n.
Pekka.NOM loves Liisa-**acc**
'Pekka loves Liisa'

If causative and noncausative psych verbs are strictly stative, we would not expect them to occur with accusative objects. This, indeed, is the case; the following sentences are sharply ungrammatical, independent of context.

(6) *Causative:*

a. *Kaisa inho-tti Mati-n.
Kaisa findDisgusting-CAUS.PAST Matti-ACC
'Kaisa disgusted Matti'

b. *Uutiset sure- tti-vat Mati-n.
news-NOM beSad-CAUSE-3PL Matti-ACC
'The news made Matti sad'

Noncausative:

c. *Kaisa inho- si Mati-n.
Kaisa-NOM findDisgusting-PAST Matti-ACC
'Kaisa found Matti disgusting.'

d. *Matti suri uutise-t.
Matti.NOM beSad.PAST news-ACC.PL
'Matti was sad because the news'

In principle, the partitive case of the complex causative predicate could come from three sources: it could either be assigned by the noncausative base verb or by the causative suffix or it by the combination of these two.[2] If it was assigned by the noncausative base verb, this test would not necessarily tell us anything about the aspectual properties of the complex verb. It could simply be the case that the causative predicate assigns whatever object case its noncausative base assigns. This, however, cannot be the generalization about the case-assigning properties of causatives in general

[2]I am here abstracting away from any particular theory of object Case assignment but the idea is that if the partitive case was assigned by the combination of the base and the suffix, the object cases carried by these two morphemes (or whatever heads handle object Case assignment) would somehow "merge" into one.

since verbs that do not assign any object case causativize. In (7b), the accusative case on the direct object must come from the causative suffix:

(7) a. Lasi hajo-si
glass.NOM break-3SG.PAST
'The glass broke'

b. Pekka hajo-tti lasi-n
Pekka.NOM break-CAUS.PAST glass-ACC
'Pekka broke the glass'

Furthermore, it is clear that the aspectual properties of the base verb do not simply percolate up to the complex predicate; i.e. the fact that a causative psych verb assigns partitive case is not the *same* fact as the fact that its noncausative counterpart does. For instance, the noncausative unaccusative in (7a) is aspectually an achievement. Thus, it is incompatible with adverbials such as 'for a minute', as is shown by (8a). The causative in (7b), on the other hand, is aspectually an accomplishment and can, therefore, be construed as both telic and atelic. Consequently, it is compatible with both 'in a minute' and 'for a minute' type of adverbials and with both partitive and accusative case marking, as (8b) illustrates:

(8) a. Lasi hajo-si *minuuti-n/minuuti-ssa
glass.NOM break-3SG.PAST* minute-ACC/minute-INESS
'The glass broke *for a minute/in a minute'

b. Pekka hajo-tti [lasi-a minuuti-n]/
Pekka.NOM break-CAUS.PAST *[glass-PAR minute-ACC]/
[lasi-n minuuti-ssa]
[glass-ACC minute-INESS]
'Pekka broke the glass for a minute/in a minute'

Thus, it is unlikely that the partitive case assigned by causative psych verbs simply tells us about the aspectual properties of the embedded verb. Rather, it shows that the complex predicate as a whole is atelic. In other words, the psych predicates under discussion are not accomplishments or achievements. The next step is to show that they are not activities, either.

Test 2: The Progressive

The progressive is expressed in Finnish with the verb 'be' and an infinitival form of the verb in the inessive case. All verb classes, except states occur in the progressive.

(9) *Activity:*

a. Vesi on kiehu-ma-ssa
water.NOM is boil-INF-INESS
'The water is boiling'

Accomplishment:

b. Mikko on maalaa-ma-ssa talo-a
Mikko.NOM is paint-INF-INESS house-PAR
'Mikko is painting a house'

Achievement:

c. Laiva on saapu-ma-ssa satama-an
ship.NOM is arrive-INF-INESS harbour-ILL
'The ship is arriving at the harbour'

State:

d. *Pekka on osaa-ma-ssa ranska-a
Pekka.NOM is know-INF-INESS French-PAR
'Pekka is knowing French'

As expected, both causative and non-causative psych verbs are ungrammatical with the progressive:[3]

(10) *Causative:*

a. *Kaisa on inho- tta- ma- ssa Matti-a.
Kaisa-NOM is findDisgusting-CAUS-INF-INESS Matti-PAR
'Kaisa is disgusting Matti'

[3]It is also worth pointing out that the progressive in Finnish is truly a stativity test; it does not demonstrate the flexibility of the English progressive. For instance, the translations of the following English sentences (from Pesetsky 1995: 30) where stative predicates combine with the progressive are all ungrammatical in Finnish:

a. *Donald is finding your accusations ludicrous.*
Tommi on pitä-mä-ssä syytöksiäsi naurettavina.
Tommi.nom is like-INF-INESS your.accusations ludicrous

b. *I think Bill is really liking this performance.*
Luulen että Pekka on todellakin pitä-mä-ssä tästä esitykse-stä.
I.think that Pekka.NOM is really like-INF-INESS this performance

c. *Harry is clearly fearing the outbreak of flu.*
Harri on selvästikin pelkää-mä-ssä flunssan iskua.
Harri.NOM is clearly fear-INF-INESS flu attack

b. *Kaisa on sääli-ttä- mä- ssä Matti-a.
Kaisa-NOM is pity-CAUS-INF-INESS Matti-PAR
'Kaisa is causing pity in Matti'

Noncausative:

c. *Kaisa on inhoa- ma- ssa Matti-a.
Kaisa-NOM is findDisgust-INF-INESS Matti-PAR
'Kaisa is finding Matti disgusting'

d. *Kaisa on sääli- mä- ssä Matti-a.
Kaisa-NOM is pity-INF-INESS Matti-PAR
'Kaisa is pitying Matti'

Another way to see the stativity of these psych verbs is from their present tense interpretation.

Test 3: Habitual interpretation in the present tense

As in English, nonstative verbs in Finnish have a habitual interpretation in the present tense.

(11) a. Mikko auttaa Maija-a
Mikko.NOM helps Maija-PAR
'Mikko helps Maija (habitually)'

Only stative verbs can appear in the present tense with a non-habitual interpretation:

b. Mikko osa-a ranska-a
Mikko.NOM knows French-PAR
'Mikko knows French'

In this respect, too, psychological predicates group with states:

(12) *Causative:*

a. Uutiset sure- tta-vat Matti-a
news.NOM beSad-CAUS-3PL Matti-ACC
'The news cause Matti to be sad (now)'

Noncausative:

b. Matti sure-e uutisi-a
Matti.NOM beSad-CAUS-3SG news.PAR
'Matti is sad because of the news (now)'

Thus, Finnish has a class of psych predicates that are uncontroversially stative both in their causative and noncausative uses. The question then is, what is the semantic import of the causative morphology if it does not affect the aspectual properties of the verb. In the following section I show that this isn't strictly true: even though both types of predicates are interpreted as stative, they differ in the *kind* of stativity they exhibit. More particularly, causative psych verbs are interpreted as *stage-level* states, i.e. as describing temporary states, while noncausative psych verbs are interpreted as *individual-level* states, i.e. as describing more permanent situations.

12.4 The Stage Individual-Level Distinction

Several tests can be used to demonstrate that in Finnish stative noncausative psych verbs have the properties of i(ndividual)-level predicates while stative causative psych verbs have the properties of s(tage)-level predicates.[4]

Test 1: Temporal and Locative adverbials

Is has been observed by various researchers that certain temporal and locative adverbials are odd with i-level predicates (13a, 13b, 14a, 14b), while s-level predicates combine with them freely (13c, 13d, 14c, 14d) (e.g. Carlson 1982, Chierchia 1995, Kratzer 1995).

(13) a. ??John knows French in his car.
b. ??Coffee is black in the kitchen.
c. John smoked in his car.
d. Coffee is available in the kitchen.

(14) a. ??John was tall this morning.
b. ??John was intelligent on Wednesday.
c. John was sick this morning.
d. John was tired on Wednesday.

The same contrast can be found in the behavior of Finnish psych predicates: the noncausative psych verbs in (15) are odd with these adverbials, while the causative psych verbs in (16) occur with them without problem:

[4]Various accounts have been given of the stage/individual level distinction (see e.g. Kratzer 1995 and Chierchia 1995). In what follows I will not take a stand on what the right representations of these two types of predicates are. Rather, I simply wish to show that this distinction is a relevant one when distinguishing the meanings of causative and noncausative stative psych verbs.

Noncausative

(15) a. ??Jussi inho-si Mikko-a
Jussi.NOM findDisgusting-3SG.PAST Mikko-PAR
ruokapöydä-ssä.
dinner-table-INESS
'Jussi finds Mikko disgusting at dinner table'

b. ??Inhosi- n sinu-a eilen kello 3.
findDisgusting-1SG you- PAR yesterday clock 3
'I found you disgusting yesterday at 3 o'clock'

c. ??Sääli-n sinu-a eilen kello 3.
pity- 1SG you- PAR yesterday clock 3
'I pitied you yesterday at 3 o'clock'

Causative

(16) a. Mikko inho- tti Jussi-a
Mikko.NOM findDisgusting-CAUS.PAST.3SG Jussi-PAR
ruokapöydä-ssä.
dinner-table-INESS
'Mikko disgusts Jussi at dinner table'

b. Sinä inho- tit minu-a eilen
you.NOM findDisgusting-CAUS.PAST.2SG I-PAR yesterday
kello 3.
clock 3
'You disgusted me yesterday at 3 o'clock'

c. Sinä sääli-tit minu-a eilen kello 3.
you.NOM pity-CAUS.PAST.2SG I-PAR yesterday clock 3
'You caused pity me yesterday at 3 o'clock'

Test 2: Bare Plurals

Another famous distinction between i-level and s-level predicates is that i-level predicates, such as the ones in (17a) and (17b), select a universal reading for bare plurals while with s-level predicates they are most naturally interpreted existentially (and arguably also universally), as is shown by (18a) and (18b) (Carlson 1977). The following examples are from Chierchia (1995):

(17) a. Humans are mammals.
b. Firemen are altruistic.

(18) a. Firemen are available. Dogs are barking in the courtyard.

Again, the same distinction is exhibited by the Finnish psych predicates. With noncausative psych verbs bare plurals only have a universal interpretation while with causative psych verbs bare plurals can be interpreted both universally and existentially.

Noncausative (only universal)

(19) a. Suomalaiset inhoa- vat räntäsadett-a.
Finns.NOM findDisgusting-3PL sleet-PAR
'(All) Finns find sleet disgusting'

b. Eurooppalaiset pohti-vat tulevaisuu-tta.
Europeans.NOM wonder-3PL future-PAR
'(All) Europeans wonder about the future'

Causative (existential or universal)

c. Suomalaisi-a inho- tta-a räntäsade.
Finns-PAR findDisgusting-CAUS-3SG sleet.NOM
'Sleet disgusts (all/some) Finns'

d. Eurooppalaisi-a pohditu- tta- a tulevaisuus.
Europeans-PAR wonder- CAUS-3SG future.NOM
'The future makes (all/some) Europeans wonder'

Test 3: *Always*

I-level and s-level predicates also interact differently with adverbs of quantification. The following contrast is observed by Chierchia (1995):

(20) a. ??John always knows French.
b. A Moroccan always knows French.
c. John always speaks French.

Thus, i-level predicates are odd with quantificational adverbs such as *always* unless they are predicated of kind-referring nouns such as *a Moroccan*. S-level predicates, on the other hand, combine with these adverbs freely. The exact same pattern is found with the Finnish causative and noncausative psych verbs:

Noncausative

(21) a. ??Kerttu aina inhoa- a räntäsadett-a.
Kerttu.NOM always findDisgusting-3SG sleet-PAR
'Kerttu always finds sleet disgusting'

b. Suomalainen aina inhoa- a räntäsadett-a.
Finn.NOM always findDisgusting-3SG sleet-PAR
'A Finn always finds sleet disgusting'

Causative

c. Räntäsade inho- tta- a aina Kerttu-a.
sleet.NOM findDisgusting-CAUS-3SG always Kerttu.PAR
'Sleet always disgusts Kerttu'

Test 4: Episodic contexts

Another way to see the stage/individual distinction between the two types of psych verbs is the fact that only causative psych verbs occur naturally in episodic contexts. Consider the following:

(22) a. Menin eilen kalatorille, mutta en ostanut mitään. Kalaa käsiteltiin paljain käsin ja...

'Yesterday I went to the fish market, but I didn't buy anything. They handled the fish with bare hands and...'

b. ... se **inho- tti** minu-a.
that-NOM **findDisgusting-caus.**PAST I-par
'... that disgusted me'

c. ... ?? minä **inho- si- n** sitä.
I-NOM **findDisgusting-**PAST-1SG that.PAR
'... I found that disgusting'

Here the intended meaning is that the speaker was in a state of disgust while in the fish market. In English this can be conveyed with the translation of either (22b) or (22c). In Finnish, however the causative is much more felicitous in such a context. The individual-level meaning of (22c) is not compatible with the clearly episodic context in (22a).

Some further evidence:

In Section 2 I demonstrated that both causative and noncausative psych predicates have a nonhabitual interpretation in the present tense, thus behaving as stative predicates in general. However, if causative psych verbs are stage-level predicates, we would expect them to also have a habitual interpretation in the present tense. In other words, it should be possible to generalize over these stage-level states and get a generic statement of the sort in (23b). I-level predicates, however, do not under normal circumstances yield to such generalizations, as is shown by the anomaly of (24b).

(23) a. Bill is tired. (s-level)
b. Bill is tired after work. (s-level habitual)

(24) a. Bill has brown hair. (i-level)
b. ??Bill has brown hair after work. (i-level habitual; non-existent)

It is, indeed, the case that causativized psych predicates in Finnish have a habitual interpretation in the present tense, as is shown by (25) below:

(25) Hyttyset inho- tta- vat Mikko-a .
mosquitoes.NOM findDisgusting-CAUS-3PL Mikko-PAR
'Mosquitoes disgust Mikko in the evening (in general)'

This contrasts with the corresponding noncausative:

(26) ??Mikko inhoa-a hyttysi-ä iltaisin.
Mikko.NOM findDisgusting-3SG mosquitoes-PAR in.the.evening
'Mikko finds mosquitoes disgusting in the evening'

Yet another indication of the stage-level property of the causative psych predicates is that mental states that cannot easily be construed as episodic do not causativize in Finnish. These include the following:

(27)

rakasta	'love'	**rakast-utta*	'cause to love'
pitä	'like'	**pidä-ttä*	'cause to like'
vihaa	'hate'	**viha-utta*	'cause to hate'
tietä	'know'	**tiedä-ttä*	'cause to know'

Notice that none of the verbs above have Experiencer-object forms in English, either. Finnish psych verbs that do causativize include the ones listed in (28). In this group at least the first three have nonperiphrastic Experiencer-object forms in English, as well:

(28)

inhoa	'find disgusting'	*inho-tta*	'disgust'
ällö	'be grossed out'	*ällö-ttä*	'gross out'
sure	'be sad'	*sure-tta*	'sadden'
sääli	'pity'	*sääli-ttä*	'cause to pity'
arvele	'wonder'	*arvel-utta*	'cause to wonder'
epäile	'doubt'	*epäil-yttä*	'cause to doubt'
häpeä	'be ashamed'	*häve- ttä*	'cause to be ashamed'

Thus, there seems to be robust evidence that while both the causative and the noncausative psych verbs are stative, the former are stage-level and the latter individual-level predicates. This suggests that it is not stativity *per se* that is semantically incompatible with causativity, but individual-level stativity. Similar observations have been made about English. Dowty (1979: 129, n. 4), for instance, observes that English has several deadjectival causatives which do not exhibit the individual-level meanings available for their base adjectives. For instance, while the adjective *tough* can mean either 'difficult' or 'resistant to tearing', the verb *toughen* cannot mean 'make difficult' (see also Levin and Rappaport 1990:96-97 for discussion).

In the following section we will see that the stage-level meaning is not the only semantic difference introduced by the causative suffix: it also introduces a causing eventuality. The properties of this causing eventuality will allow us to understand what exactly it is about the meaning of the causative suffix that brings about the stage-level property.

12.5 The Bistativity of the Causative

The causative and noncausative psych predicates also behave differently when modified by adverbials such as *melkein* 'almost'. These adverbials introduce ambiguity with the causative, but not with the noncausative.

(29) a. Maija melkein inhoa-a Matti-a.
Maija-NOM almost findDisgusting-3SG Matti-PAR
'Maija almost finds Matti disgusting' (The mental state fails to hold)

b. Matti melkein inho- tti Maija-a.
Matti-NOM almost findDisgusting-CAUS.PAST Maija-PAR
'Matti almost disgusted Maija'
(1) Matti did something or had some property that almost caused a state of disgust in Maija (the mental state almost held)
(2) Matti almost did something or had some some property that would have caused a state of disgust in Maija (the causing event almost occurred)

The second interpretation in (29b) is possible in situations where Maija, for instance, knows that a certain behavior of Matti generally causes a state of disgust in her and perceives that Matti almost engaged in that behavior. The fact that the two interpretations exist for the causative but not for the noncausative suggests that there is a component in the meaning of the causative that is absent in the meaning of the noncausative. Thus, it seems to be the case that the causative suffix of psychological causatives encodes some kind of causing eventuality, just like it does with accomplishment-like causatives.[5] Two questions immediately arise: (i) how is this causing eventuality interpreted and (ii) why does its presence make the predicate episodic? Let us consider each in turn.

It has been noted by various researchers that for a mental state to hold, the Experiencer must somehow direct attention to or have some perception of the Theme (or Stimulus) of the mental state (e.g. Croft 1993, Dowty 1991, Engdahl 1990). In Finnish, this seems to be true of causative psych verbs but not of noncausatives. Namely, (30a) can be truthfully uttered at any time, while (30b) can only be felicitously uttered under its nonhabitual interpretation if Mikko is around mosquitoes, or perceives them, at speech time.

(30) a. Mikko inhoa-a hyttysi-ä
Mikko.NOM findDisgusting-3SG mosquitoes-PAR
'Mikko finds mosquitoes disgusting'

b. Hyttyset inho- tta- vat Mikko-a.
mosquitoes.NOM findDisgusting-CAUS-3PL Mikko-PAR
'Mosquitoes disgust Mikko (now)'

Even when the intended interpretation of (30b) is habitual, the perception requirement holds: the interpretation is roughly that whenever Mikko perceives mosquitoes, they cause a state of disgust in him. The noncausative in (30a) has no such conditional interpretation. What this suggests is that the semantic import of the causative morpheme is to introduce a causing eventuality which gets interpreted as the perception of the Theme by the Experiencer. This perception eventuality seems to be what is responsible for the stage-level interpretation of the causative: the mental state is interpreted as holding only for as long as the state of perception

[5] It is, however, controversial whether *melkein* 'almost' in (31b) introduces a true ambiguity or whether it is simply vague with respect to the point of interruption of the causal chain. Tenny (present volume) argues that it has the latter character. Even if this is correct, the contrast between (31a) and (31b) is still a fact and shows that the meaning of the causative is more complex than the meaning of the noncausative. If it wasn't, we would not expect it to have a larger range of interpretations with *almost*-type adverbs than the noncausative.

does. Recall the contrast we observed when using a causative and a noncausative psych predicate in a clearly episodic context in (22), repeated below:

(22) a. Menin eilen kalatorille, mutta en ostanut mitään. Kalaa käsiteltiin paljain käsin ja...
'Yesterday I went to the fish market, but I didn't buy anything. They handled the fish with bare hands and...'

b. ... se **inho- tti** minu-a.
that-NOM **findDisgusting-caus.**PAST I-par
'... that disgusted me'

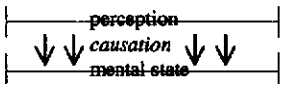
c. ... ?? minä **inho- si- n** sitä.
I-NOM **findDisgusting-**PAST-1SG that.PAR
'... I found that disgusting'

Here the noncausative in (22c) sounds deviant due to the unlikelihood of developing an i-level mental state towards the specific sight at the fish market. The causative in (22b), on the other hand, is felicitous since it precisely reports that the speaker was in a state of disgust for as long as she perceived the trigger of the mental state. Thus, the causation described by stative psych causatives is of the same type as the causation described by predicates such as *push a cart*: the cart will move only for as long as somebody is pushing it. With psych causatives, the perception sustains and delimits the caused mental state which, due to this temporal dependence, receives a stage-level interpretation. The different interpretations of the causative and noncausative forms could be described informally as in the diagram in (31): the noncausative describes a mental state with no temporal bounds while the causative describes a causal relation between a state of perception and a mental state, the former of which sustains the latter:[6]

(31)

a. i-level, noncausative: ——— mental state ———

b. s-level, causative:

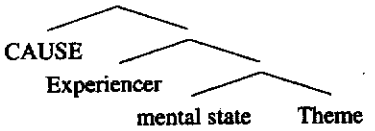


More specifically, the proposal is that when the complement of a causative morpheme is a predicate describing a psychological state, as in (32), the

[6]Some kind of perception might be a metaphysical requirement of the noncausative, as well; but, even if this is the case, such an eventuality does not seem to figure in the behavior of noncausative psych predicates in any way and thus should not be part of their linguistic representation.

causative morpheme is interpreted as a perception of the Theme of the mental state by its Experiencer.

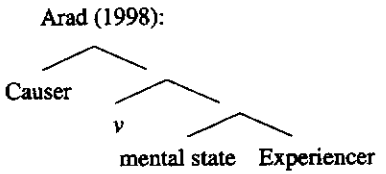
(32)



Of course we are now encountering the infamous linking problem which has inspired most of the research on psych predicates: how, from the representation in (32), do we get a surface form in which the Theme participant is the subject and the Experiencer the object?

One possibility is that the Theme raises to subject position past the Experiencer. This is argued for by Belletti and Rizzi 1988. But this type of analysis violates locality of A-movement (McGinnis, to appear). As an alternative, Arad (1998) proposes that causative psych predicates are, in fact, not derived from their noncausative counterparts; rather, they have a true external argument introduced by an external argument-introducing head (v):

(33)



The important difference between the two types of analyses is that the raising analysis (or any analysis which derives the causative from the noncausative) predicts that the mental state described by the noncausative is entailed by the causative while the latter type of analysis doesn't. The relevant question then is whether causative psych predicates do, in fact, entail their noncausative counterparts. In the following section I try to show that in Finnish this is the case for stative psych causatives but not for nonstative ones.[7]

12.6 Differences Between Stative and Non-Stative Psych Causatives

Analyses which do not derive causative psych predicates from noncausative ones rely on an observation by Pesetsky (1995:58) that (34a) is a tautology

[7]For other interesting differences between stative and nonstative psych causatives, see Arad (1998).

while (34b) isn't:

(34) a. Because Bill feared the ghost, the ghost frightened Bill. [tautology]
b. Because the ghost frightened Bill, Bill feared the ghost. [nontautology]

The sentence in (34b) is a nontautology because it is possible that the ghost *caused* a mental state of fear in Bill without the ghost being the "target" of the fear. To account for this, Pesetsky proposes that the object of *fear* bears the thematic role Target, while the subject of *frighten* bears the thematic role Causer. The Causer participant is responsible for bringing about the mental state without necessarily being the Target of the mental state. That this is the case with a verb such as *frighten* becomes even clearer when we consider examples such as the one in (35): here the most easily available interpretation is one where the news simply causes Mary's mental state without being the Target of it:

(35) The news frightened Mary.

Thus, Pesetsky's proposal is, similarly to Arad's (1998), that the subject of causative psych predicates receives the Causer theta role from the causative morpheme and receives no theta-role from the predicate describing the caused mental state.

One prediction that this proposal makes is that no selectional restrictions of the object of the noncausative should apply to the subject of the causative. This is hard to test in English due to the relatively small number of causative psych predicates; we can fear, worry about or be bothered about almost anything. In Finnish, however, one of the causativizing psych verbs is *sääli* 'pity' which requires an animate object:

(36) a. Minna sääli-i Matti-a.
Minna.NOM pity-3SG Matti-PAR
'Minna pities Matti'
b. Minna sääli-i naapuri-n laiha-a kissa-a.
Minna.NOM pity-3SG neighbor-GEN skinny-PAR cat-PAR
'Minna pities the neighbor's skinny cat'
c. ??Minna sääli uutisi-a.
Minna.NOM pity.PAST.3SG news-PAR
'Minna pitied the news'
d. ??Minna sääli onnettomuutt-a.
Minna.NOM pity.PAST.3SG accident-PAR
'Minna pitied the accident'

Now, if it is indeed the case that the subjects of causative psych verbs do not receive a theta role from the noncausative predicate, causativization

should make the deviance of (36c-d) disappear. In other words, we should be able to interpret the causative versions of (38c-d) as we interpreted 'The news frightened Mary': something in the news caused a state of pity in Minna or the accident caused Minna to pity the people involved. But this isn't the case: the causativized versions of (36c-d) in (37) are as deviant as (36c-d):

(37) a. ??Uutiset sääli-tt-i-vät Minna-a.
news.NOM pity-CAUSE-PAST-3PL Minna-PAR
'The news caused pity in Minna'
b. ??Onnettomuus sääli-tti Minna-a.
accident.NOM pity-CAUSE.PAST.3SG Minna-PAR
'The accident caused pity in Minna'

Thus the same selectional restriction that makes (36c-d) deviant makes the causatives in (37) sound strange. I take this to be evidence that stative psychological causatives in Finnish are, in fact, derived from their noncausative counterparts. However, when it comes to nonstative psych predicates, exactly the opposite seems to hold.

Recall that nonstative psych predicates are morphologically complex already in their Experiencer-subject forms: they are derived from nouns denoting mental states by the addition of the inchoative suffix *-stU*. These Experiencer-subject verbs take an object in the elative case. This elative DP is interpreted as the cause of the mental state ('INCH' below stands for the inchoative suffix):

(38) a. Maija viha-stu-i Jussi-n kommenti-sta.
Maija.NOM anger-INCH-PAST Jussi-GEN comment-ELA
'Maija became angry because of Jussi's comment'
b. Jussi paha-stu-i Mari-n käyttäytymise-stä
Jussi.NOM bad-INCH-PAST Mari-GEN behavior-ELA
'Jussi became upset because of Mari's behavior'
c. Jussi ikävy-sty-i presidenti-n pitkä-stä
Jussi.NOM boredom-INCH-PAST president-GEN long-ELA
puhee-sta.
speech-ELA
'Jussi became bored because of the president's long speech'

The elative DP has to describe the causing *event*, not simply a participant in that event. Thus, the situations in (38a-c) cannot be described by the sentences in (40a-c) in a parallel fashion to (39) where the (b)-sentence can be used to report on the situation described by the (a)-sentence:

(39) a. His arrival frightened me.
(The event of his arriving caused me to become frightened.)
b. He frightened me.
(Some event that he participated in caused me to become frightened.)

(40) a. ??Maija viha-stu-i Jussi-sta.
Maija.NOM anger-INCH-PAST Jussi-ELA
'Maija became angry because of Jussi'
b. ??Jussi paha-stu-i Mari-sta.
Jussi.NOM bad-INCH-PAST Mari-ELA
'Jussi became upset because of Mari'
c. ??Jussi ikävy-sty-i presidenti-stä.
Jussi.NOM boredom-INCH-PAST president-ELA
'Jussi became bored because of the president'

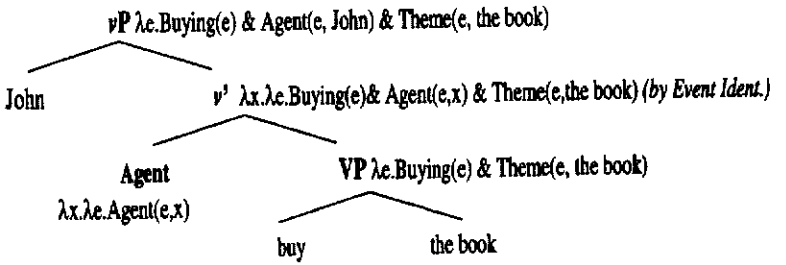
However, as predicted by Pesetsky and Arad, causativization removes the deviance of the examples in (40). The causativized versions of all of the sentences in (40) have the interpretation that something that the subject did caused a change of mental state in the object participant:

(41) a. Jussi viha-stu-tti Maija-n.
Jussi.NOM anger-INCH-CAUSE.PAST Maija-ACC
'Jussi caused Mari to become angry'
b. Mari paha-stu-tti Jussi-n.
Mari.NOM bad-INCH-CAUSE.PAST Jussi-ACC
'Mari caused Jussi to become upset'
c. Presidentti ikävy-sty-tti Jussi-n.
president.NOM boredom-INCH-CAUSE.PAST Jussi-ACC
'The president caused Jussi to become bored'

I take the reason for the contrast between (40) and (41) to be the fact that nonstative psych causatives have an external argument. I will assume, along with much recent work (Kratzer 1994, 1996, Chomsky 1998, among many others), that external arguments are not true arguments of the verb but are introduced by a separate head right above the VP level. The semantic content of this head, which I will call v (Chomsky 1998), is the thematic role of the external argument. This head combines with the meaning of the VP by the rule of Event Identification (Kratzer 1994, 1996), illustrated below:[8]

[8]Here, and what follows I will assume a neo-Davidsonian theory of verb meanings along the lines of Parsons (1990).

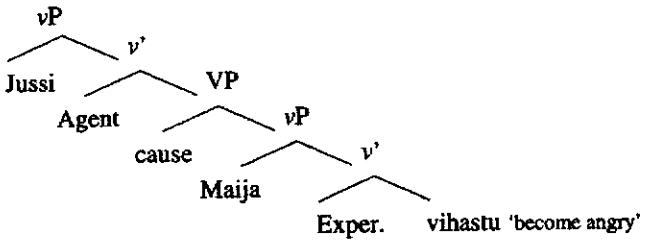
(42)



As (42) makes clear, the head v thematically relates the external argument to the event described by the verb. Now if non-stative psych causatives have an external argument, they must also have a v. But this v does not relate the external argument to the change of mental state described by the inchoative verb, but rather to the event that causes this change of state, i.e. the event introduced by the causative suffix. Thus, under an agentive interpretation, (41a), repeated below, would have the structure in (41a'):

(41) a. Jussi viha-stu-tti Maija-n.
Jussi.NOM anger-INCH-CAUSE.PAST Maija-ACC
'Jussi caused Mari to become angry'

41a' Nonstative Psych Causative:



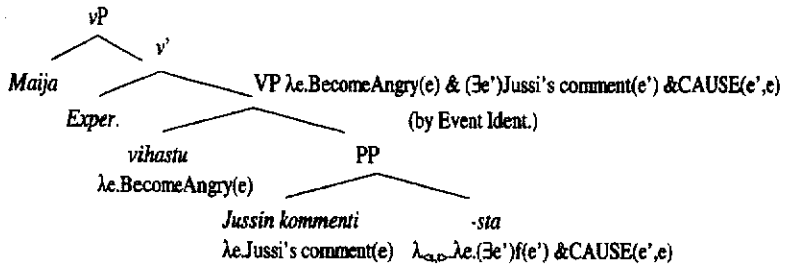
Here the causative is built on a structure where *vihastu* 'become angry'appears without the elative DP describing the cause of the mental state. This is not a problem for the semantics of *vihastu* since the elative DP is, in fact, optional:

(43) Maija viha-stu-i.
Maija.NOM anger-INCH-PAST
'Maija became angry'

Therefore, there is reason to believe that the elative DP is not a quirky case object but an adjunct,[9] and that (41a'), thus, involves no unsaturated argument.

What is important in (41a') is that it involves *both* a causative head introducing a causing event *and* a higher v which introduces a *participant* of the causing event[10] (to appear) I argue that even though in Finnish CAUSE projects its own syntactic head, in English type languages it doesn't but is rather expressed in v.. Such a structure is absent from the non-causative. When the noncausative occurs with the elative adjunct, the elative morphology introduces a causing event but there is no head which would allow us to relate an individual to that event in the same way that v relates an individual to the event described by its complement. Therefore, the argument of the elative case marker has to be a DP that can easily be construed as an event itself.

(44)



This I take to be the reason for the contrast between (42a) and (43a), repeated below. The head v allows us to introduce a participant of the causing event in (43a) but no such head is involved in (42a), hence its deviance:

(42) a. ??Maija viha-stu-i Jussi-sta.
Maija.NOM anger-INCH-PAST Jussi-ELA
'Maija became angry because of Jussi'

(43) a. Jussi viha-stu-tti Maija-n.
Jussi.NOM anger-INCH-CAUSE.PAST Maija-ACC
'Jussi caused Mari to become angry'

Similar contrasts can be found in English. I take the explanation offered for (42a-43a) also to be the reason why the (b) sentence in (45) can be used to report on the situation in the (a) sentence (as already observed in (41)) while this is not possible for the noncausatives in (46) and (47):

(45) a. His arrival frightened me.
b. He frightened me.

(46) a. I blushed at his comment.
b. ??I blushed at him.

(47) a. I fainted at his comment.
b. ??I fainted at him.

Thus there seems to be robust evidence for positing an external argument for non-stative psych causatives. But, as already suggested, with stative psych causatives the evidence points in the opposite direction: in Finnish, the same selectional restrictions apply to the object position of the noncausative and to the subject position of the causative. Passivization data further supports this conclusion. It is a well-known generalization that verbs which already in the active have a derived subject do not passivize (Perlmutter and Postal 1984, Marantz 1984, etc.). This predicts that stative psych causatives should not passivize and this is exactly what we find in Finnish:

(48) Stative causative:
a. *Maija-a inho-te-taan
Maija-PAR findDisgusting-CAUS-PASS
'Maija is disgusted'
b. *Maija-a sure-te-taan
Maija-PAR beSad-CAUS-PASS
'Maija is caused to be sad'

Crucially, both noncausative stative psych verbs and causative nonstative psych verbs do passivize:

[9]It is, however, worth mentioning that Finnish *does* have verbs which take an obligatory elative object. One such verb is *pitää* 'like':
(i) Minä pidä-n sinu-sta. (ii) *Minä pidä-n.
I.NOM like-1SG you-ELA I.NOM like-1SG
'I like you' 'I like'
The interpretation of the elative argument in (i) is, however, significantly different from the interpretation of the elative DP that is possible with change of mental state verbs: in (i) the elative argument is the Target of the mental state (using Pesetsky's terminology) while with change of mental state verbs it names the causing event. Thus in the latter case it is interpreted as the at-phrase in *I blushed at his comment* which we would not want to treat as an argument of the verb in English, either.

[10]I assume that CAUSE has roughly the following meaning: $\lambda f_{<s,t>}.\lambda e.(\exists e')f(e')$ & $CAUSE(e,e')$ (where s is the semantic type of eventualities). However, in PylkkänenPylkkänen, L.

(49) Stative noncausative:

a. Maija-a inho-taan.
Maija-PAR findDisgusting-PASS
'Maija is found disgusting'

b. Uutisi-a sure-taan
news-PAR beSad-PASS
'One is sad because of the news'

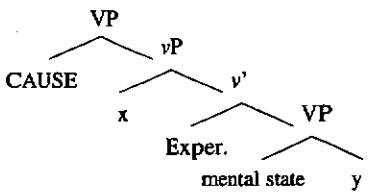
(50) Nonstative causative:

a. Kaisa pelä-sty-te-ttiin huonoilla uusilla.
Kaisa fright-INCH-CAUS-PASS.PAST with bad news
'Kaisa was frightened with bad news (by somebody)'[11]
('bad news' modifying the causing event)

b. Presidentti ila-hdu-te-ttiin hyvillä
president.NOM joy-INCH-CAUS-PASS.PAST with
uutisilla.
good news
'The president was caused to become delighted with good news'

If we assume that stative psych causatives have a derived subject while nonstative ones don't, these data are explained. Thus, Finnish supports an unaccusative analysis of stative psych causatives in the style of Belletti and Rizzi (1988). Based on this, I will assume that these verbs have a causative head without an external argument-introducing v, illustrated in (51). As already argued for above, I assume that in a context such as the one in (51), CAUSE is interpreted as a perception eventuality involving the participants of the complement vP.

(51) Stative Psych Causative:



This structure makes a clear prediction about the possible interpretations of the subjects of stative psych causatives: they cannot be interpreted as a participant which is not related to the caused mental state. This is why there is a contrast between (52) and (53).

[11]The Finnish passive does not allow the expression of a by-phrase.

(52) a. All of a sudden John dropped the kettle.
b. He frightened me.

(53) a. Last night John passed me without saying 'hello'.
b. ??He bothered me.

In (52) we have a nonstative psych causative. Thus its structure involves a causative head and a v which relates an individual to the causing event. Therefore, we can use (52b) to report on the situation in (52a), i.e. to mean that something that John did caused me to become frightened. In (53), on the other hand, we have no head that would allow us to introduce an individual participating in the causing event. Therefore (53b) cannot be used to report on the situation in (53a); that is, it cannot be used to mean that the event of John passing me without saying 'hello' bothered me. Rather, (53b) has to mean that there was something about *him* that bothered me.

12.7 Conclusion

Let us summarize. In this paper I have presented evidence from Finnish that stative psychological Experiencer-object verbs have a causative semantics. I proposed an analysis in which their causative morphology introduces a causing eventuality which is interpreted as the perception of the Theme of the caused mental state by its Experiencer. On the basis of this analysis, we can hypothesize that causative predicates are stative when the causally related eventualities described by them are both interpreted as states. The result is a complex state decomposable into two "substates". If right, this analysis is significant for theories of possible verb meanings, which have traditionally considered states semantic primitives. The data discussed in this paper also show that causativity and stativity are semantically compatible notions. However, there is reason to believe that causativity is incompatible with individual-level stativity. This is because causativization forces a stage-level interpretation of Finnish psych predicates, which in their noncausative uses behave as individual-level predicates.

I have also argued that stative psych causatives and non-stative psych causatives differ semantically in ways independent of aspect. Specifically, I have argued that the participant in the subject position of stative psych causatives is the Target of the caused mental state while the participant in the subject position of nonstative psych causatives is a participant of the causing event and not thematically related to the complement predicate. Thus, I have presented evidence against a unified account of these two types of causatives: the properties of stative psych causatives suggest a raising analysis along the lines of Belletti and Rizzi (1988), while the properties of nonstative psych causatives suggest a nonraising analysis along the lines of

Arad (1998).

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13

Events and the Semantics of Opposition

JAMES PUSTEJOVSKY

13.1 Persistence and Change

13.1.1 Introduction

There has recently been a renewed interest in the explicit modeling of events in the semantics of natural language. This is more evident now than ever before, particularly with the interest in explaining the properties of syntactic linking in languages in terms of the event representations underlying sentential forms. The papers in this volume, for instance, are examples of this recent line of discussion. Most of this work assumes a logic of interpretation where events are associated with the tensed matrix verb of a sentence and sometimes with event-denoting nominals expressions, such as *war* and *arrival.* There has, however, been little serious discussion in the semantics literature of the logical consequences of adopting a stronger view of quantification over events in language, where the event structure representation makes explicit reference to object and property persistence for all the logical arguments in the sentence, and not merely the classical "theme" argument.[1]

Typically, even with a binary event structure, the predicates associated with the individual events make reference to a unique change. For example, change-of-state predicates such as *break* and *die* affect a single argument position, as with *the glass* and *John*, respectively, in (1) below:

(1) a. Mary broke the glass.
    b. John died.

In the course of an activity or an event, however, the major predication

[1]This remark also holds for the literature on object-event quantification and event plurality; see, for example, Link (1998), Krifka (1989), Barker (1999), and Schein (1993).

Events as Grammatical Objects.
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