

RESULTATIVE VS. CAUSATIVE EVENT FRAMING: DESCRIPTION, MODELLING, PROBLEMS

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Abstract

This contribution looks into special properties of English causative verbs that show a wide spectrum of distribution patterns. These verbs extend their canonical complementation frames (as transitives) as these constructions show aberrant behaviour in transitivity and telicity. The study attempts to show the close link between causativity, telicity and resultativity in events lexicalised in English. From an observed deficiency of telic verbs as a class and telicity in the Vendlerian sense itself as a verb classifier, the paper argues for a primacy of resultativity and the need for a formal description and subsequent modelling of event structures via the resultative – non-resultative dichotomy, which for some is rather a cline than a dichotomy. Resultativity is empirically derived as an emerging property out of a proper analysis of the features of verbal events. For this end, events will be classified according to their lexical-temporal profile and according to the semantic parameters of their causative resultativity.

Key words

causation, causativity, resultatives, constructions, lexical aspect, verb classes, event frames, complementation

1 Introduction

An open subset of transitive verbs can extend their frames of complementation beyond the conventional pattern as they license constructions like transitives/ditransitives, inchoatives, resultative, fake object resultatives or allowing way-constructions and motion phrase complementation. This alternation or ‘elasticity in argument structure’ (Onozuka 2007: 539) means on the one hand that some arguments may be missing or not realised or on the other hand that there are more arguments than conventionally expected. The grammaticalization patterns of these constructions are therefore based on different conceptualizations of the causative event in which interlocutors focus salient aspects of the event or neglect arguments as cognitive defaults (cf. Haase 2007 and Haase 2009 *forthc.* on the problem of causer neglect).

Goldberg (2001) has identified three determinants of patient omission under low discourse prominence in which the causee can be deleted. Discourse prominence means that an argument (either focus or topic) needs to be expressed and is typically the case for arguments in agentive, subject positions. Patient

arguments are more flexible, given that several conditions are met. The three conditions or determinants isolated by Goldberg are atelicity, iterativity and de-emphasis. Thus, argument structure frames (known as constructions) cannot be described with a redundancy-free prediction from verbal semantics alone. It has been suggested from cognitive-linguistic argumentation perspectives that they can in principle be overt effects of conceptualisations. Cf. the following examples of uses of *kick* (adapted from Goldberg 2001: 504):

- (1) a. Pat kicked the wall
- b. Pat kicked the ball into the goal
- c. Pat kicked John bloody
- d. The horse kicks
- e. Pat kicked his way out of the stadium

In this contribution, the reality of the determinants is assessed in an empirical survey of constructions in which causee neglect can be observed. It raises the question whether causatives are resultatives in cases where the result is not an exemplification or emphasis of the causal action. This argument then leads to predicting the elicitation behaviour of informants in the empirical study. Discussion will therefore involve data from elicitation tests of German students. The added layer of result-specified causation is then integrated into a larger class of cues as proposed in Haase (2007). It further speculates that the linguistically significant syntactic properties (i.e. properties that enable the spectrum of constructions referred to above) are semantically determined and have therefore a cognitive-conceptual core.

2 Aspectual class and argument frame flexibility

The reality of the three determinants can be tested when subjects are asked to qualify verbal items according to their telicity, especially if telicity is not the quality that is queried specifically. The responses can then be converted to telicity judgments which can then be correlated with the fact of causee presence or absence. The system students were asked to use was comprised of the canonical aspectual classes (given with the original examples by Vendler (2005 [1967]: 23) below):

1. activity (*to run, to push a cart*)
2. accomplishment (*to run a mile, to draw a circle*)
3. achievement (*to win a race, to reach the summit*)
4. state (*to like somebody, to hate something*)

These classes define the telicity or atelicity of events in that states are static, unchanging situations or qualities (which can be emotional or physical) and continuous over a certain period of time. They can answer the question, *how long?* and have the following morphosyntactic properties: they disallow progressives (2a.), imperatives (2b.) and they do not have a natural end point, cf. 2c. vs. 2d.

- (2) a. *Lisa is hating it
- b. *Like this book!
- c. *I finished believing it
- d. I started/stopped believing it

Activities are dynamic situations which can persist indefinitely without a defined endpoint. Thus, they have no definite end and can therefore answer the question, *how long?* Among the list of properties are optional progressives (3a.), imperatives (3b.) and a semantic compatibility with voluntary (3c.) and involuntary events: 3d. (which means: *If the plant stops growing, it has grown*).

- (3) a. We were observing the entrance
- b. Watch this movie!
- c. I'm deliberately looking at the picture
- d. Our plant is growing

Accomplishments denote dynamic situations with a defined endpoint or climax. The endpoint must be reached and the VP can answer the question, *how long?* Noted properties are: they have a finish (4a.), they happen in a certain time X (4b.) but never happen for a certain time X (4c.). Also, if John stops writing the letter, he has not written it.

- (4) a. John finishes writing the letter
- b. She recovered from the flu in 2 weeks
- c. *She recovered from the flu for 2 weeks

Achievements are dynamic situations which occur instantaneously. These punctual events in which a state changes can answer the question, *at what time?* and exhibit the following properties:

- (5) a. We reached the summit type A: instantaneous
- b. We found a solution type B: culmination phase

The aspectual classes were created in order to capture the internal temporal profile of the events themselves, not of the verbs proper as can be seen from the different assignments of *run* and *run a mile*. Furthermore, as can be seen from

the examples above, the events differ in their telicity and their result function. This is therefore the feature to investigate when we want to isolate determinants of possible object deletions. Resultative verbs are the most flexible class and will be briefly looked at in the next section.

3 Resultative verbs

All resultative verbs appear in two morphosyntactic variants, either as lexical causatives with the result encoded in the semantics of the lexical item or as prime resultatives with explicit end states (so-called hammer-flat type verbs). Sometimes, both types appear with the same verb but with differing degrees of resultativity:

- (6) a. Mary wiped the table
- b. Mary wiped the table clean

The difference between the two types corresponds clearly with a semantic gradience between a result and a change of state of the goal of the verbal action (the causee). Whereas the hammer-flat part of the second type of verbs (which carries the result information) has occasionally been analysed as a small clause construction (cf. Higginbotham 1998), this analysis is impossible for the first type as the result must be supplied lexically. This of course begs the question for the argument structure of resultative verbs. The question is therefore, is the result given in the argument structure of the resultative or is it supplied from the lexicon? The following section offers syntactic arguments and discusses their plausibility for a formal modelling.

3.1 The lexical semantics of resultatives

Resultatives consist of a causative verb, a direct object and a result constituent or result predicate. As a conventional definition, Trask (1997) notes that a resultative is “[a] piece of a sentence identifying the result of the action named in the sentence, cf. *I painted the bathroom blue*” (ibid.: 188).

Resultatives occupy a special position for their semantic versatility. Their syntax allows for the incorporation of a causer component (*I*), a causee component (*the bathroom*) a result (*blue*) and a lexical chassis of a causative verb (*paint*). In Wolff et al.’s typology (2003), resultatives are the only class of verbs that encode all semantic variables outlined in their approach: change of state of cause; end state specified or not; tendency of cause; agreement causer – cause; direct or indirect causation and means or mechanisms given. Wolff could prove

that resultatives grammaticalize most meaning components compared with analytical or lexical causatives. Another interesting feature is that resultatives also encode the manner/path distinction that forms two major typological classes of satellite-framed languages (like English, which conflates motion and manner) and verb-framed languages (like Spanish, which conflates motion and path). Cf. the following example:

- (7) a. Mary laughed herself mad
 b. Mary caused herself to become mad by laughing

The causing event and the subevent unfold together and are temporally entangled. The result is encoded in the adjective; therefore a resultative verb can independently encode the manner and means of causation as in

- (8) Bill dusted/blew/wiped/swept the table clean
 which translates formally into

- (9) CAUSE [Causer, [BECOME [Result], Causee], BY [Manner-V + *-ing*]]
 (cf. Pustejovsky 2005: 94, Wunderlich 1997: 30)

This formula accommodates all participants of the resultative event and it renders the result a logical argument of BECOME. This is important because the result predicate can be grammaticalized with different word classes and the causee is an obligatory element which cannot simply be left out. The next section will further focus on the wide spectrum of situation types accommodated by resultatives and show problems.

3.2 The argument structure of resultatives

Result predicates can be at least of three different phrasal types: adjectival phrases, prepositional phrases and noun phrases, cf. example (10) (examples adapted from Carrier & Randall 1992: 173ff):

- (10) a. They painted the house green (AP)
 b. He broke the glass to pieces (PP)
 c. They painted the house an eerie green (NP)

A constraint for the result predicate is that it can only be a state, cf.

- d. *He broke the glass pieces

in which *pieces* does not designate a state. This state is temporally open and thus atelic. This imposes a semantic constraint for the result predicate: it can not refer to deverbal *-ing* adjectives:

- (11) a. Gillian ran herself sweaty
 b. *Gillian ran herself sweating

but cf.:

- c. Gillian found herself sweating

The resultative verb itself can be either transitive or intransitive. The distinction of resultatives in transitives and intransitives has different effects for their argument structure.

Transitive examples in

- (12) a. The author read the pages loose
b. The food blender ground the fruits to jam

are not controversial at first glance as the status of the postverbal NP is that of a direct object. This is also evidenced by the fact that 12a. entails 12c. and 12b. entails 12d.:

- c. The author read the pages
d. The food blender ground the fruits

The status of the postverbal NP in the intransitive examples is more debatable:

- (13) a. The guys giggled themselves into a coma
b. Miles sat the cake flat

The postverbal NP cannot be the direct object of the verb and the non-resultative V – NP relationship is neither syntactically licensed nor semantically entailed:

- c. *Miles sat the cake

Finally, we have to accept that the status of the postverbal NP as a direct object for transitive resultatives is not valid either. Cf.

- d. The author read himself into a coma
which is clearly transitive but does not entail
e. ?The author read himself

This was also noted by Dowty (1979) who subsequently suggested to consider the entire class of resultatives to be derived not from transitives but from intransitives (*ibid.*: 217). A possible way out here is to postpone the question whether the NP is an argument of the verb (and what role it receives) and attempt the analysis of the result predicate and as small clause. This is also the route taken by Carrier and Randall (1992). In retrospect, this offers also a way out of 13e. because a typical small clause construction like

- (14) a. We want the building demolished
does not entail
b. We want the building

As noted above, a closer investigation of the result predication unravels its semantic structure as an atelic meaning component. Two types of predication can be distinguished: resultative predication in the narrow sense and depictive predication. The result predicate as a secondary predicate is thus an aspectual modifier in the sense that it introduces a new event and defines a relation between it and the event introduced by the main predicate. They thus ‘glue’ the telic and the atelic part together to an aspectually complex predicate. Three canonical examples of depictive and resultative predication are compared below:

- (15) a. John drove the car drunk (depictive) subject-oriented
b. Mary drank the coffee hot (depictive) object-oriented
c. John painted the house red (resultative) object-oriented
(examples 15a.-c: Rothstein 2004: 60)

This opens the obvious dichotomy between 15a. and 15b./c. Depictives are subject-oriented which means that the result predicate refers to properties of the subject (*John = drunk*) and resultatives are object-oriented which means that the result predicate refers to properties of the object (*coffee = hot, house = red*). The first case is clearly an example of low discourse prominence whereas object-oriented constructions have high discourse prominence for the results. This means that the result phrase is a reliable indicator for the argument frame flexibility. The study focuses this determinant in a two-step elicitation test.

4 Method and discussion

Informants

The study was comprised of a questionnaire elicitation test. Informants were queried in two groups of junior and senior students with a sufficient competence in lexical aspect of English verbs. Both groups had been familiarized with the Vendlerian aspectual classes in theory and application. There was no prior information about the possible decision triggers.

Materials

Stimulus set in the test materials was a short original document from the popular science journal *New Scientist*.

The text was provided under the task that all verbal elements be classified according to their aspectual class. No information was given on complementation or transitivity issues, thus all cues were implicitly contained. The telicity information was therefore made intransparent due to terminological issues: aspect classes were to be assigned, not telicity proper. The text is given in full below:

It's written all over your face

(NewScientist.com news service)

IT IS hard not to feel a little nervous. Andrew Ryan is trained to catch liars, and I am sitting in his lab at the US Department of Defence Polygraph Institute, preparing to lay a bald-faced whopper on him.

Earlier today, I participated in a mock crime, a short-lived melee that ended in aggravated assault, attempted murder and robbery. The act of stabbing a dummy in the chest and rifling through its purse has left me feeling more than a little guilty. My accomplice has instructed me to reveal nothing. But will my discomfort give me away?

Settling into a wide, comfortable chair, I begin answering questions, while a high-resolution infrared camera scrutinises my face, watching the blood swirl just beneath the surface of my skin. The camera forms part of a prototype for a new generation of lie detectors being developed by the US government. One day, they could be used to help unmask criminals, improve screening at border crossings and checkpoints, and perhaps interrogate terrorist suspects.

The drive towards new devices comes from a desire for something a cut above the “polygraph”, the standard lie detector whose rubber tubes and wires are familiar from TV and the movies. Scientists have long attacked the device as inconclusive, and in 2002 a report commissioned by the National Research Council (NRC) in Washington DC found that the polygraph’s performance falls well short of what is needed to tell the guilty from the innocent. As a result, the US Department of Energy began scaling back the polygraph security checks it was running on its own staff.

4.1 Expectations

In order to find conclusive evidence of the psychological and cognitive reality of the determinants given for the flexible argument structure, the pooled data is expected to cluster around the determinants explained in section 2. The first table summarizes the findings for the aspectual classes.

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#	text item	state	act	acc	ach
01	<i>It is hard not to feel a little nervous.</i>	25	1	0	0
02	<i>Andrew Ryan is trained to catch liars,</i>	3	14	6	3
03	<i>and I am sitting in his lab at the US Department of Defence Polygraph Institute,</i>	8	18	0	0
04	<i>preparing to lay a bald-faced whopper on him.</i>	9	8	6	1
05	<i>Earlier today, I participated in a mock crime,</i>	0	16	7	2
06	<i>a short-lived melee that ended in aggravated assault, attempted murder and robbery.</i>	1	0	6	16
07	<i>The act of stabbing a dummy in the chest and</i>	0	8	2	4
08	<i>rifling through its purse</i>	0	10	3	1
09	<i>has left me feeling more than a little guilty.</i>	14	3	5	4
10	<i>My accomplice has instructed me to reveal nothing.</i>	0	14	10	1
11	<i>But will my discomfort give me away?</i>	2	9	2	8
12	<i>Settling into a wide, comfortable chair; I begin answering questions,</i>	1	14	6	2
13	<i>while a high-resolution infrared camera scrutinises my face,</i>	2	21	0	0
14	<i>watching the blood swirl just beneath the surface of my skin.</i>	2	21	2	0
15	<i>The camera forms part of a prototype for a generation of detectors being developed by the US government.</i>	9	4	13	1
16	<i>One day, they could be used to help unmask criminals,</i>	2	10	7	5
17	<i>improve screening at border crossings and checkpoints,</i>	1	10	9	4
18	<i>and perhaps interrogate terrorist suspects.</i>	0	12	1	4
19	<i>The drive towards new devices comes from a desire for something a cut above the „polygraph“,</i>	8	12	3	1
20	<i>the standard lie detector whose rubber tubes and wires are familiar from TV and the movies.</i>	15	3	0	0
21	<i>Scientists have long attacked the device as inconclusive,</i>	1	11	10	2
22	<i>and in 2002 a report found that the polygraph's performance falls well short of</i>	4	1	3	17
23	<i>what is needed to tell the guilty from the innocent.</i>	9	5	3	2
24	<i>As a result, the US Department of Energy began scaling back the polygraph security checks</i>	1	11	4	7
25	<i>it was running on its own staff.</i>	0	15	3	1

Table 1: Aspectual class elicitation results (n=30)
 (item sums <30 correspond to incomplete answers;
 act = activities, acc = accomplishments, ach = achievements)

The raw data above represent the elicitation behavior of the students which in principle corresponds with the canonical answer to the question in which the distribution of the classes becomes a relevant argument. Further, most subjects

were inclined to agree on one of the four classes, which means that in principle the appropriate triggers for the decision worked. The agreement however is not in all cases coherent with the appropriate class, as the following distribution shows:

#	VP	aspectual class	% coherent
01	<i>feel nervous</i>	state	*83.33
02	<i>train to catch liars</i>	activity	46.67
03	<i>sit in his lab</i>	state	26.67
04	<i>prepare to lay a whopper</i>	accomplishment	20.00
05	<i>participate in a crime</i>	activity	*53.33
06	<i>end in assault</i>	achievement	*53.33
07	<i>stab a dummy in the chest</i>	accomplishment	6.67
08	<i>rifle through its purse</i>	activity	33.33
09	<i>leave me feeling</i>	state	46.67
10	<i>instruct me to reveal</i>	activity	46.67
11	<i>give me away</i>	achievement	26.67
12	<i>begin answering questions</i>	activity	46.67
13	<i>scrutinise my face</i>	activity	*70.00
14	<i>swirl beneath the surface</i>	activity	*70.00
15	<i>form part of a prototype</i>	accomplishment	43.33
16	<i>use to help unmask criminals</i>	accomplishment	23.33
17	<i>improve screening at crossings</i>	activity	33.33
18	<i>interrogate suspects</i>	activity	40.00
19	<i>come from a desire for</i>	activity	40.00
20	<i>be familiar from TV</i>	state	50.00
21	<i>attack the device as inconclusive</i>	accomplishment	33.33
22	<i>find that the performance</i>	activity	3.33
23	<i>need to tell the guilty from</i>	accomplishment	10.00
24	<i>begin scaling back</i>	activity	36.67
25	<i>run on its own staff</i>	activity	50.00

Table 2: Proportion of correctly assigned aspectual classes (n=30; * indicates significance)

The major surprises can be observed in items 04, 07, 16 and especially 22 where the response correctness is particularly lower than chance. However, in the majority of items the correct assignment is above chance level and for several it is highly significant.

4.2 Discussion and results

The elicitation results show significant differences in their means and variations. An ANOVA of the ingroup- and intergroup variability rendered the

following results (with $N=100$ for 4 groups x 25 items): for the sums of squares $SS_t = \Sigma x^2 - (\Sigma x)^2/N = 3779.75$ and $SS_b = 664.03$, so we obtain as the sum of squares of deviation $SS_w = SS_t - SS_b = 3115.72$. This means for the intergroup variability $s_b^2 = SS_b / k-1$ we obtain 221.34 and for the ingroup variability $s_w^2 = SS_w / N-k$ a value of 32.45. These results correspond to an F score of $F = s_b^2 / s_w^2 = 6.82$ which is significant with a critical value of 3.29 ($p < .025$) ($F > F_{tab}$). As a result, there is a significant difference in the means measured which emphasizes the argument that syntactic triggers are recognized and processed by the informants. The discussion of the triggers themselves reiterates the general conundrum that the argument frames of the verbal events have a different ‘filling status’. These triggers are summarized in the following table:

#	text	causee	result
01	<i>feel nervous</i>	no	no
02	<i>train to catch liars</i>	yes	yes
03	<i>sit in his lab</i>	no	no
04	<i>prepare to lay a whopper</i>	yes	yes
05	<i>participate in a crime</i>	no	no
06	<i>end in assault</i>	yes	yes
07	<i>stab a dummy in the chest</i>	yes	no
08	<i>rifle through ist purse</i>	yes	yes
09	<i>leave me feeling</i>	yes	yes
10	<i>instruct me to reveal</i>	yes	yes
11	<i>give me away</i>	yes	no
12	<i>begin answering questions</i>	yes	no
13	<i>scrutinise my face</i>	yes	no
14	<i>swirl beneath the surface</i>	no	no
15	<i>form part of a prototype</i>	yes	yes
16	<i>use to help unmask criminals</i>	yes	no
17	<i>improve screening at crossings</i>	yes	no
18	<i>interrogate suspects</i>	yes	no
19	<i>come from a desire for</i>	no	no
20	<i>be familiar from TV</i>	no	no
21	<i>attack the device as inconclusive</i>	yes	no
22	<i>find that the performance</i>	no	yes
23	<i>need to tell the guilty from</i>	yes	yes
24	<i>begin scaling back</i>	yes	yes
25	<i>run on its own staff</i>	no	no

Table 3: Causee and result as triggers for the verbal events

The combinations of the triggers create four classes of causee/result coherence: a) yes for both, b) no for both and causee/result incoherence: c) yes-no and d) no-yes. The incoherent class is at first counterintuitive: Can a result be realized without a causee present and vice versa? A look at the examples reveals indeed that this is possible, cf. item 07, *stab a dummy in the chest* clearly has a causee as direct object (dummy) but there is no result. On the other hand, find that the performance has a result but no causee because the performance is not a causee but the result is in the verbal aspect of resultativity of *finding* (which implies something found).

#	causee	result	state	act	acc	ach
01	no	no	25			
03	no	no		18		
05	no	no		16		
14	no	no		21		
19	no	no		12		
20	no	no	15			
25	no	no		15		
02	yes	yes		14		
04	yes	yes	9			
06	yes	yes				16
08	yes	yes		10		
09	yes	yes	14			
10	yes	yes		14		
15	yes	yes			13	
23	yes	yes	9			
24	yes	yes		11		
07	yes	no		8		
11	yes	no		9		
12	yes	no		14		
13	yes	no		21		
16	yes	no		10		
17	yes	no		10		
18	yes	no		12		
21	yes	no		11		
22	no	yes				17

Table 4: Argument frames and elicitation assignment (maximum values displayed only)

The table summarizes the assignments and obviously gives a mixed picture of the trigger role of causee and result. With simple events of class b) (*no-no*), there are no deviations. The results are even better for class c) (*yes-no*) in which

virtually all non-result events were recognized as activities (which yield no results). For group a) the data is more heterogeneous: there are only two cases in which accomplishments and achievements were assigned. Given, that the basic dichotomies in the lexical classes are first, temporal duration (virtually unlimited for states, instantaneous for achievements) and second, resultativity (activities yield no results, accomplishments do), we can plot the results for every item and investigate occurring patterns.

The scatterplot in Figure 1 represents the net results in which the coordinates along the axes of an item are calculated by summing up the elicitation data for temporal extension (i.e. classified by the informants as state or achievement) and for resultativity (classified as activity or accomplishment). The items are mainly distributed in the two quadrants of positive resultativity. This is surprising as only 15 of 25 items have grammaticalized result arguments (see Table 3). The temporal trigger seems to have clearly overruled the resultativity trigger, which explains the sophisticated elicitation data in the upper quadrants.

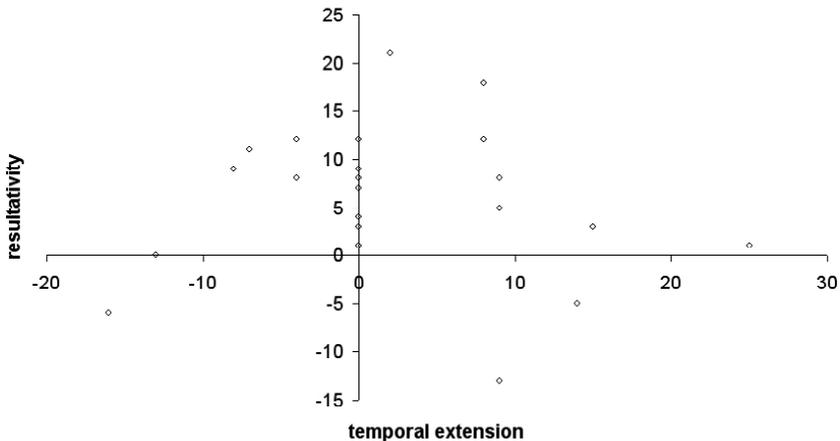


Figure 1: Scatter plot of temporal extension and resultativity (x-axis: state-achievement; y-axis: activity-accomplishment)

5 Conclusion

If we consider the distribution in all groups, we find first that the ‘rare’ aspectual classes, especially those that involve context and a combination of object permanence and verbal aspect, remain largely unassigned, evidenced by the overall low scores for accomplishments and achievements. However,

informants were increasingly likely to assign ‘activity’ when no result was given. This coincides with the observation made above, that telicity is a parameter in the decision process. Events where no result is supplied are atelic, as are states and activities. This further exacerbates the role of causees as special arguments in argumentation frames. Resultativity can therefore be a determinant of stretching argumentation frames as well as the low discourse prominence of the causee, which in all ‘no’ cases was not supplied in the text. In the complementary study on causer neglect (Haase 2007), the causee was expected to be in the patient or experiencer role at the receiving end of the verbal event, whereas for active sentences the causee was expected to be in the object position. In a small subset of cases, the argumentation frame of causatives even needs expansion for syntactic well-formedness. In that sense, Levin and Rappaport-Hovav’s examples in 16a. (see Levin & Rappaport-Hovav 1995: 188) and on the appendage of a directional phrase to a causative in 16b. can be extended by another class of extension, a resultative phrase, as in 16c.:

- (16) a. ?The general marched the soldiers (causative)
 b. The general marched the soldiers to their tents (causative + directional)
 c. The general marched the soldiers tired (causative + resultative)

(Examples 16a.-b: Levin & Rappaport-Hovav 1995: 188)

The classification of triggers (‘learner bias’, cf. *ibid.*: 69) relied in that study on causative-inchoative alternation and less frequently, strong agentive triggers. These determinants will have to be appended with the determinant of resultativity. Therefore at least four elements control the liberal expansion of the argumentation frame of causative constructions: inchoativity, telicity, agentivity (of which low or high discourse prominence forms a subset) and resultativity are all well-defined morphosyntactic determinants.

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