

Necessary and sufficient conditions in lexical causative verbs

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1. Introduction. As often observed, lexical causative verbs (henceforth **LCs**) can not only express ‘direct’ causation events (taking place between temporally adjacent causes and effects), but also indirect ones, *pace* Fodor (1970). For instance, (1a) can mean that Peter directly communicated an idea to Mary — ‘d(irect)-reading’ — but can also convey that Mary found this idea thanks to something Peter said (e.g. about the cat) two weeks ago — ‘i(ndirect)-reading’, cf. Oehrle (1976). The same way, (1b) does not have to express a direct killing event (Neeleman and Van de Koot 2012). It is also felicitous in a situation where, e.g., the gunsmith accidentally put real bullets instead of fake ones in the toygun used some days later by Sue, Ana’s co-player.¹

- (1) a. Peter gave Mary the idea she needed for her paper.
b. Eventually, the gunsmith killed Ana!
c. Peter didn’t give Mary the idea she needed for her paper.
d. I’m surprised that Peter gave Mary the idea she needed for her paper.

2. Differences between the two readings.

I. **At-issue component.** When the LC statement is embedded in presupposition holes, no event involving the subject’s referent (henceforth **S**) has to be assumed under the d-reading. However, under the i-reading, some event involving *S* that could have developed into a *P*-event (*P* being the property denoted by the verb) is taken to be familiar in the discourse. For instance, under its d-reading, the statement (1c) does not presuppose any of Peter’s action, while under the i-reading, some discourse-familiar event involving Peter is said not to have inspired Mary. This difference in the at-issue component reflects itself in several ways. (i) For some speakers, the i-reading of LCs is easier to get if some element — e.g. a fronted *by* -ing gerund/event description (*By doing this, he killed her*), an adverbial like *eventually*, the embedding of the LC under an implicative verb like *end up* — contributes to make familiar some event involving *S* (henceforth *e_S*). (ii) When a LC statement is embedded under a propositional attitude verb like *be surprised that*, the mental state tends rather to bear on *S*’s motivation to perform such or such act in the d-reading, and on the fact that some *e_S* resulted in the causation event under the i-reading. For instance, (1d) either reports my surprise that Peter communicated this idea to Mary (d-reading), or my surprise that some event involving Peter resulted in Mary having the idea needed for her paper (i-reading). This difference is expected if the occurrence of some *e_S* is under discussion on the d-reading only, given that the reported attitude bears on this at-issue component only (e.g. *I’m surprised that Ana stopped smoking* typically does not convey surprise that Ana smoked before).

II. **Cross-linguistic counterparts** The d- and i- readings of English LCs are often morpho-syntactically distinguished cross-linguistically. In particular, in languages that allow the so-called non-culminating ‘zero-result’ reading of causative verbs (cf. e.g. *Sue killed Ana but she did not die*), the i-reading shares more properties with the form that entails culmination (the Salish limited/non-control morphology, see e.g. Bar-El et al. 2005, Jacobs 2011), the Tagalog ‘ability and involuntary-action’ *ma(ka)-/na(ka)-* prefixes, see Dell 1983) than with the competing control/neutral form, that implies culmination only. Firstly, both Salish limited/non-control morphologies and the Tagalog *maka-* morphology suggest that the *P*-event obtains as the result of certain circumstances not under *S*’s control, which is also an inference triggered by sentences like (1a/b) under their i-reading. Secondly, with the Salish limited/non-control morphology, some *e_S* that could have developed into a *P*-event outscopes the negation and *almost*-adverbials

¹Note that the subject’s referent *S* can act intentionally or not under both readings: Peter may have had the intention to induce a particular idea in Mary when speaking about the cat two weeks ago, or the gunsmith can ‘directly’ shoot Peter to death accidentally.

(the ‘nothing happened’ reading is possible only with the control morphology, see Jacobs’ 2011 tables on pp. 122 & 128). Thirdly, in Tagalog, *maka-* statements embedded under attitude reports like *be surprised to* are interpreted the same way as English LCs under the i-reading (suggesting that some e_S that could develop into a P -event is also presupposed). On the other hand, the neutral form is interpreted as the English LCs under the d-reading (suggesting that the whole causation event is asserted), see Dell (1983: 183) examples (21/22).

3. A previous account. Wolff (2003) claims that LCs can report causation events made of non-temporally adjacent causes and effects only if the additional cause is an ‘enabling condition’, that is, ‘does something that is concordant with the tendency of the causer’. Rappaport Hovav (2014) adopts Wolff’s (2003) claim to explain the contrast in (2a); the idea is that the ambient condition is ‘the most direct cause’, while the agent is only an indirect cause and the ambient condition is not an enabling condition (because the gardener does not control it). However, (1a/b) shows that the i-reading of LCs can be felicitous although the subject’s referent is not ‘an enabling condition’ (i.e. (1b) is not paraphrasable by *Sue enabled the gunsmith to kill Ana* in our scenario). Finally, Wolff’s (2003) account does not capture the facts in I and II.

4. Proposal. My account is inspired by Baglini and Francez (2016) and Nadathur (2016). I assume that LCs have the same semantics under their d- vs. i- readings, with CAUSE being underspecified for direct or indirect causal relations. Nevertheless, their d- vs. i- readings differ by the way sufficient and necessary conditions for the P -event are distributed among its participants and by the causal dynamics projected in discourse. Under both readings, all e_S -independent causal factors for the P -event are assumed to be satisfied, see [iii.] below.

In the d-reading, a LC statement asserts that e_S is both the necessary and sufficient cause for the P -event (see also Lauer 2011: 21). On the other hand, a LC statement under the i- reading is interpreted very similarly to two-way implicative verbs as analysed by Baglini and Francez (2016) and Nadathur (2016):

Under the i-reading, a LC

- i. presupposes in the context of utterance c_u some discourse-familiar e_S to be causally necessary, but not sufficient, for the occurrence of a P -event;
- ii. asserts that e_S actually caused a P -event. Consequently, a negative LC statement asserts that e_S did not cause a P -event.
- iii. presupposes in c_u that all e_S -independent necessary conditions for a P -event are satisfied.

Given that [iii.] requires all necessary conditions independent from e_S to be taken for granted in c_u , it conveys that e_S is *sufficient* for a P -event in this context (Nadathur 2016).

5. Supporting data. A. The account captures the observations in I in § 2, since the occurrence of some event e_S is presupposed (resp. asserted) under the i-reading (resp. d-reading). Relatedly, adverbials like *ultimately* or verbs like *end up* help to get this i-reading because they contribute to present an event e_S involving S as familiar in the context of utterance. **B.** The contrast in (2a) can be accounted for as follows: in the causal model assumed in a default context, a particular change of temperature, but not the act of a gardener, can be conceived as the sufficient cause for the blossoming. But we can force such a context as in the French example (2c), more acceptable than its agentive counterpart (2b). The contrast in (2d) can be explained the same way: out of the blue, the press coverage about a book is not conceived as a sufficient cause for getting the Nobel Prize. But this interpretation can be forced as in (2e), by backgrounding the causal role of the book itself, and highlighting the press coverage as the sufficient cause *given this causal background* by the adverbial *en fin de compte* ‘ultimately’. **C.** The contrast (2f/g) is accounted for by [iii.] above: Sue’s shooting, which is a causal factor necessary for the P -event independent from the gunsmith’s act in the context of utterance, is asserted in (2f), but presupposed in (2g). Similarly, in the context given in (2h), the i-reading of (1b) — selected by the last clause — is infelicitous, because one of the causal factors for the P -event is explicitly put into question (cf. Nadathur 2016’s similar examples 25/26).

- (2) a. *The gardener blossomed the fruit trees/Early summer heat blossomed fruit trees across the valley. (Rappaport Hovav 2014)
- b. *Ana a fâné les roses du jardin.
Ana has wilted the roses of-the garden
'Ana wilted the roses of the garden.'
- c. (?)Ce qu'Ana a fait a suffi à fâner les roses du jardin.
What Ana has done has sufficed to wilt the roses of-the garden
'What Ana did was sufficient to wilt roses of the garden.'
- d. #La presse lui a donné le prix Nobel.
the press her has given the prize Nobel
'The press gave her the nobel Prize.'
- e. #C'est vrai, il a écrit un bon livre. Mais en fin de compte, c'est la presse qui lui a donné le prix Nobel.
it is true he has written a good book but at the end of the day it is the *presse* that him has given the prize Nobel
'True, he wrote a good book. But at the end of the day, it is the *press* that gave him the Nobel Prize.'
- f. The gunsmith killed Ana #by forcing Sue to shoot her. (following Jackendoff 1972)
- g. The gunsmith *forced* her assistant Sue to shoot Ana. So ultimately *he* killed her!
- h. It's not clear whether the gunsmith put real bullets in Sue's gun while repairing it. But ultimately, he killed Ana! #Sue who used it later thought the bullets were fake.

6. Conclusions Alonso-Valle and Hsieh (2017) already point out that the Tagalog (and Salish) limited/non-control morphology have an inferential profile very similar to English two-way implicative verbs like *manage to* as analysed by Baglini and Francez (2016). What I argue for is that in languages like English, LCs can also have the same inferential profile under their i-reading. This explains the parallelisms pointed out in II in § 2. Given that in languages like English, such limited/non-control morphologies do not exist, and that some restrictions also seem to bear on the use of many periphrastic causatives, such a flexibility in the use of English LCs is expected.

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